

## Submitted To



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> FINAL REPORT 26th May, 2021

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## **EXECUTIVE SUMMARY**

## Background

The City of Hebron in the south eastern section of the West Bank/Palestine is served by a combined sewer system which provides sewer services to some 77% of the city. There is currently no wastewater treatment plant at the end of the sewer system and therefore, most of the sewage intercepted by the sewers runs untreated along Wadi As-Sameen until it reaches the green line to Shokeit where it is eventually treated by the Israelis.

This untreated waste flows for about 40 km along the Wadi, causing damage to the eastern aquifer and the communities which border the Wadi along the way. Also, *because of the Wadi's location in a recharge area that discharges to the West Mountain Aquifer Basin (described in Impacts on Groundwater Quality), the groundwater is at continuous risk of contamination.* 

This was identified as a serious issue as far back as the 1970s. In order to address the outstanding issue within the Hebron Governorate, the Palestinian Authority requested support from the donor community for this project - the Hebron Governorate Regional Wastewater Management Project, which would be financed by a consortium of multilateral and bilateral partners including the l'agence française de développement (afd), the European Union (EU) and the World Bank (WB).

## **ESCHIA Objectives**

The purpose of the ESCHIA is to ensure that environmental, social, cultural heritage impacts are identified, screened and classified (or categorized) right at the design stage of the phases and components of the HRWWTP so that mitigation measures and social and environmental management plans are well developed to avoid or reduce irreversible or serious negative impacts which could affect both the population and the environment to manageable levels.

According to the Terms of Reference (TOR) issued by PWA and EQA, specific objectives of this consultancy assignment include the following:

- Conduct, prepare and provide (ESCHIA) in order to fully comply with Palestinian environmental law, to support the sustainability of the expected project outputs and to obtain EQA's approval;
- Identify the possible environmental, social and cultural heritage impacts of the infrastructure component of the project;
- Identify any potential temporary or permanent land acquisition requirements associated with civil works;
- Design and prepare an environmental, social and cultural heritage management plan (ESCHMP) to manage, mitigate, and monitor any possible negative impacts during the construction and operation phases of the project
- Conduct a capacity assessment of the implementing party of the ESCHMP and provide recommendations for any capacity building needs.



## **Project Description**

#### Flow design and wastewater pollutant loads

The design of the HRWWTP will follow the natural flow pattern to the maximum extent possible, as the line will continue along the course of the valley until the proposed site of the station, and its design will be based on the amount of wastewater flowing from the sewage network of the city of Hebron, taking into account the rainwater that flows directly into the sewage network.

The wastewater plant will be initially designed to serve the residents of the city of Hebron according to population forecasts, to serve in the future neighboring communities such as Yatta, al-Fawwar camp, Hadb al-Fawwar, Halhul, Bani Naim, and al-Rayyah. It should be noted here that industrial activities in the southern region of Hebron, such as stone saws, slaughterhouses, and laundries, will not be connected to the proposed treatment plant.

#### Industrial discharge

#### Stone cutting slurry

The stone cutting activity generates important quantity of slurry, a mix of water and suspended solid. Their intermittent discharges in the sewer system will produce a shock load to the HRWWTP comparable to a non-point source impact.

Important load of TSS overtaking momentarily the normal loading ranges will have a detrimental effect on the process and a direct impact of the stability of the treatment.

#### Tanneries

The tanneries located in a cluster of the Hebron industrial zone discharge their wastewater in the municipal network. The flow from the tanning stage of the process containing chromium is segregated from the rest of the flow and it is conveyed to a storage tank for pre-treatment. The pretreatment consists in a chemical precipitation to transform the soluble chromium in a solid form to make it settle and then collect it with the sludge before its transfer to an appropriate dumping site.

The result of the survey is that the total quantity of chromium treated monthly on-site in the pretreatment facility is 180 to 200 kg. The chromium removal pre-treatment is processed in a batch mode (4 shifts per week; 7 m3 of IWW treated per shift). For each shift, 12,5 kg of chrome (200 kg/month and 16 shifts per month) are treated and removed. This quantity, even if untreated and discharged in 3 hours in the municipal network, will not represent a risk due to an important dilution of the tanneries IWW with the main flow (average daily flow of the HRWWTP = 22 500 m3/day).

However, the risk assessment is based on the actual activity of the tanneries cluster and does not provide any guarantee for the future, even if the factory owners have mentioned the slow-down of their activity during the last years. A monitoring program is requested to identify any changes in the chromium discharges in the municipal sewerage system.

#### Dairy industries

According to the "FEASIBILITY STUDY AND DESIGN OF INDUSTRIAL EFFLUENTS MANAGEMENT SCHEME, information collected during the site visit in the two dairies (Al Jebrini & Al Juneidi) indicates that whey proteins, a by-product from the milk processed for cheese and Labaneh production, are discharged in the municipal sewer. Whey protein are highly biodegradable



substance and the quantities discharged in the wastewater could be an explanation of the increase in BOD5 concentration. However, when compared with the conceptual design criteria of the HRWWTP, the total daily COD load discharged by the two dairies factories is less than 10% of the treatment capacity of the plant for COD (3 t vs 34,7 t) and can be accepted without compromising the global functioning of the sewerage system.

#### Other industries

The volumes discharged and the pollutant loads from slaughterhouse, Olive Mill, Tahina activities and other industries are low when compared with the capacity of the HRWWTP defined by the Contractor ALKE in its conceptual design (less than 2%) and the plant can treat all these industrial effluents without impacting its treatment capacity.

#### Wastewater Treatment at HRWWTP

The HRWWTP will be constructed for secondary treatment of the current wastewater stream discharged in Wadi As-Samen.

In the preparation stage of the project (during the feasibility stage), alternative wastewater treatment options for the HRWWTP were reviewed and two reference designs were analysed based on a Multi Criteria Approach. <u>The final biological treatment process selected relies on activated sludge</u> treatment, a proven and well established technology.

The wastewater treatment process will be an activated sludge process, with a single treatment stage with extended aeration, with nitrification and denitrification and the phosphorus biological / chemical removal. The sludge stabilization shall be performed by anaerobic sludge digestion.

This project has principally been designed for the stage 1 facilities, (225,580 people equivalents or 22,500 m3/day on an average yearly basis) but must allow for possible expansion of the plant in the future to meet. the total stage 2 capacity (455,500 people equivalents or 43,500 m3/day) by logical spacial reservations.

The wastewater flows into the inlet chamber located at the inlet of the automatic coarse screens where online water quality measurements are performed. Coarse screenings will automatically be dropped into a container at ground level. After passing through the coarse screens, the wastewater flows to the inlet pumping station where it is lifted up to allow free flow by gravity through the wastewater treatment plant.

Wastewater is then transferred to fine screens where fine screenings are removed, washed and dewatered and transferred to containers.

From the fine screening channels, the wastewater flows to the combined aerated grit and grease removal tanks. Grit will be removed in order to reduce the risk of damage to the mechanical installations in the treatment units and grease is removed to avoid unpleasant conditions caused by malodorous floating sludge.

Settled grit will be treated in the classifier and transported to containers. Retained grease will be scraped off to the grease collector and then discharged to truck for final disposal.



After passing the grit and grease removal tanks, the wastewater flows into a distribution chamber where it is either automatically by-passed or sent to biological treatment stage according to signal received from the early warning system monitoring.

In the primary sedimentation tanks, a major part of the suspended solids and organic matter is removed. Clarified wastewater is drawn from overflow weirs at the surface and the settled primary sludge is concentrated at the bottom hopper before withdrawal. The settled primary sludge will be collected into the sludge cone and will be transferred by primary sludge pumps in to the gravity pre-thickening tank.

Scum formed on the surface of the primary sedimentations will be retained in the clarifiers and scraped off to a scum pumping station.

From the primary sedimentation tank, wastewater flows to a channel where it is distributed evenly to the anaerobic and activated sludge tanks. Biological phosphorus removal will be realized in anaerobic mixing tanks. Also ferric chloride shall be dosed for chemical phosphorus treatment. After anaerobic mixing tank, wastewater shall flow to the activated sludge tanks. In the aeration tanks biological decomposition of organic matter takes place by means of micro-organisms (activated sludge) suspended in the wastewater. The biological processes for decomposition of the organic matter requires continuous oxygen supply. In order to obtain the maximum operational stability and keep power consumption low, mixing and the aeration shall be separated. **Oxygen will be supplied from blowers through bottom mounted diffusers.** The output of the blowers shall be automatically controlled in correspondence with the actual oxygen concentration in the activated sludge tanks. The suspension of activated sludge shall be provided by slowly rotating propeller mixers.

The biological processes continuously create new micro-organisms (activated sludge). An equivalent amount of sludge shall be removed from the process tank as biological excess sludge.

The activated sludge liquor will be collected from the activated sludge tanks and distributed into the secondary clarifiers. in the clarifiers, suspended sludge and treated wastewater will be separated by sedimentation. The treated wastewater shall be drawn from the surface by overflow weirs and the settled sludge shall be concentrated in the bottom hoppers. The concentrated sludge shall be returned to the activated sludge tanks to secure sufficient quantities of activated sludge in the tanks. The return sludge pumping will be proportional to the influent flow. Scum formed on the surface of the clarifiers will be retained in the clarifiers and scraped off to a scum pumping station.

The clarified effluent shall be transferred to the chlorine contact tank for final disinfection.

Primary sludge will be transferred to conventional gravity thickener to increase DS content. This process will increase dry solids content of the primary sludge by up to 5 - 6 % DS. Thickened primary sludge will be pumped directly to the digester by pre thickened sludge pumps.

The excess biological sludge will be pumped by excess sludge pumps to the mechanical sludge thickening unit. Coagulation takes place by the addition of polymer to the sludge. Thickened excess sludge will be transferred by mechanically thickened excess sludge pumps to sludge digester for stabilization.



The most common anaerobic process used for the treatment of sludge is a mesophilic fully mixed digester where the sludge is heated to approximately 35°C. The gas produced in the digesters will be utilized in a combined heat and power plant and excess gas shall be burned in a gas flare.

To prevent struvite (magnesium phosphate ammonium) precipitating in the digesters and in downstream processes and piping, ferric chloride will be dosed into the feed sludge of the digesters. The ferric chloride reacts with the inorganic phosphate to prevent the phosphate from forming struvite.

The digested sludge will be stored in digested sludge pumping station and later on fed to the belt filter press for final dewatering. Coagulation will take place by the addition of polymer to the sludge. Dewatered sludge will be transferred via screw conveyor to on to sludge containers.

Concentrate and filtrate water from excess sludge thickening and dewatering process is then directed to supernatant pumping station.

The HRWWTP will be constructed for secondary treatment of the current wastewater stream discharged in Wadi As-Samen, and reduction of nutrient loads reaching the Wadi the aquifer;

The conventional HRWWTP activated sludge treatment plant comprise the following main elements:

- Inlet pumping station
- Preliminary treatment including screens and grit removal
- Primary sedementation tank
- Primary sludge pumping station
- Equalization tanks
- Aeration tank
- Blower building
- Final sedementation tanks
- Return activated and surplus sludge pumping station
- Chlorine contact tank
- NaOCl dosing plant
- Gravity prethickener
- Sludge mechanical thickening and dewatering building
- Sludge pumping station
- Filterate pumping station for thickened sludge
- Digester
- Desulpharisation unit
- Digested sludge storage tank



# Environmental Impacts Assessment During Construction and Operational Phases

The key receptors which the Consultant has considered include

- 1. Air (air quality and ambient noise);
- 2. Soil (soil quality, erosion, landscape);
- 3. Water (water quality and resource consumption);
- 4. Biological environment (Flora and Fauna);
- 5. Human environment (Occupational health & safety, Community safety, Visual impacts, Cultural heritage and Archaeology impacts, traffic impacts and the Socio-economic and Health impacts)

#### During construction

#### Waste Handling and Disposal Impacts

The waste generated fall into one of two categories:

- **Excavation waste:** While soil sample results proved trace metals to be negligible, soil needs to be handled with care to mitigate environmental risks of improper disposal, especially since it was a runway for highly biologically concentrated wastewater. Mitigation measures and screening criteria to prevent such impacts are detailed in the ESMP.
- Human wastes generated by construction labor, including sewage and garbage collected from labor camps in HRWWTP locations. Disposal of sewage and garbage generated from construction labor, if not transported to adequate sites, will be a continuation of the existing sanitation situation and contribute, although to a relatively low extend, to the deterioration of water quality. It is therefore necessary that a solid waste management plan is formulated and implemented. The ESMP has recommended measures for sound management of such waste.

In general impacts of waste handling during the construction of the HRWWTP should be considered of <u>Low significance</u> if mitigated and will be controlled by applying the mitigation measures related to waste management included in the management plan.

#### Noise

Traffic jam, noise/vibration caused by the heavy vehicles transporting huge amounts of materials and disposed soil will be considered. These issues can be prevented by a proper selection of access route and a restriction of the time for transportation.

Noise will also be experienced during construction activities, especially those associated with the use of heavy machinery i.e. use of cranes, heavy trucks and generators. Noise resulting equipment vary from continuous sources, such as cranes and trucks, to intermittent impacts, from excavation works.

The vulnerable groups who are susceptible to the construction noise impacts are :

- The construction workers
- The neighboring residential areas



The distance between the plant and the closest neighboring community are as described in "Hebron Site Location and surrounding communities" in section 7.1.

Tools and equipment that will be utilized during the construction phase are not known at this point yet; however these were identified based on the Consultant's experience and data collected by the consultant from other similar projects.

Standards specified for noise intensity and exposure duration for the working environment listed in the ESCHMP, should be respected during construction.

The noise emitted during the construction of the HRWWTP will be high at the source and will decrease as the equipment moves away from source. The source is a moving point, which originates at the location of construction activities at each point in time. The closest residential area falls about 95m from the inner boundary of the road surrounding the HRWWTP site and only one house falls at a distance of about 85 m from the inner boundary of the road surrounding the HRWWTP site. While these distances are less than the precautionary 200m, construction noise impacts on surrounding communities will only be temporary. Workers are expected to be affected the most by th e potentially generated noise (as detailed in occupational health and safety impacts below). The impact is temporary and <u>of moderate significance</u> but can be brought down to <u>low significance</u> if mitigated. Health and safety procedures are detailed in the ESCHMP.

#### <u>Air Quality</u>

The excavation of top soil in construction sites will cause dust emissions that will vary according to the type of soil in the specific area and the excavation technique. The dust emissions result in temporary raise in particulate matter in ambient air near construction sites. Also there are other, relatively minor sources of air emissions, such as construction trucks and power generators.

The Palestinian Law has specific air quality standards; however there are no specific standards for dust emissions from diffuse sources.

In controlling dust emissions from excavation activities, certain measures need to be implemented during excavation, soil stockpiling, soil haulage and control of exhaust of fuel combustion machinery.

The following air pollutants are expected in most of the construction activities:

- Fugitive d ust emissions ( PM<sub>10</sub>, PM<sub>2.5</sub>)
- NOx and SOx
- CO in case of old motors

Excavation activities will be mainly limited to the site.

During the construction of the HRWWTP, trucks bringing raw materials and those transferring spoil and construction waste will be moving to and out of the site on a regular basis, thus affecting the receptors exposed to the roads leading to the HRWWTP site. However, this impact will be of temporary and intermittent nature. The air quality impacts due to the construction of the HRWWTP is considered of Low significance

#### Soil and groundwater Impacts



Typical construction activities may result in soil and groundwater contamination due to the following:

- Uncontrolled disposal of hazardous liquids such as spent oils, paints, or any other chemicals/additives used in concrete making and finishing works.
- Leaching of solid wastes which are randomly disposed of.

Potential impacts on soil other than contamination include:

• Soil erosion

In general the soil impacts during the construction of the HRWWTP should be considered of <u>Low</u> <u>significance</u> and will be controlled by applying the mitigation measures related to waste management and by maximizing the reuse of the excavated soil.

#### Disturbance of Traffic and Difficulty of Access

The main impact on roads traffic will be caused by the heavy vehicles transporting huge amounts of materials and disposed soil that may cause temporary blocking of the road, but for relatively short period, possibly few hours.

Traffic disturbance impacts during the construction of the HRWWTP should be considered of <u>Low</u> <u>significance as it</u> is a transitory problem that can be mitigated by the proper selection access route and implementing a restriction of the time for transportation.

Risks of Improper Management of Culturally Valuable Sites

Although there no identified antiquity sites in the project area, the project exists in an area nominated UNESCO Heritage site and thus possibilities for chance-finds during excavation works need to be taken into consideration. Finding such objects may, if not properly managed, risk their loss or damage during handling/storage in construction site.

In such case, the risk on such structures will be similar to the impacts on structures integrity discussed previously.

In case of chance finds, collaboration should be established between the Ministry of Tourism and Antiquities and the contractor in case of chance finds. These standards and requirements were addressed in the ESMP, which has defined procedures for chance-finds of antiquity objects, and measures for protection of antiquity sites during construction activities.

This impact is considered of medium significance but can be mitigated to low.

#### Occupational health and safety impacts

Construction sites are considered the most potentially hazardous and accident-prone parts of any working environment. Excessive exposure to these construction site hazards exposes workers to injury and possible death. To prevent this, contractors should be aware of all possible dangers that can be encountered during normal business operations. According to the safety and health standards every employee shall have sound knowledge of their susceptibility to harm or injury in the workplace.



Due to the high probability of occurrence and the high risk involved, the occupational safety and health impacts during the construction of the HRWWTP should be considered of <u>high significance</u>. The impacts will be controlled to a large extent and be brought down to low by applying the mitigation measures listed below.

Listed below are the main six construction site hazards identified by the Occupational Safety and Health Administration (OSHA), all of which will be encountered during the construction of the different components of the HRWWTP project.

- 1. **Excavation and Trenching** OSHA has recognized excavation and trenching as the most hazardous construction site operation.
- 2. Falls Falling from scaffolding over six feet or a fixed ladder over twenty feet is the most dangerous and common construction site hazard. The usual cause of this incident is slipping, tripping and using unstable ladders. There are many reasons for fall hazards and to eliminate such risks, employers must have a fall protection program as part of any overall workplace safety and health program.
- 3. Stairways and Ladder According to OSHA's construction safety and health standards, stairways and ladders are important sources of injuries and fatalities among construction workers.
- 4. **Scaffolding** –The most potential risk of scaffolding is due to moving scaffold components; scaffold failure related to damage to its components; loss of the load; being struck by suspended materials; electrical shock; and improper set-up. Construction workers who assemble and dismantle scaffolding and work platforms at construction sites face the risk of serious injuries due to falls.
- 5. Use of Heavy Construction Equipment –The main causes of such accidents include: ground workers struck when a vehicle is backing up or changing direction; equipment rollovers that injure the operator; mechanics run over when brakes are not properly set; and ground workers crushed by falling equipment from backhoes, buckets, and other moving construction vehicles.
- 6. **Electrical Hazards** Electricity is one of the greatest hazards to workers on site. Power line workers, electricians and electrical engineers work continuously work with electricity can face exposure to this hazard on a daily basis.

Due to the high probability of occurrence and the high risk involved, the occupational safety and health impacts during the construction of the HRWWTP are considered of <u>high significance</u> if not properly controlled. The impacts will be controlled to a large extent and be brought down to <u>low significance</u> by applying the mitigation measures listed below.



#### Visual impacts

During the construction of the HRWWTP, the project would gradually change the aesthetics and landscape of the areas where the HRWWTP will be constructed. The Visual impacts due to the construction of the HRWWTP is considered of Medium significance.

No mitigation measures are required expect constructing an interim fence around the site in order to improve the aesthetics as well as reducing other environmental impacts.

#### Risks of migrating snakes to neighbouring communities

According to locals in the area, snakes have been observed at several instances in the project area. Construction activities can result in snakes migrating to the neighbouring communities. Risk of such an occurrence is considered of <u>moderate significance</u> and can be brought down to <u>low</u> with proper mitigation measures.

#### Cultural Heritage Impacts

#### 1. Vernacular structures

The area of Qilqis is classified as an inhabited Kherbeh, an ancient ruins area that has recently been inhabited. The site of the HRWWTP is in close proximity to these sites. While apparent traces of ancient human activities are scattered over the territory, some spots require more attention and are more likely to host ancient traces than others.

The southern part of the proposed site reveals some vernacular built elements. These elements are more developed than dry stone walls but they need further investigations and excavations from archaeologists to elaborate on their characteristics. Since it is not possible to predict what soil conceals beneath its surface, this study recommends a close coordination with the (MoTA) when excavations start, especially after defining the accurate borders of construction.

Archaeological sites are protected by the law of antiquities for the year 1966 according to article no 10. The priority measure is avoidance which is crucial to avoid any adverse effects to such sites. Since the whole Kherbeh (Qilqis) is classified as archaeological, it is better to avoid places that show signs of rich human traces.

#### 2. <u>Caves</u>

Potential impacts of water and sanitation project on caves represent in digging on top of ancient caves and remove their traces. Moreover, the move of heavy machines on in areas of caves and cavities expose on human being's life to danger on the one side and lead to the damage of caves.

There is high possibility of finding caves scattered in the target area; if caves are historic, they should be preserved.

#### 3. <u>Terraces</u>

Terraces are a set of platforms marked on the lands to improve agricultural production and considered a traditional feature of Palestinian heritage. Terraces in the area around are subjected to demolish due to difficult accessibility to the project site. It is highly crucial not to undermine these cultural assets when designing roads toward the project site. Many terraces are laid out in the western slopes that surround the project site. The fragile structure of dry-stone walls that form these terraces requires attention and in order to keep it intact.



Terraces represent are fundamental to the Palestinian landscape, and must thus be preserved and maintained.

#### 4. Agriculture Land use and Vegetation

As introduced in previous sections, important parts of flora are the olive groves, vineyards and indigenous trees. Since the specified project site does not include organized agricultural activities, the potential impact that may affect this component during the implementation of "Hebron Wastewater treatment plant "can be summarized in ripping of olive trees and herbs from the surrounding area during the attempts to provide proper accessibility to the site.

#### During Operation

#### Impacts on Water Resources

Disposal of untreated municipal wastewater in the West Bank is a critical environmental challenge. Domestic wastewater is either collected by main sewerage networks or in cesspits. The part collected by networks is often linked with a primary treatment plant such as Nablus West WWTP and Jericho WWTP.

Partially or fully treated effluent from these plants as well as untreated effluent from the areas that have no treatment plants such as Hebron is then discharged to the valley without treatment. Moreover, the part collected in cesspits is either percolates to groundwater aquifers or when evacuated is dumped into open wadies where part of it percolates again to the groundwater causing environmental, health and social problems.

In Hebron area, untreated wastewater effluent originates from Hebron City, Al-Fawar refugee camp, Israeli settlements and other wastewater producers, which dispose of their wastewater in the wadi, such as vacuum tankers and quarrying industries, flows into Wadi Al Samen. This wadi is extending from Hebron City upstream and continues southward crossing the West Bank boarder at its southeastern part and reaches the Mediterranean Sea at its final destination downstream.

The Wastewater of Wadi Al Samen is a highly concentrated wastewater, BOD, COD, TSS and TDS appearing at very high concentrations compared to typical values, as shown in **Table 4-7**. These pollutants may eventually reach the ground waters, causing contamination to the aquifers.

Treating the wastewater from Hebron will help prevent discharge of untreated sewage, lessening the pollutant loads in the area.

#### Positive Impacts on Groundwater Quantity

As noted in the original ESCHIA document, groundwater could offer a sustainable solution to the water shortages in the Hebron area (i.e. 40 Mm3/yr). Wastewater treatment for Hebron, along with storm water during winter months can provide for an extra 20-30 Mm3/yr.

It is worth noting however, that it is still unclear how the potential effluent will be managed, i.e. stored, reused, used for artificial recharge etc. However, if the influent is used, the proposed HRWWTP will *positively* impact the amount of water available in Hebron Governorate leading to economic, environmental and social impacts.



#### Negative Impacts on Groundwater Quality

The location of Wadi as-Samen is susceptible to pollution as it is a recharge area to the West Mountain Aquifer Basin (WMAB) and water table is relatively shallow.

The high fractured rocky area easily allows percolation of pollutant to groundwater. The directions of groundwater in the upper sub aquifer of the WMAB is further elaborated in section 7.3.1 of the original ESCHIA.

Water analysis of wells 15-09/010 and 15-09/12 (located downstream of the proposed site location of HRWWTP) in both the original ESCHIA and that carried out for the addendum were used to describe the potential impact of the untreated effluent on groundwater quality. In both cases, high levels of nitrate were noticed, further emphasizing the percolation of polluted water to the aquifer.

Since nitrate concentration ranges between 15- 20 mg/l under normal conditions in natural groundwater and carrying out a comparison between the current NO3 concentration in the downstream wells, found to be 122.7 mg/l, it can be concluded that on average, the Nitrate pollution load percolates to the groundwater in amounts between 107 - 102 mg/l. If the treatment will bring the nitrate level to the WHO acceptable level of 50 mg/l or to the Palestinian Standard acceptable level of 70mg/l, the pollution load will be significantly reduced, eventually leading to improved groundwater quality.

#### Impacts on Irrigation Technologies

While nitrogen levels in treated effluent mainly depends on the treatment technology, the high efficiency of the drip and sprinkler irrigation systems can reduces the loading to the lands, thus reducing the load reaching ground water compared to surface irrigation systems. This argument is further elaborated in section 7.2.6 of the original ESCHIA.

#### Soil and groundwater Impacts

Potential impacts on soil and groundwater during the operation of the HRWWTP will also arise from potential leaks. However, these should be considered of <u>Low Significance</u> if proper mitigation measures are followed.

<sup>4</sup>otential impacts on soil and groundwater are due to waste generation, sludge management and due to Effluent use in irrigation (covered in other impacts).

#### Risks Associated with Sludge Handling

The following main environmental impacts are associated with sludge handling:

- Odors and insects which are expected to be generated around sludge tanks. The effects of
  odors and insects are expected to be in the areas surrounding sludge tanks inside and outside
  HRWWTP.
- Odors and insects that may be generated in sludge storage sites and disposal sites. These impacts will be reversely proportional with the degree of sludge stabilization achieved.
- Risks of pathogens transfer to workers who shall handle and transport sludge from dewatering tanks, land application, or disposal sites
- Possible risks associated with the absorption of heavy metals, in edible agricultural products, from the sludge used for land conditioning.



If the generated sludge is applied to agricultural land without being sufficiently stabilized, there will be risks for contaminating agricultural products with heavy metals, in addition to the same nuisance and biological risks to farmers.

The expected environmental impacts associated with sludge handling, if combined with proposed mitigation measures in the ESMP, will be significantly lower than the existing impacts in the current situation, without water treatment. Even if no mitigation measures were implemented the risks associated with handling of sludge will be limited to few locations over the project area, which is much better than the current situation where sludge is evacuated discharged openly to Wadi As Samen.

#### Risks Associated with Disposal of Final Effluent

Risks with disposal of final effluent include:

- Recontamination of effluent (Discussed below in 4.3.11)
- Operational dysfunction/leaks resulting in wastewater being discharged without treatment.
- In order to meet the requirements for fecal coli, effluent has to be disinfected. Disinfected secondary treated effluent from the HRWWTP will normally meet the Palestinian effluent standards for irrigation.

However, excess chlorine may be toxic to plants and trees.

Measures to avoid negative impacts on effluent quality resulting from maintenance were addressed in the ESCHMP.

#### Odor impacts

The operation of wastewater treatment plants is normally associated with generation of odors.

Odor is one of the most pronounced impacts of operation and was one of the most concerning to the surrounding/adjacent communities, especially with regards to communities located at distances of less than 500 m. +

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The odors are generated from wastewater handling facilities are due to decomposition of organic matter.

The exposure to odors could cause poor appetite, lowered consumption of water, impaired respiration, nausea and vomiting. In addition to that there are socioeconomic impacts associated with offensive odors.





impacts of odors are subjective; it could vary from one person to another according to the background odors in the area. Also people tolerance to odor differs according to their exposure to similar odors. For example, the staff working in WWTPs are generally more tolerant to odors than inhabitants of neighboring residential areas.

Odor impacts are considered of <u>moderate significance</u> but can be reduced to <u>low significance</u> if properly addressed and controlled in the treatment plant as indicated in ESCHMP.

Impacts relating to Vectors

Nutrient rich wastewater has the capacity to cause mosquitoes breeding, and as the HRWWTP is relatively close to residential areas (shown in Figure 7-1), they can give rise to



pest and vector mosquitoes. Risks of mosquito breeding however, is generally only introduced with inadequate design and operation and maintenance.

While impacts relating to vectors and mosquitos are considered of <u>low significance in the HRWWTP</u>. Following precautionary measures listed in the ESCHMP will make the impacts <u>insignificant</u>.

#### Air Emissions and Noise

HRWWTP that work with the activated sludge process, and use surface aeration system, will generate fine spray droplets from the aeration tanks, these droplets could be dispersed for long distances, especially during periods of strong wind activity. These droplets will contain relatively high consternations of pathogens existing in the aeration tank, and hence could cause infection risks to neighboring areas. The ESCHMP includes measures to minimize these risks to the HRWWTP workers and the neighboring community.

Noise generating sources in the project are lifting station, pumps and aeration blowers.

However, the impacts are expected to be minor, or even negligible, to the neighboring sites because the pumps will be contained inside building. A relatively higher impact will be on the staff, that is exposed to intermittent pumping noise, caused by intermitted pumps switching controlled by level control. This may be uncomfortable to HRWWTP staff.

#### Risk of recontamination of effluent

If the HRWWTP goes into operation without an adequate management plan for the effluent, it is likely that effluent is discharged back, to Wadi As Samen, where it runs a risk of decontamination. It is therefore very important that a management plan is put in place for the treated effluent before the operations of the HRWWTP start.

#### Impacts due to handling and disposal of hazardous substances and hazardous wastes

The hazardous substances that would be handled in HRWWTPs include liquid chlorine (sodium hypochlorite) used for disinfection, ferric chloride used for chemical phosphorus treatment and diesel for standby generators, lubricating oils and laboratory chemicals.

Sodium hypochlorite is a colourless to yellow liquid that will be used for disinfection of treated waste water in the HRWWTP. It is corrosive and could cause serious eye damage, severe skin burns, damage to respiratory system if inhaled. It is also toxic and may cause damage to gastrointestinal tract if swallowed. Sodium hypochlorite is unstable and therefore chlorine could evaporate to gas state.

The concentration of chlorine in the working environment should not exceed the legal requirement exposure. Certain precautions for safe storage should be considered in chorine buildings. This has been covered in the ESCHMP.

Also, an increase in the specified amount of chlorine for treatment would negatively affect the quality of the final effluent. Moreover, the chlorination by-products which are produced as a result of chemical reactions of wastewater with chlorine pose risk to human health upon ingestion.

Ferric Chloride is dosed in the anaerobic tank for phosphorous removal in HRWWTP. Ferric chloride is characterized as being a corrosive chemical and contact can severely irritate and burn the skin and eyes. Breathing Iron Chloride can irritate the nose, throat and lungs causing tightness in the chest and lungs and/or difficulty in breathing.



The main environmental risk associated with diesel storage and management is leakage. This is more critical if unobserved leaks are dispersed in soil.

Lubricating oils that could be used in the HRWWTP may have some hazardous, especially toxic, properties, however, normally the risks are minimum with handling such oils as the labor normally have high handling awareness. Higher risks will be associated with disposal of empty containers, which should be collected and sent to back to vendors.

Laboratory chemicals can also include different hazardous substances; however, the expected risks are relatively low, because of the low quantities and low exposure possibilities. Again, higher risks could arise from improper disposal of empty containers, which should be collected and sent back to vendors.

Impacts due to handling and disposal of hazardous substances and hazardous wastes are considered of <u>moderate significance</u> but can be brought down to <u>low significance</u> with proper handling. The ESCHMP includes details about the suitable mitigation measures to minimize such risks.

Occupational Health and Safety

• Accidents and injuries

Risk of accidents and injuries at the HRWWTP may result from slippery areas, or entry into confined spaces, including manholes, sewers, pipelines, storage tanks, digesters, and pump stations. Methane generated from anaerobic biodegradation of sewage can lead to fires and explosions.

• Chemical exposure

Chemical hazards in the HRWWTP could include exposure to ammonium compounds chlorine products, sodium hydroxide, odorous compounds, odour-control and sewage-biodegrading enzymes and heavy metals.

• Exposure to pathogens and vectors

Biological hazards in wastewater treatment plants imply the exposure to pathogens (e.g., viruses, bacteria, protozoa, parasitic worms, fungi) and other infectious microorganisms that can result in occupational illnesses such as hepatitis, typhoid fever, dysentery and cholera.

• Noise

High noise levels can be present in the vicinity of operating machinery and flowing water at water and sanitation facilities.

Occupational health and safety accidents could lead to serious injuries and health conditions are therefore considered of Major significance. Measure to control the occupational health and safety is covered in the ESCHMP.



## Environmental, Social and Cultural Heritage Management Plan

The objectives of this Environmental, Social and Cultural Heritage Management plan are to propose ways for implementing mitigation measures for expected negative impacts and to monitor the efficiency of these mitigation measures based on relevant environmental indicators. The ESCHMP identifies certain roles and responsibilities for differ rent stakeholders for implementing, supervising and monitoring the environmental performance of the project.

The tables below summarize the management plan for construction and operational phases.



Executive	Summary
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Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Implementation / Supervision
Impacts on roads			Positive	Construction				
Risks of improper handling of waste generated during construction	<u>Moderate</u> <u>significance</u>	<ul> <li>Arranging disposal of any dewatering liquid by tankers in nearest sewers or WWTP.</li> <li>Proper stockpiling, haulage and disposal of non-hazardous, normal construction waste and asphalt waste</li> </ul>	Low significance	Preconstruction and construction	Construction Contractor for implementation	<ul> <li>PIU-PWA for preconstru ction arrangeme nts</li> <li>EQA</li> </ul>	<ul> <li>PIU- PWA for field supervisio n and review of signature on waste manifests during constructi on</li> </ul>	Within normal contractor price

1. Environmental Management Matrix during construction



Executive Summary

Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Implementation / Supervision
Noise	moderate significance	<ul> <li>Avoid working at night hours whenever possible</li> <li>Minimization of exposure of construction workers to different noise levels and noise impacts according to the law standards.</li> <li>Use of ear muffs, if needed, especially for those working near drilling machines.</li> <li>Protective noise protection equipment must be provided to workers. Provided that it is charged against noise.</li> <li>The working hours are specified according to the permissible periods of exposure to noise in accordance with the Labor Law (6 hours)</li> </ul>	<u>low</u> significance	Construction	Contractor	<ul> <li>PIU-PWA</li> <li>Contract and supervisio n consultant to follow the guidelines</li> </ul>	Field supervision	- Contractor normal bid price



Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Implementation / Supervision
Air emissions	<u>Moderate</u> significance	<ul> <li>Machinery emissions should be within the Palestinian acceptable standards.</li> <li>Store construction materials in pre- identified storage areas.</li> <li>Cover friable materials during storage.</li> <li>Wet the network of unpaved roads on site.</li> <li>Regulation of speed to a suitable speed (20 kmh) for all vehicles entering or passing through the project site.</li> <li>promptly repair vehicles with visible exhaust fume.</li> </ul>	Low significance	Construction	Contractor	<ul> <li>PIU-PWA</li> <li>Contract and supervisio n consultant to follow the guidelines</li> </ul>	Field supervision	- Contractor normal bid price



Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Implementation / Supervision
Disturbance of traffic and access difficulty	Low significance	<ul> <li>Place suitable warning signs. Should be clearly visible at night.</li> <li>Assign one worker to be present 24 hours for helping people with difficulty in access or respond to falling accidents</li> </ul>	<u>negligible</u>	Construction	Contractor	PIU-PWA	Field supervision	- Contractor normal bid price



Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Implementation / Supervision
Soil and groundwater	Low significance	<ul> <li>Lining of septic tanks and areas were oil and fuels are handled to prevent contamination of ground water</li> <li>construct an impermeable protective base layer underlying area with potential hazardous liquids storage or use.</li> <li>Site construction management plan including segregation options of excavated soil.</li> </ul>	negligible	Construction	Contractor	PIU-PWA	Field supervision	- Contractor normal bid price



Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Implementation / Supervision
Risk of improper management of culturally valuable sites	<u>Moderate</u> <u>significance</u>	Apply chance finds procedures to found antiquity objects	<u>low</u> significance	Construction	Contractor who will order immediate stopping of excavation	PWA and Ministry of Tourism and antiquities	Review documentation of chance find procedures	<ul> <li>Possible delays in construction works, including extra costs related to rental of unused equipment</li> <li>Cost of equipment rental to be reclaimed from PWA</li> </ul>
Occupational health and safety	<u>high</u> significance	The Contractor shall adopt <u>an Occupational Health and</u> <u>safety plan</u> during the construction phase.	low significance	Construction	Contractor	PIU-PWA	Field supervision	- Contractor normal bid price



#### 2. Environmental Monitoring Matrix during construction

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
Risks of improper handling of waste generated during construction	Accumulation of waste	Construction sites	Observation, documentation	Daily field observation and documentation in monthly reports	Contractor	Contractor management costs
Noise and air emissions	Dust emissions	Construction site	Observation, documentation	Daily field observation and documentation in monthly reports	Contractor	Contractor management costs
	Complaints from residents	Construction site	Record and document complaints received from residents	Recording to be once complaint is received. Documentation shall be in monthly reports	Contractor	Contractor management costs
Disturbance of traffic and access difficulty	Accidents, complaints and remarks from residents	Construction site	Record and document complaints received from residents	Recording to be once complaint is received. Documentation shall be in monthly reports	Contractor	Contractor management costs
Risk of improper management of culturally valuable sites	Date, time, locations and status of chance finds	Construction site	Documentation of chance- find procedures	In case an object has been found	Contractor	Contractor management costs
Socioeconomic impacts	Complains from local community	Construction	Receive and document complaints	Complaints to be recorded once received. Documentation to be in monthly reports	Contractor	Contractor management costs


# 3. Environmental management during operation

Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision	Estimated Cost of implementation / supervision
Soil and groundwater Impacts	Moderate significance		Low significance					
Risks of improper handling of sludge	Moderate significance	<ul> <li>Awarded Contractor's Design includes all stages that ensures stabilization of sludge including:</li> <li>Sludge treatment</li> <li>dewatering technology (filter press)</li> <li>Continuous effluent monitoring</li> </ul>	Low significance	Operation	Contractor	PIU-PWA	- bidding scoring process	- Contractor's bid
		Provide workers with protective gear and hygiene instructions		Operation	Contractor	PIU-PWA	- occasional field inspections	- Contractor's bid
		Analyse sludge and decide accordingly whether the sludge could be used in agriculture and how is it going to be applied		Operation	Contractor	PIU-PWA, EQA and Ministry of Agriculture	- Review of procedures in progress reports	- Contractor's bid
		Dispose unused sludge in controlled Al Minya landfill		Operation	Landfill operator or Waste contractor assigned by contractor	- Hebron municipality	- Hebron municipality through regular inspections - PWA	Contractor's management costs



Risks associated with disposal of final effluent	Moderate significance	Risk of decontamination of effluent is expected if water is returned to Wadi As- Samen. This was dealt with by the preparation of an irrigation plan that is suitable for the treated effluent levels in accordance with the acceptable Palestinian Standards for irrigation using treated wastewater as described in Error! Reference source not found., Error! Reference source not found., Error! Reference source not found.Error! Reference source not found., Error! Reference source not found., Error! Reference source not found.Error! Reference source not found. Error! Reference source not found. Error! Reference source not found. in the main study and section 4.2.8 of this executive summary. This will eliminate the need for discharging back into Wadi As-Samen.	Low significance	Operation	PWA	PWA	Cannot be determined until discharge options are known.	Feasibility will have to be carried out for such an option.
		Risk of leaking will be addressed by applying preventive maintenance of structures and equipment to avoid leakage		Pre operation and operation	- Contractor and service provider to provide maintenance schedule	- PIU-PWA and	- PWA to review schedule - Contractor to inspect	- Normal management costs for contractor



	• The design of the HRWWTP is such that:	design	Contractor	- PIU-PWA	
	<ul> <li>It is possible to manage operation with one of the process units out of order, without any deterioration of the effluent quality.</li> </ul>				
	<ul> <li>When malfunction of major plant components fails the plant still has to meet 80% of maximum design load and 100% of hydraulic design load in case of malfunction of main plant components.</li> </ul>				
	<ul> <li>Effluent quality will comply with required values.</li> </ul>				
	<ul> <li>Chlorination provided. Residual chlorine in disinfected effluent will not to exceed 1mg/l to meet irrigation requirements (in case it would be used in irrigation)</li> </ul>				
	<ul> <li>Equalization tank has been provided to hold water that has been diverted from primary treatment tank</li> </ul>				
	• All primary treatment units like screens, inlet pumping station and grit/grease chamber will be sized according to storm water flow.				



		Design, operation	and	- Design consultant for	- PIU-PWA	- PIU-PWA to review and evaluate	- Dichlorination system and extra
				designing suitable		design	aeration
				dosing unit, and			requirements are
				extra aeration in			included in the
				biological			project budget
				treatment			- Normal contractor
				- Contractor			cost
				- PWA			



#### Addendum to the ESCHIA for the HRWWTP Project

Unacceptable Odours	Moderate significance	<ul> <li>High efficiency of biological treatment (including the use of anaerobic digesters to reduce odours.)</li> <li>Odour abatement technologies have been incorporated in design.</li> <li>Sludge will be completely stabilized through the following stages:</li> <li>Gravity pre-thickener, Mechanical sludge thickening, Anaerobic digester, Gas handling and storage, Digested sludge storage tanks, Sludge dewatering and odour treatment unit.</li> <li>Odorous air will be collected from all odour sources such as; the Inlet Channels, Coarse and Fine Screens, Containers, Inlet Pump well, Grit/Grease Chamber, Gravity Thickeners, Sludge Storage Tank, Mechanical Sludge Thickeners and Sludge Dewatering Equipment.</li> <li>The odorous air will be treated in the odour Removal Unit and the limits of odour will be achieved on all places which confirms the Contract Specifications. Therefore, the guarantee to achieve the odour limits will be provided from the Supplier of the odour Treatment System which confirm the Contract Conditions and will be back-toback.</li> </ul>	Low significance	Operation	Contractor	PWA	<ul> <li>Review of monthly reports and occasional field inspections</li> <li>Monitoring the maximum allowable H2S concentrations on the site boundary. avoid exceeding these concentrations.</li> </ul>	- Included in above items - PWA management costs
		Establish communication with neighbouring areas		Operation	Contractor, PWA	PIU-PWA, Hebron Municipality	- Review of means of communications	<ul> <li>Awareness</li> <li>sessions</li> <li>contractor and</li> <li>PWA management</li> <li>costs</li> </ul>



#### Addendum to the ESCHIA for the HRWWTP Project

		Cultivate wind barrier trees around aeration tanks		Operation	Contractor	PWA	-	- Within contractor's bid - PWA normal price for irrigation
Risks of vectors	Low significance	<ul> <li>Ensure proper aeration</li> <li>tanks have been sized such that they continuously contain deep water.</li> <li>Routine maintenance including the regular control, regular removal of floatables and other flotsam from accumulation points, and the repair of cracks and other failures</li> <li>Disinfection of effluent</li> </ul>	Insignificant	Design and operation	Design consultant (contractor)	PWA/EQA	Regular inspections for mosquito larvae	Within contractor's bid
Risks of handling hazardous substances	Moderate significance	<ul> <li>Design precautions of chlorine building</li> <li>Should be included in contractor's HSE management system</li> </ul>	Low significance	Design	Design consultant (contractor)	PWA	- Review of design reports	- within design price - PWA management costs
		Empty chlorine bottles/containers, oil containers and lab chemicals containers to be returned to vendors		Operation	Contractor	PWA	- Review of cylinders manifests	<ul> <li>Contractor normal costs</li> <li>PWA management costs</li> </ul>
Risks of improper management of solid wastes	Moderate significance	Daily removal of screens waste to Al Minya landfill	Low significance	Operation	Contractor, waste contractor	PWA, Hebron municipality	- Documents review and occasional site supervision	waste contractor charges- PWA management costs



Air Emissions and Noise	Moderate significance	<ul> <li>Fine bubble diffusers have been included in the activated sludge tanks. These systems are less noisy and have less emissions than conventional aeration systems.</li> <li>Air blowers will be in separate blower house close to the aeration tanks. These will be centrifugal type.</li> <li>standby generators with emission standards by including certificates of emissions standards provided by the generator supplier</li> <li>The noise residual impacts mentioned are aligned with ESCHIA recommendations</li> <li>Acoustic enclosures will be provided for specific equipment selection will take into account the noise and air emission standards into consideration</li> </ul>	Low significance	Operation	Contractor	Contractor	<ul> <li>Review of procedures reports</li> <li>Review certificate for emission standards from an air quality lab</li> </ul>	- contractor normal price
Affordability of poor people to		Categorize the community according to affordability to pay		Preconstruction	Social Affairs Departments	PWA, Hebron municipality	- Review categorization reports	No cost
project costs		Arrange for government subsidies for categories that cannot afford to pay		Preconstruction	Hebron municipality	PWA, Hebron municipality	- Follow-up subsidy arrangements	No cost
		Arrange for instalment payments for other categories		Preconstruction			- Follow-up instalment arrangements	No cost



# 4. Environmental Monitoring Matrix during Operation

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
Risks of improper handling of sludge	pH of fresh sludge	HRWWTP dewatering	Continuous pH sensors	Continuous for two days after laying fresh sludge (2 days average to be documented)	Contractor/PWA and Yatta Municipality to oversee the process	- M&E budget
	Zn, Cu, Ni, Cd, Pb, Hg, Cr, Mo, Se, As, faecal coliforms, salmonella and escharis eggs	HRWWTP dewatering	Taking representative sample and analyse it according to requirements of USEPA	Once each 6 months, or whenever sludge is being sold	Contractor/PWA and Yatta Municipality to oversee the process	- M&E budget
	Dry solid content of at least 20% before it leaves the site of HRWWTP.	HRWW/TP dewatering	Check that solid content is within acceptable range for Al Minya landfill (14 to 16%).	Each batch	Contractor/PWA and Yatta Municipality to oversee the process	- M&E budget
	Volatile solids reduction of the sludge in the digesters shall not be less than 38% - In case of aerobic digestion, the oxygen requirements of the digested solids in the sludge shall be no more than 2.0 mg/hr per gram of volatile solids at 20°C. (measure of how stabilized the sludge is)					



Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
	Water borne diseases for HRWWTP workers	Identified medical centre	Medical examination and lab analysis	Quarterly	Contractor/PWA and Yatta Municipality to oversee the process	
Risks associated with disposal of final effluent	Discharge rate of influents	HRWWTP	- Fixed flow meters and weirs	- Continuous, average flow to be recorded daily	Contractor/PWA and Yatta Municipality to oversee the process	- Normal contractor price
	BOD5, COD, TN, NH4, TSS, TKN and P, Faecal E.coli, PH and CL	HRWWTP influent and effluent effluent of Chlorine Contact Tank.	<ul> <li>Sampling and analysis in HRWWTP lab</li> <li>detected via online CL analyser on the effluent of Chlorine Contact Tank.</li> </ul>	- Daily	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- M&E budget
	All parameters identified by Palestinian law	HRWWTP effluent		- Monthly	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- M&E budget
	Performance efficiency of HRWWTP	HRWWTP	Detailed environmental audit	- Annually	- Environmental consultant Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- Included in project budget



#### Addendum to the ESCHIA for the HRWWTP Project

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
Unacceptable Odours	<ul> <li>Neighbours' complaints</li> <li>H2S concentrations levels on the site boundary</li> </ul>	HRWWTP	Record keeping of complaints Keep records of monitoring rounds	<ul> <li>Record once a complaint is received</li> <li>Analyse and document in monthly reports</li> </ul>	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- M&E budget
Risks of handling hazardous substances	Chlorine concentration in air	Chlorine building in HRWWTP	Chlorine detectors	<ul> <li>Continuous leak detection</li> <li>Leak incidents to be documented in monthly reports</li> </ul>	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- Normal contractor price
	Amount of delivered containers to vendors	HRWW'I'P	- Checking signatures in waste manifests	- Monthly check of waste documents	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- Normal contractor price
Risks of leakages	Discharge of HRWWTP	HRWWTP	- Readings of HRWWTP flowmeter chambers and weirs and calculate the difference	- Daily	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- Normal Contractor price
Risks of improper management of solid wastes	Waste delivery manifests	HRWWTP and Al Minya landfill	Auditing waste manifests and contracts	Quarterly	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- contractor management costs



Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
Noise and air emissions	CO, SO <sub>2</sub> , total hydrocarbons and NOx	Generators at HRWWTP	Onsite gas analyser measurement for exhaust	Annually	Environmental consultant Contractor/PWA, Hebron and Yatta Municipality to oversee the process	M&E budget
	Noise intensity, exposure durations and noise impacts	At plant boundaries	Onsite noise meter measurements from representative locations	Annually	Environmental consultant Contractor/PWA, Hebron and Yatta Municipality to oversee the process	M&E budget
Affordability of poor people to participate in project costs	% coverage of house connections of different socioeconomic categories	PWA	Prepare statistics of covered house connections among non-affordable and affordable categories	Quarterly	Environmental consultant Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- PWA, Hebron municipality management costs



# 5. Slurry Management Action Plan

Item	Action	Environmental & Social Risks Avoided	Requirement ( Best Practice)	Resources, Investment Needs, Responsibility	Timeline	Target and Evaluation Criteria for Successful Implementation	Status
Specifically, designated disposal site options for slurry	<ul> <li>Khallet Sharabati site was acquired. The site falls at a distance of about 3 Km from the industrial zone.</li> <li>Survey, monitoring &amp; assessment of existing site</li> </ul>	Avoid illegal dumping of slurry which may lead to undesirable impacts on quality of air, water, ecology and community health and safety	<ol> <li>International best practices</li> <li>Local Palestinian legislation (listed in Table xxx)</li> </ol>	Hebron municipality	Done	Land acquisition documents	Done
Engineered design of disposal site	The marble dumping site provided by Hebron Municipality should be developed after the Environment Impact Assessment study. The dumping site should be designed, constructed, operated & maintained by an experienced designer /contractor. It is recommended that the base and sides of the cells are lined with compacted clay lining having low hydraulic conductivity to eliminate any seepage. The dumping site should also provide proper water collection network at the bottom of site for collection of slurry water.		According to EPA's engineered design requirements for industrial waste landfills	Hired contractor under supervision of EQA	Before the operation of the HRWWTP		Pending
Permits and approvals	<ul> <li>Submit updated Environmental and Social Impact Assessment (ESIA) to the Environmental Quality Authority (EQA) for ESIA approval prior to any construction activities</li> <li>Ensure compliance with the requirements of above listed permits</li> </ul>		EQA's Requirements	Hebron municipality	Before the operation of the HRWWTP	Permits obtained in a timely manner i.e. ESIA and other permits	Pending



Item	Action	Environmental & Social Risks Avoided	Requirement ( Best Practice)	Resources, Investment Needs, Responsibility	Timeline	Target and Evaluation Criteria for Successful Implementation	Status
Violations identification	Identification of stone cutters practicing unauthorized dumping of slurry and taking appropriate legal action	<ol> <li>Adverse impact on quality of air.</li> <li>Adverse impact on quality of water.</li> <li>Adverse impact on ecology</li> <li>Adverse impact on health (community health and safety)</li> </ol>		Technical assistance and Hebron municipality	Periodical checks that will continue throughout the operation of the plant		Pending
Workers and Community health and safety	<ul> <li>Adopt and communicate grievance procedure for workplace and community concerns related to slurry</li> <li>Ensure the use of PPE equipment especially in the disposal site (when required)</li> <li>Ensure proper disposal and covering of slurry on site to avoid its transport by the wind</li> <li>Providing and adding 12 kg powder type fire extinguishers and distributing them as appropriate,</li> <li>The need to adhere to the absence of electrical panels exceeding 100 amperes, and the need to add an automatic extinguishing system from FM200 type,</li> <li>The necessity to ensure that workers at the project site are trained on emergency plans for evacuation in the event of any emergency occurring with the necessity of providing signals and an audio and visual warning</li> </ul>	Adverse impact on workers' health and community health and safety including: a. Dust generation and nuisance/health impacts on the local community b. Diseases associated with high levels of air pollutants c. Dust on agricultural lands		Hebron Municipality	During operation of the slurry dumpsite		NA



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Item	Action	Environmental & Social Risks Avoided	Requirement ( Best Practice)	Resources, Investment Needs, Responsibility	Timeline	Target and Evaluation Criteria for Successful Implementation	Status
	system						
Monitoring Requirements	<ul> <li>Monthly monitoring of ambient air quality monitoring, mainly particulate Matter (PM10 &amp; PM2.5) on 24 hourly bases</li> <li>Ground water monitoring, mainly to analyze pH, Conductivity, Suspended Solids (SS), Turbidity, Total Hardness &amp; Total Alkalinity</li> </ul>	<ol> <li>Adverse impact on quality of air.</li> <li>Adverse impact on quality of water.</li> <li>Adverse impact on ecology</li> <li>Adverse impact on health (community health and safety)</li> </ol>		Hebron municipality	Monthly during operation		NA
Study on industrial waste utilization for diversion of slurry from landfills	<ul> <li>Execution of mutual agreement between private limited company, cement industries and other beneficiary units for transportation &amp; cost sharing</li> <li>Hebron Municipality may investigate the use of stone slurry as a construction material for non-load bearing structures</li> <li>Hebron Municipality may investigate possible incorporation of marble slurry in road pavement, construction of sub-grade layer by replacing a percentage of in-situ soil</li> </ul>	<ol> <li>Limited available</li> <li>landfilling space</li> <li>Reducing handling</li> <li>volumes of slurry and</li> <li>therefore the:         <ul> <li>a. Adverse impact on</li> <li>quality of air.</li> <li>b. Adverse impact on</li> <li>quality of water.</li> <li>c. Adverse impact on</li> <li>ecology</li> <li>d. Adverse impact on</li> <li>health (community</li> <li>health and safety)"</li> </ul> </li> </ol>		Hebron municipality	Before the operation of the HRWWTP		Pending



# Stakeholder Engagement and Public Consultation

The public consultation chapter aimed at highlighting the key consultation and community engagement activities and their outcomes. In addition, the chapter outlines the key issues to be discussed when holding the consultation activities.

Throughout the various consultation and engagement activities, the work teams recorded the different reactions of the community and the governmental stakeholders towards the proposed project.

Public consultation activities have been implemented during the preparation of the site-specific studies. The public consultation activities scheduled are the following:

- Scoping consultation activities were conducted in August, September and October 2018
- A scoping session was conducted on 14 October 2018 in Hebron Governorate
- A scoping session was conducted on 16 October 2018 in Hebron Governorate
- A final Public Consultation on 13th June 2019 in Hebron Governorate

# Consultation Methodology and Activities

In the current study, consultation activities were held over two rounds that occurred during the preparation of the site specific ESCHIA. The consultation process conducted during the preparation of the ESCHIA was dynamic and evolving; i.e. it adapted with the nature and expectations of the host community. The process also engaged the local leadership and the parties involved in agriculture, Sanitation Sector, Industrial, and health activities; so to reach out to various groups among the Affected people. Focus has been on the consultation activities were conducted with the community people to identify their opinions, inquires, and concerns towards the project.

The Consultant carried out stakeholder engagement activities through two phases in August, September and October 2018, through the following methods: In-depth interviews with government officials in different stakeholders, Focus Group Discussion (FGDs) with community members and officials in Municipalities, Group Meetings with community stakeholders, and Public consultation sessions with all stakeholders.

#### Scoping consultation activities

The research team for this study has adopted multi-dimensional consultation activities that enable the marginalized, voiceless, youth and women to gain information about the project. As well as, gaining information about their concerns and worries that regarding the project during various implementation phases. Following are the main consultation activities to date:

- 1- The study team visited the project area in order to define various stakeholders. Stakeholder engagement plan has been developed for the different communities,
- 2- Based on the identification of stakeholders, various questionnaires and guidelines were prepared in order to engage:
  - The residents in the project area
  - The Community leaders
  - The community people
  - o Women
  - Young people and Elderly
  - Governmental Organizations and Authorities



- Governor of Hebron
- Heads of Municipalities
- o Health Directorate
- The Directorate of Agriculture in Hebron
- o Directorate for Antiquities
- Industrial Area of Hebron
- Chamber of Commerce in Hebron
- Water Sector Regulatory Council
- Palestinian Environmental Quality Authority
- NGOs
- Project owners Palestinian Water Authority (PWA)
- 3- All activities conducted were documented with photos and lists of participants in order to guarantee an appropriate level of transparency.

The following topics were presented and raised during the consultation activities and sessions were:

- Introduction about the project and other relevant water and wastewater projects by PWA
- The proposed new project and future projects associated with it in Yatta municipality
- The disclosure of information relevant project and it is activities. All information disclosure took place by presenting non-technical executive summary,
- Scope of the updated ESCHIA
- Anticipated environmental and social impacts and the mitigation measures.
- Grievance mechanism by which the general public and other stakeholders can raise concerns, which the Municipality/PWA will handle in a prompt and consistent manner.

#### Public consultation sessions

The Palestinian Water Authority in cooperation with the Consultant-EcoConServ Environmental Solutions, held three public consultations sessions to offer a description of the project, and to Present some findings of the study. The sessions were held in Hebron Governorate premises with the presence of the Deputy Governor of Hebron. The first session was devoted to the officials of Hebron municipality and the affiliated villages, in addition to the government officials in the related different sectors. Those sessions also included community representatives, especially those nearby the WWTP (e.g. Qilqils, Khallet El Dar, and members of the municipal councils). The third and last public consultation session focused on presenting the results of the study in the presence of municipalities representatives and El Heila residents. The session opened doors for discussions and allowed all participants to freely express their opinions.

The list of invitees included EQA regional branches, Heads and Municipalities Officials, NGOs, governmental media centers, and various government employees. In cooperation with the consultant and office of the Governor of Hebron, invitees were informed of the date and location of the Public Consultation. Participants were invited through:

- Invitations sent by PWA and the Head of Hebron and Yatta Municipalities via Faxes and e-mails.
- Telephone communication by PWA and the Consultant.
- Invitations sent by the officials of the Hebron governor's office to governorate stakeholders and Municipalities
- Invitations sent by the Municipalities to community leaders and governorate stakeholders



The following topics were presented and raised during the public consultation sessions were:

- Introduction about the project and other relevant PWA
- The proposed new project and future projects associated with it in Yatta municipality
- Project activities
- Scope of the updated ESCHIA
- Anticipated environmental and social impacts, mitigation measures and monitoring plans

#### A second Public consultation session was held to present the results of the study after approval of the draft report. The Results of the second consultation will be incorporated and analyzed in the final report.

The key message from the consultation events carried out for this project is that the public and government's acceptance for and support to the project are very strong.

- The session showed that, despite the concerns of some attendees, it was emphasized that the project is important and has a role in achieving development. Attendees agreed that it is a national project, one that belongs to the public.
- The results of the three consultation sessions showed consent of some of the attendees on some issues including:
  - In both sessions the attendees asserted the importance of the project and the urgent need for similar projects in other municipalities.
  - The importance of settling the slurry disposal site in El Khela and finalizing the necessary licences and approvals as soon as possible before starting the construction works of the plant.
  - Sludge disposal and capacity of El Minya landfill.
  - Dangers and harms which the local community suffer from due to Wadi El Samen stream.
  - The attendees were concerned about discussing the issues related to noise, odours and insects control being one of the significant negative impacts of the palnt's operation.
  - Local community members were concerned about the water resulting from the treatment process and that it should be used for agricultural purposes and poultry breeding. This should be done according to studies and plans to avoid harming the crops.
  - Representatives of the municipalities have some demands (discussed in the previous table) that should be taken into consideration. Officials should cooperate to put it into actions.
  - The attendees ensured the importance of monitoring the implementation and operation of the plant, complying with all the highest standards. Also, effectuating monitoring over the tanneries and facilities especially stone cutting.
  - Community members need awareness programs about the importance of water and wastewater projects and their continuous maintenance
  - The attendees confirmed that they do not have any objections towards the project, "especially in the second session concerned with Yatta municipality". However, they insisted on the importance of the project and willingness to exert efforts for project success; attendees stressed on the importance of implementing the demands of the



municipalities, which were presented in the consultation sessions and meetings with community people.

The Analysis for the Consultations with Yatta and El Heila Communities

Based on the assessment of social conditions in the study area, the Valued Receptor VR identified for this project is the community of El Heila village in Yatta municipality, as it is the nearest residential area to the project site. The VR is selected depending on the extent to which it is affected by the overall fundamental activities of the project (during the construction and operation phases).

As a result, several consultation activities were conducted with the community of El Heila village during different time intervals, started from 2012 until the end of 2018. This section will illustrate the results of the analysis of the conducted consultations, as well as analysing some of the correspondences between Yatta municipality, EQA, PWA and the World Bank, especially the MoUs and MoMs. in order to evaluate the concerns of El Heila community and Yatta municipality, and determine its relevance to the project impacts.

# The Analysis Methodology

The appraisal for the concerns has been carried out using the scale below. Concerns that are considered requests irrelevant to the project have been assigned a "N" Status.

Issues classified as low, medium, or high; that those are legitimate concerns relating to possible impacts of the project. The significance has been assigned depending on the degree to which the impacts are addressed by the ESCHIA mitigation measures.

# Conclusion the Analysis for the Consultations with Yatta and El Heila Communities

- As it is clear from the analysis:
  - The concerns of the community people about the project vary between:
    - Concerns related to the project's impacts will be addressed through the mitigation measures of the project.
    - Requirements and needs related to water, sanitation and road infrastructure.
  - The study provides mitigation measures for all concerns related to the potential impacts of the project in order to be addressed to reach a minimum.
  - The needs of the local community are taken into account by the PWA and the concerned authorities in order to improve the water, sanitation and roads services.
  - The PWA is interested in providing training programs and improving the efficiency of the community members. The PWA gives priority to Yatta municipality.
- The analysis of the correspondences of Yatta municipality which indicates the presence of number of concerns related to the potential impacts of the project; whether from the former and current mayor of the municipality –, showed that



there is an agreement that takes into account all the raised concerns and sets out commitments to the project stakeholders (PWA Yatta Municipality, and Hebron Municipality).

This is confirmed by the letter of the former mayor of Yatta (Mr. Mousa Makhamra) to the World Bank, in which Yatta Municipality approves the project and withdraws the objection, as well as the MOU signed between the PWA, Hebron and Yatta Municipalities (Annex 8, 9).

- The consultant was keen to discuss the concerns and the requirements of the community people through conducting FGDs with the representatives of the community; since El Heila village is the closest community to the project VR. The discussions showed the following:
  - The positions of the representatives of El Heila village towards to the project changed. The results of the consultation activities that were conducted in ESCHIA 2014 indicate the following:
    - The community people approved the project.
    - The community people suffering from the flow of water along their lands, the consequent damage and the unpleasant odours,
    - The community people emphasized the importance of the project:

"As was commonly indicated, the project will alleviate damage caused to local communities, agriculture activity and livestock. This is an important and vital project. It will rid local residents of a significant, chronic problem that adversely reflects on all aspects of their lives. Many interviewees, particularly those who lived in areas adjacent to the wastewater stream, considered the project as their number one priority."

- The results of the consultation activities conducted under the present study (ESHIA 2018) showed a change in the opinions of the representatives of the community between the project's objection, the conditional approval of a number of demands (presented in the previous tables), and the importance of the project as a national project for public benefit.
- Water and sanitation services are one of the basic needs of Yatta residents. In addition to, the employment opportunities that the project can provide.

# **Final Public consultation Session**

The final public consultation was held in Hebron Governorate (Hebron Governorate Building) on the 13 June 2019, Sixty Five (65) people attended the consultation event. They are segregated into 72 % males and 28 % females.

The list of attendees included:

- Hebron Governorate,
- Municipalities concerned with the project (Hebron, Yatta, Dura, Qilqis, Khallet Eldar, and El Zahiriya),



- Environmental Quality Authority,
- Directorates of (Agriculture, Tourism, Education, Health, Social Development, and Interior),
- Leaders, community representatives, and community people located near the project area (El Heila Village, Kharbet Beit Umrah, Khallet Ibrahim, Beit EL Shiha, and EL Faware)
- NGOs,
- Media centers in the Hebron Governorate and Municipalities,
- Various government sectors (Water Sector Regulatory Council, Chamber of Commerce, and Industrial area).

#### Conclusion

- PWA operates with clear vision and takes their wastewater and sewage treatment needs very seriously
- The project is but one small part of an overall optimistic plan that aims at covering the whole Southern part of the West Bank and the
- The project has received general acceptance from the majority of the communities except for the representatives of El Heila residents
- The views of El Heila community representatives from the project were mixed between objection and refusal and conditional consent to sign a memorandum of understanding and implement a number of projects
- The representatives of El Heila local community had the opportunity to express their opinion about the project, and to present their demands
- El Heila community representatives presented their objection to the WWTP project formally to the WB representatives at the end of the public consultation session
- The PWA appreciates all objections made for logical reasons, and ensure that all potential concerns and impacts of the project have been studied, and to take them into account in the environmental management plan, as well as the design of the plant; to avoid any negative effects impacts.
- Engineer Murad indicated at the end of the session that any new inputs will be taken into account in the ESCHIA study, He stressed that the Wadi As Samen coverage project will be completed before the operation of the WWTP.



# **1 INTRODUCTION**

# 1.1 Overview

This document has been prepared by EcoConServ Environmental Solutions, as an addendum to the Environmental, Social and Cultural Heritage Impact Assessment (ESCHIA) for the Hebron Regional Wastewater Management Project financed by the World Bank, the French Development Agency (AFD) and the European Commission. The original ESCHIA was prepared by a consultant commissioned by the Palestinian Water Authority in 2013 and was revised in 2014. The ESCHIA was disclosed by the client and on the World Bank External Website in October 2014.

All data included in the original document has been thoroughly reviewed for verification and/or gaps identification. It should, therefore, be noted that this addendum document serves to fill in gaps, resulting from changes in design conditions, time gaps or additional concerns of stakeholders and is not an annulment of the original ESCHIA. Information in the original ESCHIA will therefore hold where no changes are pointed out within this addendum.

# 1.2 Purpose of the ESCHIA Addendum

Since the latest version of the ESCHIA was carried out in 2014, some baseline conditions and design aspects of the Hebron Regional Wastewater Treatment Plant (HRWWTP) project may have changed. In addition, some municipalities of the Hebron Governorate raised concerns to the Palestinian Water Authority (PWA) and the Environmental Quality Authority (EQA) and a letter of objection was sent to the World Bank on design aspects of the project and their environmental impacts on the surrounding communities of the WWTP. These include distance to residential areas and related impacts of odor, pest hazards and mosquito infestation, presence of marble cutting slurry and carcinogenic chromium in sewage, discharges of sewage downstream of the HRWWTP with a potential of pollution of the effluent, water wells pollution, damage to agricultural lands, among others.

The main objectives of the assignment as indicated in the TOR were therefore:

- (i) To update the assessment and mitigation plans in the ESCHIA taking on-board the latest aspects of the design of the HRWWTP as detailed in the bidding document for Design, Supply, and Install contract, and accounting for specific aspects related to baseline conditions, environmental and social impacts and mitigation measures.
- (ii) To carry out all necessary consultations, at least two rounds of consultation sessions per the World Bank Operational Policy OP 4.01. The consultation plan should be inclusive to all stakeholders and project affected parties (PAPs) per the applicable Palestinian Laws and World Bank Policies.



# 1.3 Description of changes and scope of tasks

The original ESCHIA comprised description of the project, baseline conditions, legal and policy framework, impacts and mitigation measures, a Cultural Heritage Management Plan, Environmental Management Plan, and Social Management Plan.

In addition to providing an updated project description (where needed) with the current status of project design (from the bidding documents), the consultant was specifically guided to focus the assignment and zoom in to certain aspects. As outlined in the TOR, these include:

- <u>Handling of slurry from stone cutting and chromium discharges by tanneries</u>. It was assumed in the original ESCHIA that the discharge of slurry from stone cutting, and chromium from tanneries into sewers in Hebron would be terminated by the time the Project would be operational. If this practice will continue at the time the WWTP becomes operational. it may severally affect aeration and biological processes in the WWTP, and the discharge of chromium would render sludge unusable for agricultural use.
- Waste management including landfills and illegal dumps. At the time of the finalization of the original ESCHIA, two sites were put forward as potential options for waste disposal, i.e. the Yatta dumpsite and the Al Menya sanitary landfill. Since then, the sanitary landfill in Al Menya was built and has been operational since 2015. It needs to be explored whether sludge and other waste from the WWTP would be accepted in Al Menya. Otherwise, alternative disposal sites should be considered.
- <u>Affected population and distance to residential areas</u> needs to be updated as these have changed since the finalization of the ESCHIA. These changes in baseline are likely to affect significance of the predicted impacts, and effectiveness of mitigation measures.
- Odor, pest, mosquito infestation impacts, impacts on agricultural lands downstream the WWTP, and the risk of recontamination of effluent, including from Al Fawar refugee camp and villages. The increasing number of residents living less than 3km from the proposed WWTP, and the increased volume of sewage downstream are likely to affect the original impact predictions.
- <u>The growing interests of the neighboring municipalities in using the proposed WWTP</u> raises the need to include modifications in the original design of the WWTP to enable discharge of sewage from mobile tankers.

# 1.4 Hebron Municipality Background

The City of Hebron in the south eastern section of the West Bank/Palestine is served by a combined sewer system which provides sewer services to some 77%-80% of the city. There is currently no wastewater treatment plant at the end of the sewer system and therefore, most of



the sewage intercepted by the sewers runs untreated along Wadi As-Samen until it reaches the green line to Shokeit where it is eventually treated by the Israelis. This untreated waste water flows for about 40 km along the Wadi, causing damage to the eastern aquifer and the communities which border the Wadi along the way. Also, *because of the Wadi's location in a recharge area that discharges to the West Mountain Aquifer Basin (described in Impacts on Groundwater Quality), the groundwater is at continuous risk of contamination.* This was identified as a serious issue as far back as the 1970s. In order to address the outstanding issue within the Hebron Governorate, the Palestinian Authority requested support from the donor community for this project - the Hebron Governorate Regional Wastewater Management Project, which would be financed by a consortium of multilateral and bilateral partners including the française de développement (afd), the European Union and the World Bank.

#### 1.5 ESCHIA Objectives

The purpose of the addendum to the ESCHIA remains unchanged from that of the **original ESCHIA**, "to ensure that environmental, social, cultural heritage impacts are identified, screened and classified (or categorized) right at the design stage of the phases and components of the HRWWTP, and that mitigation measures and social and environmental management plans are well developed to avoid or reduce irreversible or serious negative impacts which could affect both the population and the environment to manageable levels."

The specific objectives are as in **section 1.5** of the **original ESCHIA**. In addition, the consultant was asked to focus on the following:

- Handling of slurry from stone cutting and chromium discharges by tanneries, addressed in chapter 9.
- Waste management including landfills, addressed in section 6,7 and 8
- Affected population and distance to residential areas, addressed in section 8.
- Odor, pest, mosquito infestation impacts, impacts on agricultural lands downstream the WWTP, and the risk of recontamination of effluent, addressed in chapters 6 and 7 and 8.
- The growing interests of the neighboring municipalities in using the proposed WWTP, addressed in section 7.

#### 1.6 Screening

The Palestinian Environmental Assessment Policy (PEAP) has listed wastewater treatment plants as a project for which an EIA is required as described in Section 1.6 of the **original ESCHIA**.

#### 1.7 Scoping Sessions

Scoping was carried out in two major sessions in Yatta and Hebron municipalities in addition to all the focus groups, meetings, etc... The Sessions gave room for interaction between the



consultancy team, the environmental professionals conducting the ESCHIA, the municipal officials, representatives of various Ministries, nongovernmental agencies, local residents, other participants and stakeholders who have been identified as being directly involved in or affected by the proposed HRWWTP.

The sessions are incorporated and described in detail within this report including all significant environmental and social concerns identified during sessions. Details of these sessions are precisely described in chapter 10 of this report. The action plan has also been put in place with the recommended steps required to address the concerns.

The scoping carried out for this addendum ESCHIA indicated that policies Environmental Assessment, OP 4.01, Physical Cultural Resources OP 4.11 and the WB Policy on Access to Information to be triggered by the project. The background against which the scoping was carried out is the same as in **section 1.8.1 of the original ESCHIA**.

#### 1.7.1 Scoping on environmental impacts

Environmental scoping was carried out to identify possible environmental impacts expected during construction and during the operation of the HRWWTP. More details about scoping of environmental impacts can be found in section 1.8.2 of the original ESCHIA.

While environmental impacts during the operational phase were found to be the same, mitigation measures and monitoring have been discussed further and handled in greater detail, to an extent that is proportional to its due significance, especially with regards to close distance to residential settlements.

In preparing this addendum the consultants examined the components covered in the original ESCHIA, adding missing parts, including modifications, providing greater coverage or confirming conclusions on the following:

- A modified description of the project components where necessary, using latest population data and information contained in the bidding documents.
- Only where found necessary, modifications/ additions to baseline data on relevant environmental and social characteristics of the project components including description of physical environment, biological environment, and socio-economic and cultural constrains were added.
- Outline and examine the pertinent regulations and standards governing environmental quality, health and safety, protection of sensitive areas and cultural heritage resources, protection of water resources and pollution control, and land use control at the national and local level.
- Identify and determine the potential positive and negative impacts, direct and indirect impacts. The assessment of the potential impacts included pollution of groundwater aquifer,



landscape impacts of excavations and construction, soil contamination impacts, noise pollution, and socio-economic impacts.

- Outline the risks related to the project
- Prepared an action plan for the urgent matters relating to slurry
- Prepare and develop Environmental Management Plan, and Environmental Monitoring Plan, Social Management Plan, and Risk Management Plan to mitigate the negative impacts, recommend feasible and cost-effective measures to prevent or reduce significant negative impacts to acceptable national levels.
- The Management Plans were prepared to ensure proper implementation of the mitigation measures and the impacts of the project, during the construction and operation phases.

#### 1.7.2 Scoping on Cultural and Natural Resources

The City of Hebron city is rich in cultural, archeological, heritage and natural resources, especially the old city. Located in Wadi as-Samen area, the project lies south of Hebron and holds a significant distance away from the old city. The existing wastewater collection network serves most of Hebron's old city which is nominated to UNESCO's world heritage sites for its archeological, cultural, religious, spiritual and historical significance. Being a special heritage site, the project counts as an addition to the area, contributing to the protection of cultural heritage components in Hebron.

The Cultural Heritage Impact Assessment (CHIA) section of the ESCHIA for HRWWTP aims at identifying the components of cultural heritage significance in project area, and suggesting measures to mitigate (if needed) for those elements before, during and after the implementation of the HRWWTP. The impacts of the project on these are considered and included:

- Impact on natural resources and cultural resources impacts.
- Allocating construction camps and project facilities away from natural and archeological resources.
- Protection and enhancement of the archeological resources as valuable assets.

# 1.8 Monitoring Plan

Based on the impacts and mitigation measures identified, a monitoring plan was suggested for both social and environmental elements, both during construction and operation.

- Monitoring during Construction
  - Along the Trunk Sewer and Access Road
  - HRWWTP Surrounding
  - Effluent
  - Solid Waste Management
- Monitoring in operation phase



#### HRWWTP

#### 1.9 ESCHIA Methodology

As requested by the TORs, the consultant undertook several activities to investigate environmental, social, and economic aspects. In addition, public consultations and disclosure activities were undertaken to ensure the project is well consulted and disseminated.

The methodology proposed by EcoConServ for preparing the Addendum to the Environmental, Social and Cultural Heritage Impact Assessment was in accordance with the relevant Palestinian regulations and policies, the World Bank Policies and Procedures (OPs and BPs), the World Bank Guidelines on Environmental Health and Safety, and International Industrial Best Practices.

In alignment with national and international environmental and social requirements, the consultant performed the following tasks to cover the scope of work of the assignment and update the 2013 ESCHIA, on the 4 tasks identified in the ToRs, as follows:

- Task 1. Data acquisition
- Task 2. Update and Analysis
- Task 3. Consultations
- Task 4. Submission

The activities that performed by the consultant are delineated in the following sections:

#### 1.9.1 Review and update and analyses

1) Kick-off-meeting, Meetings and site visits

While a kick-off meeting was scheduled one week after contract signature, according to the original workplan, it was put off to Thursday, 9<sup>th</sup> 2018, due to delays in the team's visas. The meeting introduced the project donors to the consultant's team and provided the consultant team with insights on the client expectations. The kick-off-meeting was carried out in Hebron and was attended by Adnan Ghosheh (World bank), Hani Bullatah (AFD), Raya Noor (Palestinian Water Authority), Morad Fuqaha (Palestinian Water Authority), Mohamad Ebeid Allah (Technical Assistance), Fayez Al Helo (technical Assistance), Dr. Tarek Genena (Team leader), Ms. Nadia Saad (Senior Social Local consultant) and Mohamed Abdou (local waste water specialist).



2) Site visits

Site visits were arranged to collect hands on data on the actual situation on ground. Site visits were made to the project area itself and major surrounding areas affected by the project. These included:

- Wastewater treatment plant location and obtain further information
- Surrounding villages
- The residential areas covered by the original baseline
- 3) Desk review

A number of environmental, social and technical studies have been conducted for the initial project leaded by the World Bank and AfD. These sources were consulted in the inception phase.

The Consultant reviewed readily available reports, statistics and web-based sources to obtain information on the population, educational status, economic activities, housing, healthcare, employment, transport...etc.

- 4) Reviewed and updated relevant legislative and regulatory considerations in the existing ESCHIA against national and international standards. This activity included:
  - Review of the institutional framework involved in the project

As part of the ESCHIA addendum, the consultant therefore reviewed the institutional set up relevant to environmental and social management in the Hebron Municipality and in Palestine in general.

- Identified local legal framework governing the project
- Environmental permits, laws and regulations on environmental quality, pollutant discharges to surface waters and land, industrial discharges to public sewers, water reclamation and reuse, water user's association, health and safety, land use control, etc. were investigated.
- National and international guidelines for environmental assessment, treatment plants and technical design requirements, including health and safety were reviewed.

The consultant carried out a gap analysis to identify legislations/regulations that were not previously addressed, which was then used to update and complete the review of the environmental and social Palestinian national, municipal, and local laws, regulations and standards. This included national requirements related to:

- i. Environmental aspects
- ii. Social aspects and land acquisition regulations

The review of the policies and standards of international organizations included:

Where gaps are found in Palestinian Laws, International Laws and regulations were consulted to fill in the gaps.



- i. World Bank Safeguard Policies and Guidelines
- ii. WHO and FAO standards
- iii. Jordanian laws and standards
- iv. USEPA standards (for sludge)

The consultant reviewed the 2016 version of the World Bank Standards and applicable WB EHS Guidelines and carried out the analysis such that the Project is completely compliant with the latest version of the World Bank Standards (published in 2016). or the Bank's "Safeguard Policies".

The environmental initial assessment was addressed through:

- i. The review of the safeguard policies against the project's components to ensuring compliance with all triggered safeguard policies.
- Describing all safeguard issues and impacts associated with the construction of the project. Identifying and describe any potential large scale, significant and/or irreversible impacts.
- iii. Describing any potential indirect and/or long term impacts due to anticipated future activities in the project area
- iv. Describing measures taken to address safeguard policy issues. Provide an assessment of project proponent capacity to plan and implement the measures described.
- v. Identifying the key stakeholders and describing the mechanisms for consultation and disclosure of safeguard policies, with an emphasis on potentially affected people.

Among the ten safeguard policies of the World Bank, three are considered by the Consultant to be relevant to the HRWWTP and have been taken into account during this ESCHIA study; these are listed and discussed below:

- i. World Bank Operational Policy (OP 4.01) Environmental Assessment
- ii. World Bank Operational Policy (OP 4.11) Physical Cultural Resources
- iii. World Bank Procedure (BP 17.50)

The Oslo Accord I (1993) between the Palestinian and the Israelis stated that a joint committee should be established on Economic Cooperation to focus among other matters on environmental issues. The Oslo Accord II (1995), which has been ineffective since the Intifada in 2000, stated that the Israelis and the Palestinians agreed to cooperate in order to prevent damage to the environment. Both parties also agreed to adopt and comply with internationally recognized environmental standards for air and



liquid emissions and to take appropriate measures to prevent pollution of soil and water resources.

#### 5) Desk Review of the ESCHIA

The consultant thoroughly examined the previous ESCHIA and carried out a gap analysis to identify areas that possibly need updates and/or modifications

#### 1.9.2 Data Collection

1) Update the environmental baseline data

Data was compiled on the characteristics of the project area in terms of its sensitivity to adverse and beneficial environmental aspects. Both primary and secondary tools were employed to collect and update environmental baseline data.

i. Secondary Data:

Secondary data from literature review discussed in previous sections, will be employed to gather information on:

- o Meteorology and Climate
- o Flora and fauna surveys
- ii. Primary data and measurements made were as follows:
  - Air Quality testing: Particulates (High Volume Sampler) at residential areas in a 3km radius around the HRWWTP location
  - Soil samples from the wastewater disposal site for VOC and Trace Metals analysis.
  - Samples from planned disposal sites for sludge and wastewater (trace metals)
  - Influent analysis: samples for routine analysis, VOC analysis and trace metal analysis
  - Downstream discharge analysis: a sample was collected from the residential discharges downstream of the HRWWTP
  - Receiving water analysis: Samples were taken for the water that will be sent to the WWTP from residential villages near the WWTP
  - o Noise measurements at plant boundaries
  - o Noise measurement at the nearest residential area
- 2) Update the socio-economic baseline data based on the field work

The socio-economic data collection methodology employed several data collection tools based on the community participatory rapid appraisal approach. Data was collected in coordination with PWA and local NGOs.



The methodology was based on qualitative data collection tools (field visits and semi structured interviews), together with reviews of relevant secondary data sources, such as available studies, reports and literature related to Hebron.

i. Secondary Data

Data on the socio-economic environment included the following:

- o Geography, administrative districts, etc.
- Basic Demographic characteristics (population, age Structure, birth rate, death rate, rate of natural increase, handicapped, etc.)
- Living Conditions (household size and density, access to electricity, source of potable water, sanitation, etc.)
- Human Development Profile (education, work status, economic wellbeing, etc.)
- ii. Primary Data:

Affected community (residential / business)

- o Field Observation
- Site visits involving community leaders and informants
- Semi structured interviews with affected communities around the project as well as industrial and business sectors (marble cutting industry)
- o Focus groups in affected areas

#### 1.9.3 Update and Analysis

#### 1) Analysis of waste management facilities

An analysis of the existing Al Menya Landfill was performed by the consultant as follows:

- A site visit was organized to the Landfill location
- Landfill documents were compiled
- Thorough document review on the operational capacity of the landfill was assessed and compared to the estimated output of the HRWWTP

#### 2) Update Relevant Environmental, Social and Cultural Heritage Aspects

The consultant presented and justified the methods used to predict potential impacts of the project on the environment, and on interactions among the project components.

#### The following have been identified the most relevant environmental aspects:

- Air quality and noise disturbance: particulates from the operation and maintenance works
- Sludge Disposal: sludge resulting from wastewater containing harmful components (e.g. pathogens), which could impact the health if improperly discharged



- Construction wastes: wastes and hazardous wastes generated during construction and their disposal for planned facilities
- Soils and geology: impacts resulting from sludge disposal at the sludge disposal sites
- Water resources including groundwater: impacts resulting from sludge disposal affecting groundwater

#### The following were identified as being the most relevant social aspects:

- **Public health:** effects of the project on the nearby communities, effect on nearby water bodies (surface and underground) if available, all pathways leading to health risks to the area around the project
- Occupational health and safety: effects on the workers in the WWTP during construction; all risks that would arise during construction, and health risks that could affect workers during operation and maintenance. During construction health risks will mainly be the cause of construction incidents, whereas during operation and maintenance, effects on the workers will also include health effects due to water quality issues and infections due to insects and air transmitted microbes
- Traffic: reduction of traffic flow during construction, traffic detour and impacts on arterial roads and local streets systems
- Land take: wastewater treatment facilities require tracts of land, while smaller dispersed plots may be required for peripheral pumping stations. Suitable land is often a limited resource, and facility footprint may require resettlement of both titled landowners and squatters and/or the taking of agricultural land
- Socioeconomic impacts on the local community: potential impacts of wastewater treatment plants on local communities include odor and reduction of property values. These impacts should be minimized as much as possible through the selection of a site that is technically, economically and socially feasible

# The following has been identified as being the most relevant cultural heritage issues:

- Archeological remains
- Agricultural terraces

The above points will be explained and discussed with relevant authorities and stakeholders of the project including government institutions, national authorities and bodies.



#### 3) Identification and Evaluation of Environmental and Social Impacts

An examination of the environmental and social impacts during the pre-construction, construction, and operation phases of the project were investigated.

i. Environmental Impacts

The environmental impacts on local community considered the potential impacts related to:

- Water resources including groundwater: impacts resulting from sludge disposal affecting groundwater
- Air quality and noise disturbance
- Soils and geology: impacts resulting from sludge disposal at the sludge disposal sites
- ii. Socio-Economic Impacts
  - The socio-economic analysis of impacts on local community considered the potential impacts of HRWWTP on local community including odor and reduction of property value. The consultant proposed measures to minimize whenever possible these impacts wherever technically, economically and socially feasible.
  - Impacts related to odor, pests, mosquito, and impacts on agricultural lands downstream the HRWWTP and the risk of recontamination of effluent: including from Al Fawar refugee camp and villages. The increasing number of residents living less than 3km from the proposed HRWWTP, and the increased volume of sewage downstream are likely to affect the original impact predictions.
  - The growing interests of the neighboring municipalities in using the HRWWTP in order to enable discharge
- 4) Update the Environmental and Social Management Plan
  - Developed an environmental and social management plan, detailing the management measures, roles and responsibilities for implementation and supervision. Furthermore, an environmental and social monitoring plan was developed indicating parameters to be monitored, their location, frequency of monitoring, roles and responsibilities.
  - Assessed the ability of the implementing agencies to implement the proposed environmental and management and monitoring plan, and developed the institutional arrangement and capacity building programs necessary to ensure successful implementation



5) Stakeholders' analysis

Stakeholder's analysis was one of the tools that facilitated identifying relevant groups of stakeholders and their interest in the project. Stakeholders identified in the project included:

- Municipalities
  - o Hebron municipality
  - Relevant surrounding municipalities
- Community members (surrounding villages)
  - o Al Fawar refugee Camp
  - Khelit ad Dar area, including the nearest town of Qilqis, highlighted that adverse impacts of the wastewater stream should be addressed
  - o Al Heila area
  - o As-Samen
- Business owners: marble factories
- Representatives of various Ministries
  - Ministry of Local Government (MoLG)
  - o Ministry of Tourism and Antiquities (MoTA)
  - o Palestinian Water Authority (PWA)
  - o Ministry of Labor (MoL)
  - Ministry of Planning (MoP)
  - o Ministry of Agriculture (MoA)
  - o Ministry of Public Works and Housing (MoPWH)
  - o Ministry of Environment Affairs (MEnA)
- Donors: AFD, EU, and the World Bank
- Nongovernmental agencies:
  - o Land Research Center, Hebron
  - o Applied Research Institute Jerusalem (ARIJ)
  - o Water Users Associations
  - o Workers and officials of waste water and sanitation
- 6) Consultation with stakeholders during the field work

Consultations were carried out by the consultant to present the project and obtain the public opinions and concerns. During these consultations, the team interacted with the local community members and the relevant stakeholders. Through these activities, the project objectives were described. The following activities were carried out during the field work:



- Field Observation
- Semi structured interviews with affected communities around the project
- Conduct focus groups in affected areas
- 7) Review of the Grievance Mechanism

The consultant reviewed the grievance redress mechanism that is already in place.

8) Laws and Regulations relating to environmental, social and cultural heritage considerations

One of the important tasks undertaken during the ESCHIA study was the reviewing of the laws, regulations and institutional set up relevant to environmental and social management in the West Bank in particular and Palestine in general. National and international guidelines for environmental assessment, treatment plants and technical design requirements, including health and safety were reviewed. International Laws were presented to offer thresholds and fill in gaps, where certain standards were found missing in the Palestinian Law.

All laws and regulations drafted in section 2 titled "LAWS AND REGULATIONS RELATING ENVIRONMENTAL, SOCIAL, AND CULTURAL HERITAGE CONSIDERATIONS" in the original ESCHIA still apply, including:

#### 1.10 EIA System and Administration

- Palestinian Environmental Assessment Policy (PEAP), through resolution No: 27-23/4/2000.
- Palestinian Environmental Strategy (PES) as a basis for environmental action at that time over a ten-year period.
- The Jordanian Expropriation Law No. 2 for 1953 which is applied in the West Bank/Palestine covers the process of expropriating private lands for public use and the compensation should be paid.
- Jordanian Antique Law No 51 for 1966
- Law of Antiquities No. 51 for the year 1966
- General Rules for the Protection of Historic Areas (Section 2.1.6.3)
- The Inventory of Cultural and Natural Heritage Sites of Potential Outstanding Universal Value in Palestine (Section 2.1.6.4)
- The World Heritage Convention (Section 2.1.6.5)
- The Public Health Law No 20 for 2004 (Section 2.1.7)

Other laws pertaining to the project that have not been mentioned previously are summarized in table 1 below.

Table 1: Environmental, social and cultural heritage laws pertaining to the project



Name of Law	Law Summary	Year				
Environmental laws and regulations						
Law 7/1999	This basic enactment of the Palestinian Legislative creates a framework for the protection of the environment, public health and biodiversity in Palestine including marine areas. Its 82 sections are divided into 5 Titles: Definitions and general provisions (I); Environmental protection (II); Environmental impact assessment, licensing, inspection and administrative procedure (III); Penalties (IV); Final provisions (V). Article 1 contains an extensive list of definitions, including "natural reserves	1999				
Law 3/2002	Palestinian Water Law	2002				
	Regulations for Groundwater Pollution Control					
	Water Pollution Control System					
Decree Law No.14 of 2014 relating to the Water Law	This Law, consisting of 68 articles divided in twelve Chapters, aims at a better water management and development of Palestinian water resources, through establishing for a new Phase for the water and wastewater sector, its governance and management. It states that the Water Authority will be under the responsibility of the Cabinet, splitting policy from regulatory functions, which was previously carried out by Palestinian Water Authority (PWA) since its establishment					
Decree No. 90/1995	Regarding The establishment of Palestinian Water Authority (PWA)	1995				
Decree No. 6/2002	The Environment Quality Authority was established by Presidential decree No 6/2002	2002				
TS 34/2012	The Palestinian Treated Wastewater Standard (Technical Specification)	2012				
PS/2003-742	Standards for effluent reuse					
Solid Waste regulations	Solid Waste Management Regulations	2004				
Social laws and regulations						
Law 7/2000	Palestinian Labor Laws 7/2000	2000				
	Health and safety					
Antiquities Law 1966	Palestinian Antiquities Law	1966				
Basic laws	Basic Laws declaration for Palestinian Human Right	2003				
Law 21	Consumer protection laws	2005				



# 1.11 Institutional Arrangements

#### 1.11.1 Wastewater Treatment Plant

All information under Section 2.2.1 "Wastewater Treatment Plant and Associated Works" of the original ESCHIA still holds, comprising to all construction works of the HRWWTP and its operational activities, e.g. sludge treatment.

Since 2013, when the original ESCHIA was produced, the "Update Feasibility Study for Hebron Governorate Regional Wastewater Management Project" evaluated two components for feasibility, these being:

- construction of HWWTP and associated works to serve Hebron City and those surrounding areas. The plant was also to include facilities for treatment of the generated sludge and to allow for reuse of treated biosolids
- 2. The second component of the project was designated for suggesting of a preferred option for reuse of the treated wastewater along with development of the conceptual designs for the proposed reuse facilities, including pumping, storage and conveyance (Not part of the scope of this document)

Summary of this section is the following:

- PWA and Hebron Municipality are the owners of the project and are therefore both responsible for running and maintaining the new investment. Distribution of roles between them is based on the legal authorities of each, being:
- According to the New Water Law 2014, PWA is the water regulating body.
- Hebron Municipality will be the entity expected in charge of managing the proposed Hebron WWTP and trunk sewer.
- Establishment of Water and Wastewater Unit (WWU) in Hebron Municipality to be in charge of the operations and maintenance of the wastewater system and the WWTP after the completion of construction. Capacity building will be provided to those responsible for responsible for the management of the treated effluent network.
- The PWA has the capacity to manage the project and supervise its implementation. The need for further enforcement in terms of monitoring and environmental inspection and auditing was however, emphasized.
- The MoTA is to make sure that cultural heritage assets are conserved and is required to be present during project implementation.

#### 1.11.2 Treated Effluent Reuse

The use of treated effluent for both farming and stone industries was suggested in Section 2.2.2. of the original ESCHIA and was in line with our findings during consultations, chapter 10 of this report. The following institutions were suggested to manage treated effluent:


- Either family units to be organized in local institutions through existing village councils or through farmers' unions/associations/cooperative to deal with the distribution and storage of treated effluent to the farmers. These units will also be in charge of system maintenance for reuse facilities.
- A standalone institution is set up and appointed to deal with treated effluent distribution and storage for both agricultural and industrial use. The reuse institution according to the latter will be in charge of reuse and effluent conveyance facilities including all its operations and maintenance.

## 1.11.3 Ministries and Organizations

All ministries and organizations mentioned in section 2.2.3 of the original ESCHIA document are unchanged.



# **2 PROJECT DESCRIPTION**

# 2.1 Project Background

Discharge situation in Wadi As- Samen, the existence of stone and marble-cutting industries (that also discharge their wastewater into the sewer system) and the general sewage situation in Hebron have not changed since the release of the original ESCHIA. No modifications/additions have therefore been made to the overall objectives of the project. Section 3.1 of the original ESCHIA will be referred to for more details in that regards.

# 2.2 Site Description

The proposed wastewater treatment plant site will be located on an oxbow of Wadi As-Samen, downstream of Hebron. The Wadi runs through the center of the plant site limiting the options for plant construction and generally making construction difficult. (ESCHIA/ESCHMP 2013)

There is more than a 40m difference in elevation between the high and low spots on the site and significant land levelling will be required before the site can be made suitable for plant construction. The site is also relatively isolated and there would be need for construction of new access roads and installation of new water and power lines to the proposed plant location. (ESCHIA/ESCHMP 2013)

# 2.3 Staging and Future Expansion

The proposed plant was intended to serve as the first stage of an eventual Regional Wastewater Treatment Plant. This first stage of the project was originally designed to serve 275,000 persons and was envisaged that expansions in the future be made to serve the entire projected regional population of 500,000 persons as funding becomes available.

These projections were recalculated using the latest 2017 statistics shown in Table 3 below. It is worth noting that the population forecast yielded for the 10-year design period is 274,264 (up to the year 2032).

# 2.4 Environmental Considerations

Providing wastewater collection and treatment will significantly improve the quality of life and reduce contamination of surface and groundwater sources in the Hebron area including the impacts on the Eastern aquifer and western aquifer. However, the construction of the wastewater treatment systems may temporarily affect the existing environmental and natural settings.



Complete details of measures to be undertaken to protect the environment and to mitigate any adverse environmental impacts are included in the Environmental Impact Assessment this report.

## 2.4.1 Wastewater characteristics

Since the influent contains high concentrations of industrial wastes, the treatment system should be sufficiently robust and flexible to resist the impact of these components and must be able to remove them from the wastewater. This is further discussed in the Environmental Baseline Chapter.

#### 2.4.2 Status of Previous Studies

The major documents referred to in this addendum, are the 2013/2014 ESCHIA document, the bidding document, the feasibility study and the USAID report on Industrial waste. All of the latter documents date back to the year 2012.

# 2.5 Existing Wastewater Flows

This section is an update to section 3.3 of the original ESCHIA. In 2012, flows and loads were initially developed using mathematical models. The mathematical models were reproduced using a current population counts, for different average water use rates wastewater contribution rate of 80% of water use.

Using the PCBS new 2017 census, and carrying out the same analysis, assuming a 3-year construction period and a design capacity of 10 years for stage 1, the mathematical flow models were replicated.

#### 2.5.1 Assumption and basic data used in developing projections

The baseline and projections (2015-2045) of future wastewater flows have been established using the following assumptions and basic data:

- Current Populations taken from the Palestinian Central Bureau of Statistics (PBCS).
- Projected Population Growth Rates taken from the PBCS.
- Per Capita Water Use projections were obtained from the *Capacity Enhancement of the water* and sanitation department in Hebron Municipality Masterplan, 2012 as no recent projections existed in this regard

Year		Projected growth rate per year, %
2015	2020	2.7
2020	2025	2.3
2025	2030	2.0
2030	2035	1.8

#### Table 2: Projected growth rate per year



Year		Projected growth rate per year, %		
2035	2040	1.8		
2040	2045	1.8		

#### 2.5.2 Population and flow projections

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Year	% of annual population increase	Population
2017		201,063
2018		206,492
2019	0.027	212,067
2020		216,945
2021		221,934
2022		227,039
2023		232,261
2024	0.023	237,603
2025		242,355
2026		247,202
2027		252,146
2028		257,189
2029	0.02	262,332
2030		267,054
2031		271,861
2032		276,755
2033		281,737
2034		286,808
2035		291,970
2036		297,226
2037		302,576
2038		308,022
2039		313,567
2040		319,211
2041		324,957
2042		330,806
2043		336,760
2044		342,822
2045	0.018	348,993

While the design year according to the bidding documents still remains 2027, it is expected to shift to 2033, taking the same 12-year planning period into consideration. For this reason, the flow was projected for both years, and three scenarios were created for each:

- 1. Scenario 1: No change in water consumption occurs (remains 69.1) and the percentage of people connected remains 77%.
- 2. Scenario 2: Water consumption reaches 120 l/c/d according to the normal consumption per capita, but the percentage of people connected remains 77%.



 Scenario 3 is the maximum flow scenario, where Water consumption reaches 120 l/c/d and 100 % of the Hebron municipality are connected to the sewer network.

Design year	liters per capita	% sewerage	Flow	Notes	
				Minimum Flow scenario- Increase only as a result of	
2027	69.1	77*	10,733	natural increase in population	
				Minimum Flow scenario- Increase only as a result of	
2033	69.1	77	11,992	natural increase in population	
				Increase as a result of increased water consumption and	
2027	120	77	18,639	population increase	
2033	120	77	20,826	Increase as a result of increased water consumption and population increase	
2027	120	100	24,206	Maximum Flow scenario- Increase as a result of increased water consumption, population increase and sewage network covering all of Hebron municipality	
2022	120	100	27.047	Maximum Flow scenario- Increase as a result of increased water consumption, population increase and	
2033	120	100	27,047	sewage network covering all of Hebron municipality	

Table 4: Estimated	d waste wa	ter contributea	to the	sewer	system	projections
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\* According to the numbers obtained from Hebron Municipality

#### 2.5.3 Diurnal and Storm water Peak flows

For this study, the same diurnal peaking factor of 2.5 proposed in the ESCHIA 2013 will be put forward for use throughout the year. The HWWTP should also be designed to treat the first flush and a storm water using a peaking factor of 1.5, which gives rise to an overall storm water peaking factor of 3.75.

The resulting peak dry weather flow and the peak wet weather flows are presented in the Table below.

Parameter	Unit	
Average daily flow	m3/d	20,826
Average hourly flow	m3/h	867.75
Diurnal peaking factor	-	2.5
Diurnal peak flow	m3/h	2,169
Storm water peaking factor	-	1.5
Stormwater flow	m3/h	3,254

#### Table 5: Wastewater flow Projections for year 2033

The mathematical models for flow and loads was verified based on actual monitoring of the flows in the sewer system immediately before discharge to the Wadi in 2013. This was done by conducting a one-week wastewater sampling and flow monitoring campaign taking measurements in two locations. At the time, the sampling locations were selected in areas considered representative of all the potentially serviced areas.



The average combined wastewater flow rate for the Hebron Municipality samples from the two locations taken at that time was found to be 444.0 m<sup>3</sup>/h or 10,660 cubic meters per day, numbers which were in agreement with the numerical model.

In agreement with PWA, the consultant was asked to re conduct the flow and load measurements in parallel with the ESCHIA addendum study. Owing to challenges faced in required budget, accessibility to manholes, security issues and difficulties finding reliable labs to carry out the measurement, both the method of execution, duration and locations differed to those in the original study.

Comparing the results, 2018 flow measurements carried out were found to be significantly different from those measured in 2012. For this reason, it was agreed that the mathematical calculations alone are considered and that it will be the consultant's responsibility to verify the results.

#### 2.5.4 Wastewater Pollution Loads

Based on the montoring of wastewater loads conducted in Hebron, a review of loads used in other wastewater treatment plants being designed in the west bank and the consultant's own experience in many countries, the specific wastewater loads as indicated in Table 6 were recommended.

Parameter	Unit	Value
Specific BOD load	gpcd	60
Specific COD load	gpcd	140
Specific TSS Load	gpcd	60
Specific TN load	gpcd	10.8
Specific TP load	gpcd	1.9

#### Table 6: Specific wastewater loads

Source: (Feasibility Study, 2012)

# 2.6 Wastewater Treatment at HRWWTP

#### 2.6.1 Project Components and Wastewater Treatment Concept

The HRWWTP will be constructed for secondary treatment of the current wastewater stream discharged in Wadi As-Samen, and reduction of nutrient loads in the Wadi and infiltrating in the aquifer;

In the preparation stage of the project, alternative wastewater treatment options for the HRWWTP were reviewed and two reference designs were analysed. <u>The proposed</u> conceptual plant design is based on Activated Sludge System following a review and evaluation of several options using a Multi Criteria Approach.

The type of activated sludge system recommended for the HRWWTP is a proven technology. Nitrification and denitrification are achieved by internal recirculation of mixed activated sludge



and wastewater through aerobic and anoxic zones in the activated sludge basin. Sludge stabilization for both primary and secondary sludge is achieved by external aerobic or anaerobic sludge stabilization.

The conventional activated sludge system consists of the following main elements as shown in the schematic Figure 1.



Figure 1: Activated sludge system proposed

As currently conceived, the plant will include:

- Influent Pump station
- Preliminary treatment including Screens and Grit Removal
- Equalization Tank
- Primary Clarifiers
- Biological treatment for Nitrification and denitrification using Activated sludge basins with aerobic and anaerobic sections
- Air Blowers
- Secondary clarifiers
- Effluent filters
- Clorine disinfection room
- Sludge Handling systems including gravity sludge thickeners; sludge digesters and Sludge Dewatering systems
- Chemical Feed facilities as needed
- Administrative and maintenance buildings as needed
- Auxiliary facilities such as fire fighting systems, plant water systems, sludge and scum pumping systems and final solids disposal facilities.

# 2.6.2 Pumping station

Non-clog centrifugal pumps will be used for most applications. Submersible pumps will be used in sumps and dry pit pumps will be used for most WWTP process applications. Grit pumps will be recessed impeller type with hardened impellers and casing.

It is envisaged that a minimum of four duty and one standby submersible pump will be installed in the pump station for the stage 1 flows. The variable speed pumps will be controlled by level



controllers in the pump station. High level alarms and low-level cut-off will also be provided. The pumps will operate in a lead/lag configuration with manually rotated duty pumps. The pumping station will receive internal return flows (e.g. from sludge treatment, wash water from screenings). Storm water overflow weir and a manual control penstock will be maintained on the main inlet chamber of the WWTP for the purpose of providing overflow of the excess water over the storm water flow.

#### 2.6.3 Screens

Screening is the first unit operation used at wastewater treatment plants (WWTPs). Screening removes objects such as rags, paper, plastics, and metals to prevent damage and clogging of downstream equipment, piping, and appurtenances.

The HRWWTP treatment plants will operate in two screening steps, coarse and fine screens.

The coarse screens will be applied as a first screening step to remove large solids, rags, and debris from wastewater, and will have a maximum width of 25 mm.

The inlet to the treatment works is of mechanical bar screen type, similar to a climber screen. As a second screening step, 6mm fine screens are provided to remove material that may create operation and maintenance problems in downstream processes. The system will include at least two automatic fine screens, each capable of handling the full storm water flow in the event that one screen is not operational. The screen will be low maintenance and designed for severe duty service.

The screens shall be automatically cleaned by washing and brushing or by raking. The cleaning cycle shall operate on the differential water level across the screens. Non-potable water shall be used for flushing of the screening material. Reject water shall gravitate to the channels of the screens. Screenings are washed, pressed and collected in two separate containers for removal. Isolation of the screens is made via manually actuated penstocks. Two isolation penstocks shall be provided to allow full isolation of each screen. Penstock frames shall be of stainless steel with doors of a suitable composite plastic material.

Containers shall be covered by an air extraction hood during filling to minimise obnoxious smells and connected to a stainless-steel ventilation duct connected to the ventilation system. The requirements for the screening containers are that they must be draining through a screen at the bottom and that the water shall be discharged through a 60 mm stopcock above a large floor drain.

The mechanical installation of the screens comprises, but is not limited to, the following equipment:



- 2 fine screens;
- Screw conveyers;
- Connecting pieces between screens and conveyers;
- Compactors with press-pipes;
- Screenings washing systems using non-potable-water supplied from the nonpotable-water system (could be combined with compactor);
- Screening containers (2 duty, 1 exchange).

## 2.6.4 Grit and grease removal

Grit includes sand, gravel, cinder, or other heavy solid materials that are "heavier" (higher specific gravity) than the organic biodegradable solids in the wastewater. Removal of grit prevents unnecessary abrasion and wear of mechanical equipment, grit deposition in pipelines and channels, and accumulation of grit in anaerobic digesters and aeration basins.

The grit system will be vortex type grit removal system. The grit will be pumped to a grit classifier. The grit classifier will wash and dewater the grit to reduce process odors. The removal of settled grit from the grit chambers to a grit dewatering device shall take place by one submersible grit pump.

The pumped grit/water mixture shall be dewatered with a dewatering device. The dewatered grit shall be delivered to a grit container via a screw. The requirements for the grit containers are that they must be draining the water through screens and that the water shall be discharged.

The HRWWTP grit removal will be carried out before primary or secondary treatment. The system is expected to achieve a removal rate of at least 95%, at a grit size greater than 0.25 mm and 65% of grit greater than 0.1 mm in size with a specific gravity of 2,650 kg/m<sup>3</sup>. grease and scum shall be removed through an upper scraper that skims the scum, grease and floatable matter from the surface of the passive zone towards a scum pit.

# 2.6.5 Equalization Tank

The equalization tank will be installed after the primary sedimentation tank to side stream influent wastewater in case the measured quality is not suitable for biological treatment. wastewater will be directed to Equalization Tank via gravity by means of the distribution chamber if:

 receiving wastewater quality in early warning system is not suitable for biological treatment (inhibition is more than 15%), wastewater will be directed to equalization basin to protect the biological treatment.



 If receiving wastewater quantity exceeds the storm flow design capacity (sizing upon which all primary treatment units like screens, inlet pumping station and grit/grease chamber is sized), excess flow will be directed to equalization basin to protect the biological treatment.

The diverted excess waste water will be stored until wastewater flow is low, after which it is transferred back to the system (e.g. at night time)

#### 2.6.6 Primary sedimentation

Primary sedimentation removes settleable solids from a wastewater before biologically treating it for dissolved organics. If primary sedimentation is applied, there will be at least 2 process units. Each unit shall be capable to handle full hydraulic and solids loads and the settled sludge shall be not less than 5%. It will also be equipped with an automatic scum removal facility, from which scum is diverted to sump and taken separately to thickener and scum treatment. Scum grease and floatable matter will be transported to thickener and dewatering separate from the internal sewer system.

The Primary Sedimentation Tank design has been done according to high TSS removal rate of 60 % for average flow conditions versus highest hydraulic retention time of 2.2 hrs. During storm flow conditions the hydraulic retention time will be 0.9 hrs. and solids removal rate will be expected about 50 % in the worst case.

Besides, the scraper bridge travelling speed will be selected in order to let the settled sludge on the tank bottom to be scraped by the scraper bottom arm.

On the other hand, the SS load is not a major parameter on the design of Primary Sedimentation Tanks and generally vary between 1,5 to 34 kg/m2/d. For Hebron WWTP Primary Sedimentation Tank solid load will be around 29 kg/m2/d.

Therefore, there will be no need to provide lamella settlers to provide additional surface for particles to settle and the selected Primary Sedimentation Tank surface area and the volume will have enough reservation for reaching the expected SS removal efficiency.

Additionally, the sludge hoppers at the tank bottom are dimensioned (V=73,6 m3) to handle the settled sludge volume (298 m3/d) for about 4 hrs. Actually, the Primary Sedimentation Sludge Pumps will operate for 12 hrs. per day having a capacity of 25 m3/h for each. (2 main, 1 standby).

After Primary Sedimentation Tank, the wastewater will be directed to Equalization Tank via gravity by means of the distribution chamber because of two reasons as follows,

• If receiving wastewater quality in early warning system is not suitable for biological treatment (inhibition is more than 15%), wastewater will be directed to equalization basin to protect the biological treatment.



 All primary treatment units like screens, inlet pumping station and grit/grease chamber will be sized according to storm water flow. If receiving wastewater quantity is higher than the storm flow, excess flow will be directed to equalization basin to protect the biological treatment.

The by-pass and distribution chamber will be maintained adjacent to the Primary Sedimentation Tank and if above cases occurs during the operation, the overflow weirs will have the opportunity to direct the wastewater either to Equalization Tank or to discharge to Wadi As-Samen for worst cases. The overflow weir penstocks will have automatic control and will take position according to the measured flow and load together with operators control and decision.

## 2.6.7 Activated sludge reactor

The common activated sludge process is a suspended growth process where the microorganisms are mixed with the wastewater. Activated sludge process system will have primary and final sedimentation in which the activated sludge volume can be developed for various activated sludge processes such as the Modified Lubzack Ettinger (MLE) approach as proposed in the FS2005, or the Carrousel approach; According to the concept design, at least two digester reactors are to be provided, and a minimum retention time at average flows with both reactors in operation will be 30 days.

Each Activated Sludge Tank is divided in different zones: Anoxic Denitrification zone and Aerobic Nitrification zone.

#### Aeration will be carried out by fine bubble diffusers with suitably sized blowers.

Mixers in denitrification zones shall keep the sludge suspended and prevent precipitation of the sludge. The anoxic zone mixers will be submersible high speed mixers with constant speed motors.

The aeration sections and mixers shall be placed thus that the best possible aeration and mixing is achieved and sediments and scum are minimised. The rotational speed of the mixers shall not disturb the biological process.

Installations for the Activated Sludge Tanks comprise, but are not limited to, the following equipment:

- Air supply pipes;
- Aeration headers;
- Mixers;



- Outlet weirs;
- Platforms;
- Stairs;
- Lifting equipment;

In biological treatment based on activated sludge (classical activated sludge, extended aeration, SBR or similar), multiple blowers shall be designed according to the principle if one blower fails still 100% of the required aeration capacity remains. They will have a minimum efficiency of blowers shall be 75%. The blowers will be equipped with variable capacity capable of supplying air from 45% to 100% of design capacity of the specific blower.

#### 2.6.8 Clarifiers (Final sedimentation)

The secondary clarifiers follow the activated sludge units and are designed to remove biomass formed during biological treatment and other solids present in the influent to the biological treatment unit. In addition to the clarification of the waste water, the secondary clarifier performs some thickening of the biological sludge that accumulates in it.

Two clarifiers will be used for separating treated wastewater from sludge. The clarifiers will be centre drive type, supported on a stationary influent column with flow entering at the bottom of the column and flowing upward into an energy dissipating inlet. Clarified effluent will overflow a peripheral v-notch weir into an in-board effluent launder. A scum baffle will prevent scum from overflowing the weir.

The mechanical installations to be furnished include an inlet, sludge pipes to the return sludge pumping station, rotating scrapers with all equipment including weir plates fixed to the outlet channel. Sludge evacuation system from the tanks shall be adapted to the geometry of the tanks. The sludge outlet flow shall be controlled by means of the return sludge pumps (frequency controlled).

The mechanical installation for the final setting tanks comprises, but is not limited to, the following equipment:

- half rotating bridge (walkway) including carriage;
- central bearing construction;
- scraper mechanism;
- sludge evacuation system;
- dive baffle;
- "V" notch weir plates;
- inlet diffuser drum;



• (train) rail construction at the topside of the tank wall.

#### 2.6.9 Effluent post-treatment

If it is necessary to store biologically treated water, effluent, wash water or similar, then these buffers are regarded as integrated parts of the effluent post treatment system.

Storage tank materials will be resistant to corrosion caused by any chemicals that may be used in the treatment process.

Effluent Storage will be collected in the Service Water Tank to provide enough reserved water volume for fire-fighting according to local conditions. Flushing and wash water of equipment such as Screens, Grit Classifier etc. will be also supplied from Service Water Tank.

In order to meet the requirements for fecal coli, effluent has to be disinfected. Two possible options for disinfection are UV-disinfection or chlorination. Preference is given to chlorination disinfection as it has some distinctive benefits when compared to UV disinfection.

Chlorination will be used for economic considerations. As UV is expensive and its energy consumption is high. According to U.S. EPA guidelines for water reuse for irrigation, the residual chlorine should not exceed 1 mg/L. In order to adjust the chlorine dosage to achieve 1 mg/L residual chlorine on the effluent, the residual chlorine will be detected via online CL analyzer on the effluent of Chlorine Contact Tank.

#### 2.6.10 Sludge thickening

Sludge from primary sedimentation tanks and excess activated sludge will be thickened in gravity thickeners. Objective is to increase the dry-solid content and by doing so reducing the total flow to the digesters. One thickener is used for primary sludge, and two thickeners for secondary sludge

#### 2.6.11 Sludge Digestion

Sludge is digested in anaerobic digesters under mesophilic conditions (temperature of 32°C). The hydraulic retention time of the digester is 22 days, which is sufficient to achieve substantial degradation of sludge. Furthermore, after digestion sludge is stabilized and easy to handle. Under these conditions organic matter is converted into biogas that can be collected and used as fuel in a CHG-set that produces electricity. Furthermore, the heat generated by the plant is to be used for keeping the temperature in the digesters on the appropriate level.

For emergency situation and disruption of the CHG a flare is to be installed to be able to burn excess gas if needed. The electricity can partly cover the electricity consumption of the HRWWTP

#### 2.6.12 Sludge dewatering

After digestion sludge will be thickened and dewatered using mechanical equipment, namely a **<u>belt-filter press.</u>** 



<u>The Belt Press</u> offers the lowest energy and polymer consumption and is particularly suitable for large volumetric feed rates and thin sludge. The belt press is a simple, robust machine, and provides ease of operation, flexibility and local maintenance capability. Running costs are lower due to the much lower power and polymer cost and economical maintenance. Labor costs are slightly higher due to the need for housekeeping. Cake handling characteristics for a given solids content are better.

Design dry solid content will be a tradeoff between energy and required solid content (depending on the treatment level required for disposal or reuse). Sludge dewatering however, shall be provided to produce sludge with a minimum solids concentration of 20%.

#### 2.6.13 Dewatered sludge conveyors

The dewatered sludge will be transferred from the dewatering system to transport containers with a capacity of 20 ton each. The system will be automated so that it is possible change from one container to the next without onsite personnel. The distribution system will have places for 4 containers, to provide sufficient capacity for at least a full day of sludge production Operation will be based on 40 hours a week, (5 consecutive days 8 hours).

#### 2.6.14 Trucking facilities

The sewage Trucks will bring sewage to HRWWTP Inlet. The Coarse Screen Building will provide the necessary area for trucks to empty the sewage to the inlet of the HRWWTP.

Trucking facilities shall be provided for the HRWWTP to load trucks for removal and disposal of dewatered sludge. This also shall include an automated truck scale for determining the weight of sludge hauled.

#### 2.6.15 SCADA System

A fully functional SCADA system suitable for automatic control, monitoring and data logging will be installed to the HRWWTP. The control system programming shall be able to be amended on site in the light of operating experience, or as new equipment is installed, and shall have the ability to monitor fault conditions and to alert the operator of these fault conditions. A data exchange with the central dispatcher and a remote operation and control of the HRWWTP shall be assured. The proposed SCADA an PLC software shall be a well-known commercial brand that is already in use in similar facilities. The SCADA will allow full operation via mobile phone.

All data from HMI will be sent to Hebron representatives – complete and full HMI without the possibility of intervention. In particular the design of the control and data acquisition system shall provide for the following: The design shall be based on an automated system controlled by programmable logic controllers ("PLCs") such that the HRWWTP is capable of automatic operation for extended periods. The plant must be equipped in a manner that:

a) A full-automatic process is guaranteed



b) All process relevant parameters can be measured by on-line meters.

c) A remote monitoring, control and operation of the HRWWTP must be ensured.

The data acquisition system shall have provision in the database to record all the results of sampling and testing undertaken by the HRWWTP Laboratory. The design of the Data acquisition system shall provide two operating data storage units in order to guarantee redundancy of the system. An emergency power supply that provides sufficient capacity to allow running of the plant in accordance with the specifications. It is envisaged that the Plant will be manned five days per week, one shift -eight hours- per day. Full operation of partly manual operated component shall be ensured for 5 days a week and 8 hours a day. At a regular operation modulation modus, a fully automatic operation shall be possible for a period of at least 2 days.

#### 2.6.16 General Design Considerations

After initial pumping, the wastewater will flow through the entire HRWWTP under gravity. If post treatment is applied, a lifting station may be used for this purpose. Internal flows however, like return sludge and flows related to sludge treatment may be pumped.

The plant shall be designed so that it shall be possible to manage operation with one of the process units out of order, without any deterioration of the effluent quality. The design has to accommodate uninterrupted flow of wastewater through the HRWWTP even in case of malfunction of major plant components. By-pass of untreated wastewater flows is not permitted. By passes due to taking parts of installation out of operation is not allowed when malfunction of major plant components fail the plant still has to meet 80% of maximum design load and 100% of hydraulic design load in case of malfunction of main plant components. The contractor will in his bid demonstrate how the plant will operate at full flow and load when one of the main components is out of service (e.g. one primary clarifier, one aeration tank, one secondary clarifier, one digester etc.

In case by-pass(es) are applied, these should function under gravity. All by-passes of relevant objects should be closed pipes, except the by-pass of the grit chamber and screens. All by-passes can be opened or closed. A by-pass has to be connected to the next (logical) process step.

The plant shall be designed so that it shall be possible to manage operation with one of the process units out of order, without any deterioration of the effluent quality. The design will accommodate uninterrupted flow of wastewater through the HRWWTP even in case of malfunction of major plant components. By-pass of untreated wastewater flows is not permitted. By passes due to taking parts of installation out of operation is not allowed when malfunction of major plant components fail the plant still has to meet 80% of maximum design load and 100% of hydraulic design load in case of malfunction of main plant components. The contractor will in his bid demonstrate how the plant will operate at full flow and load when one of the main components is out of service (e.g. one primary clarifier, one aeration tank, one secondary clarifier, one digester etc.



Facilities need to be designed to handle the current flows and the anticipated future flows through the 12-year planning period, but arrangements have been made on site to accommodate facilities required for future expansions to handle ultimate flows from the service area. Facilities have also been designed to meet the future effluent criteria as identified by the PWA as follows:

- Biological Oxygen Demand (BOD5) :20 mg/l
- Total Suspended Solids (TSS) : 30 mg/l
- Total Nitrogen (TN, as nitrogen) : 50 mg/l
- Ammonia as Nitrogen : 15 mg/l
- Organic nitrogen : 5 mg/l
- Faecal E-coli bacteria : 200 MPN/100 ml
- pH : 6 to 9



# **3 ENVIRONMENTAL BASELINE DATA**

The consultant reviewed the environmental baseline data for verification and/or updates.

# 3.1 Location and topography

All baseline data with regards to location and topography are unchanged. Section 4.1 of the original ESCHIA will be referred to for all information in that regards.

# 3.2 Climate

None of the baseline data with regards to climatic data has significantly changed. Data included in the original ESCHIA is considered the latest available. Section 4.2 of the original ESCHIA will therefore be the reference for climate.

# 3.3 Soil

Soil type in the project location have been covered in section 4.3 of the 2013 ESCHIA.

# 3.4 Land use

No changes occurred to the land use in the area, Section 4.4 of the original ESCHIA.

# 3.5 Hydrogeology

All formations mentioned, including Jerusalem Formation (Turonian), Bethlehem Formation (Upper Cenomanian), Hebron Formation (Upper Cenomanian), Yatta Formation (Lower Cenomanian), Upper Beit Kahil Formation (Upper Albian) and Lower Beit Kahil Formation (Upper Albian) are unchanged. The hydrogeology section is therefore the same as in Section 4.5 of the original ESCHIA.

# 3.6 Groundwater Aquifers

All data on groundwater aquifers are as in section 4.6 of the original ESCHIAs document. While Baseline data for the groundwater wells (information such as pumping rates) in the Hebron area (WMAB) might have changed, no updated recent data was available.

# 3.7 Surface Water

Main streams, water bodies, watersheds and streams are as in section 4.7 of the original ESCHIA.

# 3.8 Water and Wastewater Services

#### 3.8.1 Wastewater

Data on "Water and Wastewater Services" is the same as in section 4.8 of the original document. It can be noted that about 77% of the city houses are linked to the public water supply network (according to latest statistics obtained from Hebron municipality).



#### 3.8.2 Wastewater

This section on wastewater can be referred to in section 4.8.2 of the original ESCHIA. One important takeaway with regards to wastewater, is that while the majority of Hebron city is covered by a public wastewater network., about 30% of the city houses are not connected to the public sewage network according to the Head of Wastewater Department at Hebron Municipality. In unconnected areas, cesspits are the common method households use to dispose of

produced wastewater detrimentally impacting adjacent farmland and contaminating springs, groundwater and the environment

#### 3.9 Solid Waste Management

Al-Menya sanitary landfill, located east of Bethlehem and north-eastern of Hebron has been active since September 1, 2014, with an operational capacity of 550 tons/day. It serves the whole area of Hebron and Bethlehem Governorates and is currently the only one in operation in the study area. Al-Minya landfill is an engineered one with a complete lining system of layers, leachate and gas collection system. All systems prior to Al Minya, including Yatta dumpsite (which was in operation at the time the original ESCHIA was being conducted), were non-engineered dumpsites.

#### 3.10 Seismology

This section on seismology can be referred to in section 4.8.2 of the original ESCHIA, as no recent data has been found).

#### 3.11 Site Environmental Conditions

#### 3.11.1 Field Measurements

Field measurements for ambient air quality and noise are important in order to assess the current environmental conditions at the project's site. To identify the contamination level of the influent due generated from the wastewater, soil samples were assessed in Wadi As-Samen.

#### 3.11.2 Soil Analysis

The type of soil and its physical and chemical characteristics should be monitored before and during using wastewater for irrigation. The soil characteristics determine the limitation and type of management of wastewater irrigation.

Soil testing and composition was carried out to indicate the level of contamination already existing. This helped determine the kind of impact the HRWWTP will have on the soil in the area, thus identify the effects of wastewater on the surrounding lands and on soil properties; effects on agriculture activities, practices as well as public health. It also helps predict positive impacts the project will have on soil as wastewater reaching the soil in the area will be greatly reduced.



Accordingly, this will lead to the identification of needed mitigation and practices to use the affected land.

Soil testing was also important to decide how soil should be handled during construction and if extra precaution may be needed

Soil samples were collected from two points along the Wadi, locations shown in Table 8 to test for trace metals. The first location was chosen at the egress of the sewerage pipe as this marks the entrance and the second towards the middle, as the middle location is usually the one with the least turbidity (and is thus expected to represent a location where solid settlement has occurred). While two points may not be sufficient to draw a contamination pattern, they can provide an indication of the baseline situation. Reasons for limiting samples to 2 was due to budget constraints, and previous studies have reported a somehow uniform pattern.

Test	Units	Sample 1	Sample 2
Cadmium (Cd)	mg/Kg	0.058	0.06
Copper (Cu)	mg/Kg	2.57	1.59
Lead (Pb)	mg/Kg	1.82	1.36
Zinc (Zn)	mg/Kg	14.23	15.32
ТОМ	% dry	4.18	7.03

Table	7:	Wadi.	As-Same	n Soil	Analysis,	2018
	· ·					

The maximum allowable limits of heavy metals in soils and vegetables have been established standard regulatory bodies such as World Health Organization (WHO), Food and Agricultural Organization (FAO), Standard Guidelines in Europe as shown in Table 8 below:

Table 8: WHO	heavy	metals	permissible	limits
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Elements	*Target v (mg/kg)	value	of soil	***Permissible value of plant (mg/kg)
Cadmium (Cd)	0.8			0.02
Copper (Cu)	36			10
Zinc (Zn)	50			0.60
Lead (Pb)	85			2



A comparison of the values obtained for the soil analysis in wadi A Samen in Table 7 with those WHO permissible limits for heavy metals Table 8, reveal that most metal compositions in the soil fall within the acceptable range.

# 3.11.3 Sludge Analysis

Sampling of liquid sludge is generally undertaken from first treatment process or first anaerobic pond. Settled solid (sludge) was taken at representative depth of the pond. The normal practice to analyze sludge sample is after it is turned to be dry solid content (reference made to the EPA standard for sludge analysis). This will be carried out during monitoring.

# No sludge can be analyzed at this stage. Monitoring measures are suggested in that regards.

#### 3.11.4 Ambient Air and Noise Analysis

Ambient air quality and noise measurements were made in Al Heila, the closest residential settlement to the wastewater treatment plant.

All procedures for Ambient air quality and Noise sampling, their parameters and durations will be as indicated in section 7.1.1.4 of Ambient Air and Noise Analysis in ESCHIA 2013/2014.

The results of the measurements are listed in the table below.

Test	Min	Max	Average
SO2	0	0.2	0.05
NO2	0	0	0
СО	0	0.9	0.08
PM2.5	79	950	172.09
PM10 (μg/ft3)	6	224	19.66

Table 9: Air Measurements

3.11.5 Baseline wastewater quality in wadi As-Samen

In section 7.2 of the 2013 ESCHIA, BOD, COD, and TDS in Wadi As-Samen were reported as measured in 2007. For update purposes, new measurements for these parameters were made and are listed in Table 10. Water samples taken at different points were used to provide an indication of the baseline water quality environmental condition. The results of the measurements are included in Annex 11.



Test	Units	Sample 1	Sample 2 (WWTP)	Range in Wadi As Samen (mg/l)	Average in Wadi As Samen	*TYPICAL CHARACTERISTICS OF URBAN WASTE WATER
Potential of Hydrogen (pH)	-	7.71	6.76			
Bio Chemical Oxygen Demand (BOD)	mg/l	675	1270	82-1050	498	100-300
Chemical Oxygen Demand (COD)	mg/l	1410	3060	240- 1190	654	250 - 800
Total Dissolved Solids (TDS)	mg/l	1250	1834	800- 2230	713	
Total Nitrogen (N)	mg/l	265	360			20 - 85
Nitrate Nitrogen (NO3-N)	mg/l	1.4	1.2			
Ammonia Nitrogen (NH3-N)	mg/l	223.2	304.8			10 - 30
Total Phosphorous (TP)	mg/l	77.4	90.1			6-20
Chloride (Cl-)	mg/l	225	575			30-100
Chromium (Cr)	mg/l	0.185	0.522			
Volatile Matter (TOM)	mg/l	1350	1680			
Aerobic Plate Count	Cfu/ml	63*107	47*106			
Total Coliform	Cfu/100 ml	12*104	20*105			

Table 10:	Wastewater	analysis
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Test	Units	Sample 1	Sample 2 (WWTP)	Range in Wadi As Samen (mg/l)	Average in Wadi As Samen	*TYPICAL CHARACTERISTICS OF URBAN WASTE WATER
Count (TCC)						
Total Fecal Coliform Count (TFCC)	Cfu/100 ml	35*102	12*104			

\*https://www.epa.ie/pubs/advice/water/wastewater/EPA\_water\_%20treatment\_manual \_primary\_secondary\_tertiary1.pdf

Comparing values of BOD, COD and TDS, it is evident that all samples were found to be higher than the already high average values in reported in the Wadi at the time the values were reported in the 2013/2014 ESCHIA. It can also be seen that the BOD value at the location of the WWTP has jumped to about three times that of the higher limit of range values. COD values exceed the higher range value reported in the reference table (table 7.3 in the original ESCHIA) and TDS fall somewhere midrange. *Because of the Wadi's location in a recharge area that discharges to the West Mountain Aquifer Basin (described in 6.2.2, Impacts on Groundwater Quality), the groundwater is at continuous risk of contamination.* 

#### 3.11.6 Drinking Water Samples

Water samples were taken from a downstream well in Al Fawar Camp to update its water quality parameters. The updated water parameters are listed in Table 12 below. As noted in the previous ESCHIA, nitrate level is very high, much higher than the Palestinian acceptable level of 70 mg/l and knowing that nitrate concentration ranges between 15- 20 mg/l under normal conditions in natural groundwater.

While a single measurement does not reflect variation, the results indicate the effect of the pollution load in the adjacent As-Samen Valley on the ground water. The reason is due to the location of Wadi as-Samen in a recharge area that discharges to the West Mountain Aquifer Basin (WMAB) and water table in the area is relatively shallow. This formation, along with the directions of groundwater in the upper sub aquifer of the WMAB, and flows from Wadi As-Samen toward the existing wells in western part of Hebron Governorate is as described in section 7.2.3 of the original ESCHIA.



Well ID	Test	TCC (Cfu/100ml)	APC (Cfu/ml)	NO3 (mg/l)	TFCC (Cfu/100ml)
15-09/012		186	35	122.7	4

#### Table 11: Well sampling results

# 3.12 Flora and Fauna

No Hawthorn or pistachio trees were observed during the field investigation. Local community member mentioned that these trees may be at higher elevations than the proposed project site.

No biological resources of value were identified in the ESCHIA; however, during the site visit, white storks, or commonly called Abu-Laban were seen flying and landing within Wadi as-Samen.

According to locals in the area, snakes have been observed at several instances in the project area. Details on the nature/species of such snakes are not known and little information is available on the matter.

As a general case, herpetofauna, including snakes expected to be encountered are inhabitant' species present in the West Bank. These according to Albaba are summarized in the Table 12.

	Amphibians (4 Families; 4 Genera; and 4 Species).					
No	English name	Family	Latin name	Local distribution	Global distributions	IUCN Red List Category <sup>[18]</sup>
1	Levant green toad	Ranidae	Pelophylax bedriagea	All West Bank & Gaza Strip Governorates	Cyprus, Egypt, Jordan, Lebanon, Syria, Turkey, and Israel	Least Concern
2	Savigny's tree frog	Hylidae	Hyla savignyi	All West Bank & Gaza Strip Governorates	Cyprus, Georgia, Iraq, Iran, Jordan, Lebanon, Syria, Turkey, and Israel	Least Concern
3	European green toad	Bufonidae	Pseudepidalea variabilis	All West Bank & Gaza Strip Governorates	Cyprus, Georgia, Iraq, Iran, Jordan, Lebanon, Syria, Turkey, Russia, and Israel	Data Deficient
4	Spotted newt	Salamandridae	Ommatotriton vittatus	Central highlands of the West Bank Governorates	Jordan, Lebanon, Syria, Turkey, and Israel	Least Concern
				Reptiles		
	Snakes (8 Families, 21 Genera, and 27 Species).					
No	English name	Family	Latin name	Local distribution	Global distributions	IUCN Red List Category
5	Palestine saw- scaled viper	Viperidae	Echis coloratus	Jericho, Tubas, Eastern slopes of Bethlehem and Hebron Governorates	Egypt, Jordan, Saudi Arabia, and Israel	Least Concern

Table	12.	herpetofaun	a of Palestine <sup>1</sup>
1 0000	12.	петреюјаан	a of 1 ausune.

 $<sup>\</sup>label{eq:linear} \ ^{1}\ \underline{http://www.entomoljournal.com/archives/2016/vol4issue4/PartB/4-3-96-414.pdf}$ 



# Addendum to the ESCHIA for the HRWWTP Project

			F	Amphibians (4 amilies; 4 Genera; and 4 Species).	ı	
No	English name	Family	Latin name	Local distribution	Global distributions	IUCN Red List Category [18]
6	Palestine viper	Viperidae	Vipera paleastinae	All West Bank & Gaza Strip Governorates	Jordan, Lebanon, Syria, and Israel	Least Concern
7	Desert Black Cobra	Elapidae	W alterinnesia aegytia	Jericho and Eastern slopes of Bethlehem and Hebron governorates	Egypt, Jordan, Saudi Arabia, and Israel	Threatened
8	Palestine Mole Viper	Atractaspididae	Atractaspi s engaddensis	Jericho and Eastern slopes of Bethlehem and Hebron governorates	Egypt, Jordan, Saudi Arabia, and Israel	Least Concern
9	Monpeller Snake	Colubridae	Malpolon monspessulanus insignitus	All West Bank & Gaza Strip Governorates	Cyprus, Georgia, Iraq, Iran, Jordan, Lebanon, Syria, Turkey, Russia, Greece, Spain, Italy, Algeria, Tunisia, and Israel	Least Concern
10	Schokari sand Racer	Colubridae	Psammophis schokari	All West Bank & Gaza Strip Governorates	India, Oman, UAE, Iraq, Iran, Jordan, Lebanon, Syria, Pakistan Nigeria, and Israel	Least Concern
11	Palestine Kukri Snake	Colubridae	Rhynchocalamus melanocephalus	All West Bank Governorates, excluding Jericho	Armenia, Azerbaijan, Egypt, Iran, Israel, Jordan, Lebanon, Syrian and Turkey	Least Concern
12	Lined Dwarf Racer	Colubridae	Eirenis decemlineata	All West Bank Governorates, excluding Jericho	Iraq, Israel, Jordan, Lebanon, Syrian and Turkey	Least Concern
13	Roth's Dwarf Racer	Colubridae	Eirenis rothi	All West Bank Governorates, excluding Jericho	Turkey, Jordan, Lebanon, Syria, and Israel	Least Concern
14	Sinai Dwarf Racer	Colubridae	Eirenis coronelloides	Jericho, and Eastern slopes of Bethlehem and Hebron governorates	Iraq, Jordan, Syrian and Israel	Least Concern
15	Crowned Dwarf Racer	Colubridae	Eirenis lineomaculatus	All West Bank Governorates	Turkey, Jordan, Lebanon, Syria, and Israel	Least Concern
16	Dice Snake	Colubridae	Natrix tessellata	All West Bank & Gaza Strip Governorates	Slovenia, the Czech Slovakia, Hungary, Romania, Bulgaria, Ukraine, Russia, Croatia, Bosnia, Serbia, Turkey, Syria, Lebanon, Israel, Jordan, Armenia, Azerbaijan Iran, Iran, Iraq, Yemen, Afghanistan, Pakistan, China	Least Concern
17	Arabian Cat Snake	Colubridae	Telescopus dhara dhara	Jericho, and Eastern slopes of Bethlehem and Hebron governorates	Oman, Jordan, Israel, UAE, Saudi Arabia, Algeria, Chad and Lybia	Least Concern
18	European Cat Snake	Colubridae	Telescopus fallax syriacus	All West Bank and Gaza Strip Governorates, excluding Jericho	Albania, Armenia Azerbaijan, Bosnia, Bulgaria, Croatia, Cyprus; Georgia, Greece, Iran, Iraq, Israel, Italy, Lebanon, Malta, Montenegro, Russian Federation, Slovenia, Svrian and Turkey	Least Concern

Most of these species are categorized by IUCN as of least concern, except for Chaleastides guentheri, Walterinnesia, Chaleastides ocellatus which are categorized as vulnerable, threatened and near threatened respectively.



# 4 BASELINE SOCIO-ECONOMIC DATA

# 4.1 General

Hebron is the largest city in the West Bank, with a total area of approximately 74,100 dunums, including 30,000 dunums covered by housing units according to a study by the Applied Research Institute (ARIJ). The village of Al Heila comprises around 6,000 dunums, including 2,500 dunums occupied by houses. According to the Palestinian Central Bureau of Statistics (PCBS), Al Heila is a rural community located a distance of 6 km southeast of Hebron city.

Pursuant to the Hebron Agreement, a special arrangement governs the city. Hebron is divided into two areas. Whereas H1 area is governed by the Palestinian Authority, H2 is under control of the Israeli authorities. According to the Oslo Accords, Hebron comprises both Area A and Area C. A large number of Israeli settlements are located in the heart and on the environs of Hebron city, posing restrictions to Palestinian citizens' daily life, city planning and administration, and daily functions of government bodies and civil society actors.

In Hebron, various institutions contribute to developing and enhancing public service delivery. A municipal council administers the city, manages planning and development projects, issues construction licenses, provides public infrastructure services, etc. A significant number of official bodies and civil society organizations work in various fields. These include, inter alia, ministry directorate district offices, sports clubs, and charitable associations.

# 4.2 Population

According to the PCBS 2016 Population Census, Hebron city and Al Heila village and Yatta municipality housed 281,415 residents, marking an annual rise of 3.5% in comparison to the 1997 Census results. In line with the PCBS estimates. It is anticipated that the population will increase to around 320,000 in 2030. Gender ratio shows 107.3 males to every 100 females.



 Table 13: Population in the project communities in 2007-2012-2016, average annual population increase, and population estimates in 2030

		Population				
Community	2007	Annual increase 1997-2007	2012 estimates	2016 Estimates	2017	2030 estimates <sup>2</sup>
Hebron <sup>3</sup>	160,702	3.5	189,444	215,452	201,063	318977
Yatta	47,943	3.5	56,518	64,277		100,526
Al Heila	1,258	3.5	1483	1686		2493

Source: PCBS <u>http://www.pcbs.gov.ps</u>

According to the Preliminary Results of Population Census 2017, the total population of Hebron Governorate in 2017 is 711,223. It is one of the highest in the population density



Figure 2: Population by Governorate

<sup>3</sup> Data of Qalqas and Khirbet ad Dar are included with Hebron. According to the decision on expansion of municipal borders, these are now neighborhoods in Hebron



<sup>&</sup>lt;sup>2</sup> 1997 and 2007 data are quoted from the 1997 and 2007 PCBS 2007 Population, Housing and Establishment Census. 2012 and 2016 estimates are derived from the PCBS Population Estimates 2007-2016, http://pcbs.gov.ps/Portals/\_Rainbow/Documents/hebroa.htm. Population estimates in 2030 are based on a hypothetical continued population increase rates as in 2012-2016.

Source: PCBS Preliminary Results of the Population, Housing and Establishments Census, 2017 <u>http://www.pcbs.gov.ps</u>

In relation to age structure; the population in the surveyed communities is mostly young. 45.2% of the total population is 15 years of age or below, ranging from 45.2% in Hebron and 50.1% in Al Heila. Residents in the working age (15-64 age group) comprise 52.3%, including 52.3% in Hebron and 48.1% in Al Heila. The elderly account for 2.5%, including 1.8% in Al Heila and 2.5% in Hebron (*Reference: ESCHLA ESCHMP Report, 2014*)

Table 14: Population in the surveyed communities according to age groups

Locality	Below 15 years	15-64 years	65+ years
Hebron	74122	85765	4100
Al Heila	640	614	23
Total	74762	86379	4123
Percentage	45.2%	52.3%	2.5%

Source: PCBS, 2008, Census Final Results: Summary (Population, Buildings, Housing and Establishments), Hebron Governorate, Ramallah, Palestine

ARIJ, 2009, Hebron City Profile, Jerusalem, Palestine

Table 15: Population in Hebron Governorate according to age groups

Locality	Persons (0-17)	18-29	60+ years
Total Hebron	339,628	161,257	28,497

Source: PCBS, 2017 http://www.pcbs.gov.ps

With a household size of 5.7, residents of the surveyed communities were distributed to 28,463 households in 2007. According to Figure 3 below, large and medium households are dominant in the surveyed communities (*Reference: ESCHLA ESCHMP Report, 2014*).



Figure 3: Household size categories in the surveyed communities, 2007



Source: PCBS, 2009, Population, Housing and Establishment Census: Census Final Results: Summary (Population, Buildings, Housing and Establishments), Bethlehem Governorate, Ramallah, Palestine

#### 4.3 Refugee Status

The overwhelming majority of residents in the surveyed communities are non-refugees. A total of 80.7% of the population are indigenous. Less than one fifth of the populations are refugees, including 18.7% registered and 0.6% unregistered refugees (*Reference: ESCHLA ESCHMP Report, 2014*).

Locality	Registered refugees	Unregistered refugees	Non- refugees	Total
Hebron	18.9	0.6	80.5	100
Al Heila	0	0	100	100
Total	18.7	0.6	80.7	100

Table 16: Surveyed communities' population according to refugee status

Source: PCBS, 2008, Census Final Results: Summary (Population, Buildings, Housing and Establishments), Hebron Governorate, Ramallah, Palestine

## 4.4 Education

6% of the populations in the surveyed communities, who are 10 years of age or above, have completed a BA degree or a higher degree of education. This category ranges between 6.1% in Hebron and 1.7% in Al Heila. below shows a large discrepancy in terms of the educational status between the surveyed locales. Hebron indicates a proportionately high number of educated persons (persons with an educational level above high school – *Tanjihi*). On the other hand, Al Heila shows a lower percentage of educated persons. Educated individuals may provide a significant human and social capital, enhancing the quality of life in the surveyed communities (*Reference: ESCHIA ESCHMP Report, 2014*).

Table 17: Surveyed communities' population according to educational status (%)

	Illiterate	Can read and write	Elementary	Preparatory	Secondary	Associate Diploma	BA and more	Total
Hebron	3.9	14.1	27.5	30.1	14.5	3.9	6.1	100
Al Heila	18.8	16.0	36.0	16.4	10.6	0.4	1.7	100
Total	4.0	14.1	27.6	30.0	14.5	3.9	6.0	100

ARIJ, 2009, Hebron City Profile, Jerusalem, Palestine ARIJ, 2010, Al Heila Village Profile, Jerusalem, Palestine

Table 18: Illiterate and those who completed an average diploma



Area	Illiterate	Who's Completed Associated Diploma and Above
Hebron Municipality	18,249	77,526

Source: PCBS, 2017 <u>http://www.pcbs.gov.ps</u>

# 4.5 Labor Force and Economic Activities

Available data shows that participation of women in the labor force is very limited. Only 10.3% of women in the age of 10 years and above participate in the labor force. In contrast, males in the same age group comprise 70.3% of the labor force. 11.3% of the population in the surveyed communities, including 10.6% males and 16.9% females, are unemployed.

In this context, focus groups and interviewed key personalities in the surveyed communities highlighted a correlation between rising unemployment and policies of the Israeli occupying authorities. According to respondents, unemployment rate is significantly high in Khelit ad Dar and Al Heila due to historical reliance on work inside Israel and agriculture sector (*Reference: ESCHLA ESCHMP Report, 2014*).

Table 19: Individuals in the age of 10 years and above according to relation with the labour market, 2017

Sex	Economica			
	Total	Employed	Unemployed	Not Economically Active
Male	162,904	140,162	22,742	47,673
Female	23,887	17,180	6,707	178,624
Total	186,791	157,342	29,449	226,297

Source: PCBS, 2017 http://www.pcbs.gov.ps

Establishments operating in Hebron city provide employment opportunities to more than half of the local labour force. According to the PCBS 2017 Population, Housing and Establishment Census, 8,033 establishments were in operation in Hebron bookmark171. Though mostly commercial, establishments carry out a variety of economic activities.

Table 20: Establishments and workers in the surveyed communities, 2007

A * 0.0	No. of	No. of Persons Engaged			
піса	Establishments	Female	Male	Total	
Hebron	7400	3470	2099 3	24463	
Al Heila	3	0	5	5	
Total	7403	3474	2099 8	24463	



Source: Palestinian Central Bureau of Statistics, 2009, Census Final Results: Summary (Population, Buildings, Housing and Establishments), Hebron Governorate, Ramallah, Palestine

Following commercial activity, agriculture and industry sectors provide a significant source of employment in these communities. In Hebron city, over half of the labor force works in commercial activities. In contrast, 15% are employed in the agriculture sector, 15% in the industry sector, 10% in the service sector, 5% in government bodies, and 5% in Israeli workshops. In Al Heila, 60% of the labor force works in Israeli workshops, 20% in the agriculture sector, and 10% in industrial enterprises. The rest are either civil servants or service providers.

In Hebron, the economic activity comprises factories that consume a large quantity of water. For example, the Hebron Industrial Zone houses 118 stone processing workshops, including 35 that operate compressed air dryers and 58 silos (reservoirs). 25 facilities still use settling ponds for sludge treatment (Data from Hebron Municipality). According to interviews conducted by the research team in the Industrial Zone, stone processing factories use an average of 10 cubic meters per factory a day. In the Workshop on Environmental, Social, Historical and Cultural Impact Assessment of the Hebron Wastewater Treatment Plant Project, held at the Hebron Municipality hall on 8 August 2012, Hebron-based representative of the Palestinian Union of Stone and Marble Industry confirmed that stone processing factories in the Hebron Industrial Zone consume over 1,000 cubic meters of water per day. The large quantity of water used by concrete plants, and carwash services is converted into wastewater, which mostly finds its way into the city's public sewage network (*Reference: ESCHLA ESCHMP Report, 2014*).

Irrigated agriculture covers more than 400 dunums of land, mostly relying on public networksupplied water. Representatives of local government units, focus groups, key personalities and household members emphasized the significance of agricultural activities in the life of their communities. A considerable number of the households in Khelit ad Dar and Al Heila largely depend on the agricultural activity as a source of income. Despite the destructive impact of the Hebron wastewater stream on their land, causing desertification of vast areas and increasing water salinity, respondents highlighted that irrigation water, once available, means a resumption of the agricultural activity in the affected areas.

A significant number of households in the surveyed communities breed livestock. Official statistics indicate that these localities accommodate more than 14,000 sheep and goats, 1,400 mules and horses, around 1.2 million chickens, and 1,200 beehives. Most livestock units are raised in modern farms.

These activities, particularly large-scale industrial enterprises that use and produce large quantities of water and wastewater, pinpoint the importance of water in the life of households



in the surveyed areas. Unpolluted water should be provided to agricultural activity (including vegetable cultivation) and to industrial activities.

# 4.6 Sanitation and Public Health

#### 4.6.1 Water

More than 80% of Hebron city houses are linked to the public water supply network. Other households rely on rainwater collection, springs, or artesian wells (There are 3 artesian wells in Hebron). On the other hand, the Al Heila village lacks a public water supply network. Though the village has only 500-cubic-meter well, residents depend on cisterns and tankered water.

Water supply is a major problem in Hebron city and its environs. Many areas suffer from an acutely short water supply in the summertime. According to the former chairman of a village council, due to water scarcity, local residents were prevented from using water for the agricultural activity in order to give priority to drinking and domestic use. Female participants in the women's focus group asserted that short and prolonged disruption of water supply, especially in elevated places, prevent them from exploiting house gardens or cultivating certain vegetables and plants.

In general, Al Heila residents suffer from high water prices (ILS 150-200 per tank, or ILS 15-20 per cubic meter at best) as well as from contaminated water wells. In addition to scarce water sources, Hebron City is debilitated by inadequate water supply services, especially in the summer.

Average monthly water consumption in the Hebron city is around 55-60 liters per capita per day. Though low, water consumption is expected to be even less in the summertime in light of severely short water supply.

In this context, focus group discussants and interviewed household members indicated varied water consumption from one household to another. Especially in houses located on elevated places, water consumption declines in the summertime due to inadequate access to water. According to a female participant in the women's focus group, water was not supplied to her house for a month or more. Other participants asserted that they did not have access to the public water network-supplied water unless certain valves were closed. Therefore, households are forced to rationalize water use during the summertime and rely on cisterns (*Reference: ESCHIA ESCHMP Report, 2014*).

#### 4.6.2 Use of Various Water Sources

Public network-supplied water is mainly used for domestic purposes as well as for irrigation of house gardens. In addition to watering livestock and providing various projects, some farmers use this water source to irrigate greenhouse crops or open-space vegetable farming in the summer. In spite of the complaint of high prices, farmers find themselves obliged to use public network-supplied water. However, they demand that water supply prices be reduced and that agricultural institutions help them operate effective, modern irrigation techniques.



As mentioned above, the surveyed communities house a large number of industrial installations and service providers that consume a significant quantity of water. To meet water needs of factories and workshops, tankered water and public water network are used. Stone processing facilities rely on tanker trucks as a major source to supply water and to dispose of sludge; with up to ILS 30 and sometimes 40 NIS/m<sup>3</sup> during very drought periods (*Reference: ESCHLA ESCHMP Report, 2014*).

#### 4.6.3 Wastewater

In Hebron City, a public wastewater network covers the majority of the city housing units. According, the Head of Wastewater Department at Hebron Municipality, approximately 30% of the city houses are not connected to the public sewage network. These are mostly located in areas that have recently been annexed to the city's municipal borders. Others are in areas that need special techniques to connect to the public network (low areas). Work is underway to provide needed funds to expand the public wastewater network and provide appropriate pumps.

In unconnected areas, cesspits are the common method households use to dispose of produced wastewater. Interviewees described cesspits as small-sized. Sometimes, cesspits are not emptied because the soil absorbs produced wastewater. When it is not emptied, especially in the summertime, wastewater in cesspits drilled in rocky mountain regions leaks out to the streets or to land surrounding houses.

Cesspits are emptied by septic trucks at high prices (ILS 70-100) per tank. Some households are forced to pay a higher price to empty their cesspits, which are drilled in rocky mountain regions, because they are forced to empty them more than once a month (Some households empty theirs once a week). Other households afford ILS 500 a month to empty their cesspits. Septic trucks discharge emptied wastewater in open areas near to residential communities, producing foul smell and creating swamps of wastewater in several spots around residential localities. Wastewater discharged as such gravely impacts on adjacent farmland and contaminates springs, groundwater and the environment in general.

A large number of communities in southern Hebron suffer from the wastewater stream, which flows through the open Wadi as-Samen valley towards the Green Line. Wastewater passes through some residential areas, including the Al Heila village, where some houses are in close proximity to the wastewater stream. Even after it was covered and channeled into large sewers, residents of the Khelit ad Dar area still suffer from adverse impacts generated by the wastewater stream. Destructive consequences are still in place, including dehydration of trees and desertification of the soil. Participants in focus group sessions and interviewees in Khelit ad Dar complained of malodorous smell produced by open sanitary sewer manholes. In addition to a widespread foul smell, respondents stated that stolen sewer manholes increase hazards for residents and properties.



In areas with uncovered wastewater streams, adverse impacts pose a number of dangers:

- Dehydrated trees, damaged soil, and increasing soil salinity and intoxication.
- Spreading malodorous smell. A female participant in the women's focus group stated that she did not open her house windows.
- Widespread mosquitoes, causing skin diseases and adding a further financial burden on households for medical attention. Interviewees asserted they needed a separate budget line item to fight mosquitos or mitigate resultant maladies.
- Widespread insects and snakes.
- Widespread skin diseases (including itchy skin and allergy), asthma and amoeba. Many interviewees associated the high cancer rate with the wastewater stream.
- Difficult access to farmland, driving farmers out of their land.
- The wastewater stream poses an immediate hazard to individuals, especially children. According to surveyed persons, despite the reduced risk of flooding in the wintertime, deepening of the wastewater steam has rendered it more dangerous. In the past, the stream used to flood low farmland and adjacent houses.
- The wastewater stream also negatively reflects on social relations between local residents. Despite the fact that the affected communities used to lie over a green area in the past, the wastewater stream is a repellent factor that drives out residents, investors and visitors. Some participants in focus group discussions confirmed that they faced serious problems because certain families had refused to marry their daughters to residents living in the affected community because of hazards generated by the wastewater stream.

The overwhelming majority of houses in the surveyed communities include a kitchen, bathroom and toilet connected to the water supply network. In a limited number of houses, however, these facilities are either unconnected to a water supply or not available at all, thereby increasing the quantity of wastewater produced in these communities.

With the large size of Hebron City and expanding economic activities, it is expected that wastewater flowing into the public sewage network will rise. According to the Hebron Municipality's Head of Wastewater Department, the city produces 3-4 million cubic meters of wastewater a year.

The Israeli Occupation Authorities deduct an amount of ILS 1.5 from the Palestinian Money per cubic meter of wastewater disposed of by Hebron wastewater stream into Wadi as-Samen reaching the Bir as Sabe' wastewater treatment station. To maintain the wastewater stream costs the Hebron Municipality ILS 150,000-180,000 to hire machinery (including excavation, deepening



and cleaning works). The Municipality also spends ILS 10,000 a year to provide pesticides and spray areas around the wastewater stream (*Reference: ESCHLA ESCHMP Report, 2014*).

# 4.7 Affordability to Pay Due Water Bills

In the West Bank, an overall reluctance to pay due water consumption bills has resulted in the accumulation of significant debts by local government units and service providers (especially during the past 10 years). Although the economic factor is cited as a major reason for non-payment by households (those classified as poor households), a large number of households who do not satisfy due water consumption charges have a relatively high income. Those households usually consume a considerable quantity of water. These results confirm that some consumers are not willing to pay due bills despite the fact they can afford to pay. Interviewees and participants in focus group discussions emphasized that the inadequate fees collection mechanism was the main reason of general abstention from the payment of water bills. "The fee collector is not serious; he simply leaves the water bills near to the water meter or with any person," a participant households have the right to not pay due water bills for various reasons, including inadequate service delivery, equality with residents of refugee camps, or rumors reporting that bills are paid by certain agencies.

With respect to wastewater, the Hebron Municipality collects a one-time fee when a house or installation is connected to the public sewage network, further debilitating public willingness to pay subscription fees. Not to mention that the public sewage network should be repaired, the wastewater treatment plant is in need of financial resources to ensure sustainable operation. In reality, residents have been accustomed to free utilization of the public sewage network. The common culture of non-payment of subscription to public services creates a serious challenge to the Hebron Municipal Council or service providers (e.g. water utilities).

For sustainability of the proposed WWTP facility and in order to meet annual Operation and Maintenance costs, the Hebron Municipality will be required to impose a new user fee for the sewer system. The average annual operating and maintenance costs for the WWTP, including depreciation, will be US \$3.2M in year 1, increasing to US \$4.2M in year 20. Project Economic and Feasibility studies recommend that a tariff which allows for collection of full revenues while allowing for only 65% collection rates (the 2012 rate) be implemented in the early years, until collection rates improve. It is also recommended to impose a rate based on water use, rather than based on the number of connections. Current projections for a charge of US \$0.56 (NIS 2.18) per cubic meter of water to be imposed, assuming that the Municipality of Hebron can find an alternative source of funds for equipment replacement. If full depreciation rates are to be incorporated, a rate of \$1.03 (NIS 40) per cubic meter is recommended.



As a complement to user tariffs, an initial fee of US \$.013 per cubic meter (NIS 0.5) per cubic meter of treated wastewater for agriculture is proposed. This is considered low compared to the current charges of NIS 5.0 to 10 per cubic meter of water. Lastly, there will be a savings of US \$0.39 per cubic meter of water currently being paid for wastewater which reaches Israel and which is thus deducted from Palestinian VAT and customs. These three factors above enter into the financial and economic cost-benefit analysis, which is described more fully in Economic and Financial Feasibility studies for the Hebron WWTP (*Reference: ESCHLA ESCHMP Report, 2014*).

# 4.8 Hazardous Practices

According to interviews and focus group discussions conducted in the original ESCHIA assignment, the uncovered wastewater stream has generated several hazardous patterns of behavior (*Reference: ESCHLA ESCHMP Report, 2014*):

- In disregard of negative reflections on public health, some farmers use the wastewater stream to irrigate crops. However, interviewees highlighted that clients refuse to purchase crops once they realize that they originate from affected areas. Despite declining use, some farmers have continued to use the wastewater stream in the irrigation activity.
- Cesspits are emptied in an unhealthy manner (they are either discharged on adjacent streets or wastewater overflow is neglected). Also, cesspits are emptied by septic trucks, which discharge wastewater in undesignated areas. As such, wastewater is increasingly disposed of overnight and in the wintertime. Rainwater overfills cesspits, causing groundwater contamination in areas with highly- absorbent soil.
- Female participants in the women's focus group, as well as interviewed representatives of village council members and key personalities, coincided that skin diseases were widespread, particularly among children. These included skin rash and poisoning resulting from mosquitoes. Some interviewees associated the high cancer rate with the contamination resulting from the wastewater stream.



# **5 CULTURAL HERITAGE BASELINE DATA**

# 5.1 Historical Background and Cultural Value

Hebron's history goes dates back to the earliest urban human settlement of Palestine. Archaeological excavations have confirmed the existence of several successive occupations between the Chalcolithic Period (around 4000 BC) and the Umeyyad Period (661-750 AD,)

Its archeological, cultural, religious, spiritual and historical values significance and has made it eligible for UNESCO's world heritage sites nomination.

The project is considered an addition as it will cater to the old city, serving the purpose of promoting its environmental health.

# 5.2 Field work Observations

Site visits were carried out to the Hebron Governorate WWTP location and the surrounding area in general. Several interviews were carried out with municipality, Ministry of Tourism and Cultural Heritage and others to collect data about the cultural heritage and landscape elements.

# 5.3 Cultural landscape elements

Information on topography and geomorphology of the site as described in section 6.3.1 of the original ESCHIA have been confirmed. These features have had a fundamental influence on the processes of adaptation and transformation of the territories into specific typologies of historical landscapes. The topography of the site is rough and is on deep valleys surrounded by steep gradients of its slopes.

# 5.3.1 Agricultural land use

Agricultural land use is an important feature of the site's landscape. Detailed description on agricultural land use can be referred to in section 6.3.2 of the original ESCHIA.

# 5.3.2 Rural dry-stone vernacular elements

Description of Rural dry-stone vernacular elements can be referred to in section 6.3.3 of the original ESCHIA document.

# 5.3.3 Cross channeled terraces

Description of cross channeled terraces can be referred to in section 6.3.3 of the original ESCHIA document.

#### 5.3.4 Vernacular structure

Description on vernacular structure can be referred to in section 6.3.3 of the original ESCHIA document.


#### 5.3.5 Rocky and garrigue landscape

Description on Rocky and garrigue landscape can be referred to in section 6.3.3 of the original ESCHIA document.

#### 5.3.6 Caves and cavities

Description on caves and cavities can be referred to in section 6.3.3 of the original ESCHIA document.

## 5.4 Archeological elements

Included within the ESCHIA 2013/2014 was an archeological (cultural heritage) study/assessment was carried out by CH2M HILL under the USAID WRP3 program in 2005. This study concluded that:

- 1. There are no archeological sites within the boundaries proposed plant site.
- 2. There are no archeological sites within the wadi bed in the investigated areas both upstream and downstream the plant site.
- 3. Three archeological sites were found upstream the proposed Wastewater Treatment Plant site. These included:

Archeological Site No. 1: This site is a small complex of three stone enclosures and a

cistern on the gentle rocky slope about 15 to 20 meters distance from the edge of the wadi bed at coordinates 209,920 E and 598,900 N. Two enclosures are rectangular stone structures 5 meters by 4 meters and 4 meters by

4 meters. A third smaller enclosure is 1.5 meters by 2 meters. The cistern is about 10 m to the north of the enclosures; it is currently being rehabilitated by the land owners there. The three structures have 2 to 3 lines of stones still standing (about 1 meter high). The structures may be originated from the Byzantine era.

Archeological Site No. 2: This site is a recent circular stone enclosure of about 10 meters diameter and of heights up to 70 cm in the west side. The entrance is about 2 meters wide in the southern side. This enclosure encircles a natural cave of about 9 meters length (east west) and 5 meters wide (north-south) and about 2 meters high in its center. The entrance to the cave is about 1.2 meters by 1.5 meters. Inside the west part of the cave is a raised area 3 meters by 4.5 meters, 70 cm above the lower eastern part of the cave. This raised part may have been used for human use.

The cave is natural but appears modified for human use and for animal keeping as well. The use of the cave may extend back to the Canaanite era.

Archeological Site No. 3: This site is a set of six small natural rock niches with dimensions of about 1.0 meters height, 70-80 cm deep called Khuzuq Al Ghouleh. No archeological significance was observed at these niches.



# 5.5 EcoConServ's meeting with the ministry of Tourism

EcoConServ's meeting carried out with the Directorate of Antiquities on Monday, 8th October 2018 confirmed that the project area in general is not an archeological area and that no antiquities are known to exist. The team was however informed of the need to send all project documents, description and location for reviewal of the ministry for an in-depth assessment. Based on this a team will visit the location to make sure that there are no antiques.

- During construction, in case antiques are found, the contractor should report to take the necessary procedures.
- Reviewing procedures at the Directorate are fast and will not delay work in Hebron plant.

Many types of development projects can have a direct adverse impact on cultural heritage. The task manager, in consultation with national or local cultural heritage authorities as necessary, should review potential direct or indirect impacts to cultural heritage as a standard and central part of the environmental screening process (see Update no. 2: Environmental Screening).

# 5.6 Cultural landscape elements

In addition to the archeological elements identified by the study, there is a possibility that Vernacular structures, caves, terraces and other landscape elements are found in the area. These are detailed below.

### 5.6.1 Vernacular structures

The site of HRWWTP is located in the vicinity of Kherba of Qilqis, a demolished ancient settlement that has been newly inhibited.

While the whole of the territory is rich in remains and traces of ancient human activities, some spots require significant attention.

As indicated in the ESCHIA 2013/2014, the southern part of the proposed site reveals some vernacular built elements. The exact characteristics of the settlements cannot be identified at this stage, but the traces seem to point to structural elements that are more advanced than mere drystone walls and hence need further professional archeological investigations to properly trace it back.

The vernacular structures lie close but out of the project site.

Since it is not possible to predict what soil conceals beneath its surface, this study recommends a close coordination with the (MoTA) when excavations start, especially after defining the accurate borders of construction.



### 5.6.2 Caves

Potential impacts of water and sanitation project on caves represent in digging on top of ancient caves and remove their traces. Moreover, the move of heavy machines on in areas of caves and cavities expose on human being's life to danger on the one side and lead to the damage of caves on the other.

There is high possibility of finding caves scattered in the target area; if caves are historic, they should be preserved.

As in the case of vernacular structures, it is not possible to predict what is buried beneath the soil, this study recommends a close coordination with the (MoTA) when excavations start, especially after defining the accurate borders of construction.

### 5.6.3 Terraces

Terraces are a set of platforms marked on the lands to improve agricultural production and considered a traditional feature of Palestinian heritage. Terraces in the area around are subjected to demolish due to difficult accessibility to the project site. It is highly crucial not to undermine these cultural assets when designing roads toward the project site. Many terraces are laid out in the western slopes that surround the project site. The fragile structure of dry-stone walls that form these terraces requires attention and in order to keep it intact.

Terraces represent are fundamental to the Palestinian landscape and must thus be preserved and maintained.

- If some of them were affected, they should be repaired in accordance with compatible techniques and materials.
- It is necessary to rebuild demolished terraces and avoid heavy intervention.
- Terraces are composed of dry-stone retaining walls, vegetation and soil. It is necessary that all these components are recovered when any intervention takes place.

### 5.6.4 Agriculture Land use and Vegetation

As introduced in previous sections, important parts of flora are the olive groves, vineyards and indigenous trees. Since the specified project site does not include organized agricultural activities, the potential impact that may affect this component during the implementation of "Hebron Wastewater treatment plant "can be summarized in ripping of olive trees and herbs from the surrounding area during the attempts to provide proper accessibility to the site. Further cultural heritage mitigation measures



# 6 ENVIRONMENTAL AND SOCIAL IMPACTS ASSESSMENT DURING CONSTRUCTION AND OPERATIONAL PHASES

The Consultant has assessed the environmental impacts of the different components of the HRWWTP project during both the construction and operation phases. The project's components covered in the ESCHIA assessment include:

- Inlet pumping station
- Preliminary treatment including screens and grit removal
- Primary sedementation tank
- Primary sludge pumping station
- Equalization tanks
- Aeration tank
- Blower building
- Final sedementation tanks
- Return activated and surplus sludge pumping station
- Chlorine contact tank
- NaOCl dosing plant
- Gravity prethickener
- Sludge mechanical thickening and dewatering building
- Sludge pumping station
- Filterate pumping station for thickened sludge
- Digester
- Desulpharisation unit
- Digested sludge storage tank

The construction and operation of some/all of the components of the project listed above will also create additional activities/processes such as:

- 1. Solid hazardous and non-hazardous waste generation during both construction and operation phases.
- 2. Liquid waste generation during construction and treated effluent discharge during operation.
- 3. Sludge generation, handling, storage and disposal/reuse, during operation of the HRWWTP.
- 4. Development of on-site workers/staff workshops, offices and housing units during construction.

The key receptors which the Consultant has considered include

1) air (air quality and ambient noise);



- 2) Soil (soil quality, erosion, landscape);
- 3) water (water quality and resource consumption);
- 4) Biological environment (Flora and Fauna);
- 5) Human environment (Occupational health & safety, community safety/comfort, visual impacts, cultural heritage and archaeology impacts, traffic impacts and the socio-economic and health impacts)

While the impact significance assessment exercise was based on qualitative evaluation, the significance of the environmental impact was evaluated based on two factors, namely, the probability of the occurrence and the severity of effect of the occurrence.

### 6.1 Hebron Site Location and surrounding communities

The closest residential area falls about 95m (built up area 2) from the inner boundary of the road surrounding the HRWWTP site and a few houses are at a distance of about 85 m (Built up area 3) from the inner boundary of the road surrounding the HRWWTP site, location are shown in Figure 4. These distances, according to EQA's initial correspondences with the head of the Yatta municipality (Annex 14-1), were considered in violation since the municipality was asked to maintain a minimum buffer of 200m between HRWWTP and neighboring communities (by restricting building construction within that distance). The correspondence did not indicate where the 200m radius should be measured, i.e. whether the indicated distance is from the site boundary or if it refers to the HRWWTP units within the plant. Later in 2019, in a clarification sent by EQA (Annex 14-2), it was stated that after a review of the ESCHIA submitted to the Environment Quality Authority, the bilateral meetings held with the experts (who prepared the study), stakeholders, beneficiaries and the owners of adjacent lands and considering the requirements of the Water Authority concerning the engineering designs of the plant and its facilities, the results and recommendations issued were found sufficient to mitigate/reduce the environmental and social impacts of the project; such as odors, spread of insects and rodents, as well as environmental nuisance and the resulting sludge...etc., and therefore, that the buffer mentioned in the previous correspondence is not a binding requirement but rather a preventive precautionary procedure.

Since the above is no longer considered binding, and no other regulation or standards specify certain setbacks, it was found more meaningful to measure the distances from actual sources of impact as that made in Table 21 and Table 22 rather than from the boundary. All distances fall somewhere between 300-500 m, all of which are greater than the recommended 200 m.





Figure 4: Closest built-up areas (sensitive receptors)

# 6.1.1 Impacts on roads

PWA owns the project land, contract which was made with the land owner since 2005. The contract allocates the land for the construction of the proposed project. According to field observations, the project site is an empty flat land that contains no other structures. Accordingly, there is no conflict for the future use of the land. In addition, there will be no involuntary physical resettlement resulting from construction activities.

However, since the early start (April 2019) of the onsite excavations works on HRWWTP, one landlord whose land is adjacent to the Wastewater Treatment Plant (WWTP) filed a complaint<sup>4</sup> (on July 28, 2019) appealing that landowners used the very old dirt road that goes through the WWTP to reach to their land and farms. The complaint was documented in the Grievance Redress Mechanism (GRM) system for HRWWTP project.

PWA informed Hebron Municipality HM to take measures in order to reach intermediation actions to consensual understandings with the owners of grievances. HM suggested the construction of a Ring Road around the land of the treatment plant to serve as an access road to

<sup>&</sup>lt;sup>4</sup> GRM System: Complaint Code : HRWWTP 03



the adjacent lands<sup>5</sup>. The construction of the Ring road will provide the land owners adjacent to the treatment plant with the opportunity to easily and safely access their lands, since most of them are forced to take remote agricultural roads to reach their places of residence; some of the neighbors are forced to take the path of the valley of the roundabout.

The Ring road is expected to improve living standard in the region. Since this will allow the WWTP neighbors to invest and transport their agricultural products with ease and allow the Hebron Municipality in the future to enhance the level of services and infrastructure in the area. The opening of the 4-meter agricultural road is expected to reduce complaints related to access to land.

The existing road to the WWTP is a dead-end road, which can be a source of concern for everyone. Therefore, the future Ring Road will enable drivers to maneuver and to take a path leading to a safe destination for travel, whether it be to Qalqas or Al-Hailah or Yatta in accordance with the warning signs that will be provided on the site indicating the safe behavior of vehicles and pedestrians.. In addition, the road will facilitate any necessary future operation and maintenance of WWTP and will secure the privacy of the treatment plant lands.

The proposed Ring Road will be 1,500 meters in length in a specific path around the periphery of the WWTP so that the path will secure optimal benefit and welfare of the neighboring properties and the neighboring areas as well as ensuring privacy and security of the WWTP, the WWTP operators and the landlords. In addition, the ring road will consider and connect the road network around WWTP. The ring road will also serve and facilitate access to the parcels located in the second row of the adjacent land to the WWTP<sup>6</sup>.

PWA provided support to HM in conducting consultations with the landowners, and provided support to HM in consultations with Yatta Municipality YM. Yatta Municipality was provided with details and description of the proposed ring road as the road will serve residents of Yatta. PWA has received a written approval form YM to the construction of the 4m agricultural road as an exception.

### • Technical options for the right of way RoW, the ring road, are one of the following

<sup>&</sup>lt;sup>6</sup> The Palestinian Water Authority PWA has prepared a report that includes all the details related to the construction of the Ring Road. Which includes: (Ring road Description - Names of landlords located in the Ring Road path - Land Classification and land Use - The mitigation measures taken by Hebron Municipality - Hebron and Yatta Municipalities Approvals - The One to One Consultations with Landlords MOM by phone the Landlords). For the previous details, see Annex 18 Ring Road Report for HRWWTP, 6 July 2020.



<sup>&</sup>lt;sup>5</sup> Discussion of this issue was documented in the Minutes of Meeting (MoM) with the World Bank mission in September 2019.

- 4 m width agricultural road, completely deducted from state lands. Extendable to 8 m in future stage 2 (4m from WWTP lands as stage 1 and 4 m from landlords in stage 2).
- 2. 8 m width urban road, 4m from the WWTP lands and 4m from landlords.

In order to address the complaint, PWA has suggested a 4 m width agricultural road as an exception, which will allow a relatively quick implementation of a solution that meets the needs of the owners of neighboring lands and prevents further complaints and reactions. This option also meets the plans of Hebron Municipality for the development of the area (future master plan). Given the possibility of implementing the second stage, upon securing the necessary funding, HM will expand the width of the road to 8 meters and to fulfill the requirements of the Ministry of Local Governorate MoLG. HM will work with landowners on the implementation of the 8m width road.

The agricultural Ring Road will follow the rights of usage in accordance with laws and regulations of the MoLG. After construction, the road will be documented as a public road and one of the fixed assets of the city of Hebron.



Figure 5: Ring road general layout Source: Ring Road Report for HRWWTP, 6 July 2020

The surrounding area of WWTP classified as subsistence farming and grazing area with few plots planted olive trees. The ring road will facilitate the movement and access of landowners to their lands. The Palestinian Land Authority provided PWA with the final land settlement files related to WWTP and landlords. Some of the plots have several beneficiaries, the number of landlords



owner are 14 lots (see Annex 18). The figure below includes the lot numbers and land area of each lot.



Figure 6: Landlords lots numbers Source: Ring Road Report for HRWWTP, 6 July 2020

In accordance with the World Bank safeguard policies, affected people should be consulted. Consultations will be transparent and meaningful and should provide the affected people with all information regarding the road design and the land needed. People will be informed about the existence of a GRM system to enable them to raise any concerns or complaints.

Due to Covid-19 confinement, the Bank team advised PWA<sup>7</sup>, to use alternative ways of managing consultation and stakeholder engagement. During the week commencing May 18 2020 one-to-one consultations by phone were conducted individually with landowners informing them about the 4-meter agricultural road. Landowners were also informed that there will be second phase where the agricultural road will be expanded in the future to 8 meters once HM will secure funding.

<sup>&</sup>lt;sup>7</sup> In accordance with the WB Technical Note on public consultations and Stakeholder Engagement in WB-supported, operations when there are constraints on conducting public meetings during the Covid-19 pandemic.



Except for one landowner (Mohammad Salem Jebra'eel Makhamreh, owner of lot n. 33; that PWA unable to reach him because he was outside the country), PWA consulted with all the landowners and their legal authorized persons<sup>8</sup>. PWA explained the design of the road to the stakeholders, clarified reasons for adopting the 4-meter agricultural road option and asked whether they have any concerns. Consulted stakeholders agreed to the design. Some of them recommended to expand the road to 8-meter as soon as funds would be available.

PWA conducted consultations with HM regarding the 4 m agricultural road option. During the consultations PWA clarified the reasons to postpone the 8 m option to a second stage and to start immediately in the construction of the 4 m agricultural road as an exception. These reasons are mainly related to lack of funds, lengthy legal procedures and recent complaints filed and by the land owners and incidents reported by the contractor (May 2020). HM provided a written approval to the construction of the 4 m road on exceptional basis.

PWA also consulted YM regarding the 4 m agricultural road and obtained their written approval to the proposed solution on exceptional basis.

Environmental assessment is carried out for the ring road in compliance to the requirements of World Bank safeguard policy. According to this policy, the ring road project requires Environmental, Social Management Plan (ESMP), which entails mitigation measures, institutional setup, and monitoring plan. Since the ring road will be constructed within the footprint of HWWTP, therefore, the ESMP of the ring road will be highly aligned with the HWWTP ESCHIA and ESCHIA Addendum in identifying the impacts and mitigation measures related to the construction of the whole project.

Environmental and social management and monitoring will cover all aspects of the environment and social issues indicated above which will be affected by the ring road project. Most of the activities mentioned under the environmental and social aspect in the ESCHIA and ESCHIA addendum are also considered as actions that protect the environment and social issues including community health from the road construction. For convenience, these common activities will not be repeated here but are included in the ESMP matrix in the ESCHIA report and in the Environmental Monitoring and Management Matrix (Table 30-33) in the ESCHIA Addendum.

Hebron Municipality the project owner, will prepare the ESMP and ESMP matrix for the ring road, and will be responsible for ensuring the procedures for monitoring and management outlined in the ESMP are adhered to for the duration of the project. Hebron Municipality will retain an overriding audit function of all of its contractor activities, perform additional monitoring, and enforce compliance where needed.

<sup>&</sup>lt;sup>8</sup> In the case where owners of land are women, have special needs or underage.



The construction of the Road will start immediately after getting the approvals from HM and YM. The planning department in HM is responsible for finalizing the detailed design of the road based on the comments provided by the surveyors of the PWA and West Bank Water Department.

# 6.1.2 Waste Handling and Disposal Impacts

The waste generated during construction could be categorized to the following categories:

- **Excavation waste:** While soil sample results proved trace metals to be negligible, soil needs to be handled with care to mitigate environmental risks of improper disposal, especially since it was a runway for highly biologically concentrated wastewater. Mitigation measures to prevent such impacts are detailed in the ESCHMP.
- Human wastes generated by construction labor, including sewage and garbage collected from labor camps in HRWWTP locations. Disposal of sewage and garbage generated from construction labor, if not transported to adequate sites, will be a continuation of the existing sanitation situation and contribute, although to a relatively low extent, to the deterioration of water quality. It is therefore necessary that a solid waste management plan is formulated and implemented. The ESCHMP has recommended measures for sound management of such waste.

### 6.1.2.1 Waste Handling and Disposal Significance

In general impacts of waste handling during the construction of the HRWWTP is considered of Moderate significance and can be brought down to **Low significance**. Mitigation measures related to waste management included in the ESCHMP.

### 6.1.3 Noise

Traffic jam, noise/vibration caused by the heavy vehicles transporting huge amounts of materials and disposed soil will be considered. These issues can be prevented by a proper selection of access route and a restriction of the time for transportation.

Noise will also be experienced during construction activities, especially those associated with the use of heavy machinery i.e. use of cranes, heavy trucks and generators. Noise resulting equipment vary from continuous sources, such as cranes and trucks, to intermittent impacts, from excavation works.

The vulnerable groups who are susceptible to the construction noise impacts are:

- The construction workers
- The neighboring residential areas

The distance between the plant and the closest neighboring community are as described in "Hebron Site Location and surrounding communities" in section 6.1.



Tools and equipment that will be utilized during the construction phase are not known at this point yet; however, these were identified based on the Consultant's experience and data collected by the consultant from other similar projects.

Standards specified for noise intensity and exposure duration for the working environment listed in the ESCHMP, should be respected during construction.

### 6.1.3.1 Noise Impact Significance

The noise emitted during the construction of the HRWWTP will be high at the source and will decrease as the equipment moves away from source. The source is a moving point, which originates at the location of construction activities at each point in time. The closest residential area falls about 95m from the inner boundary of the road surrounding the HRWWTP site and only one house falls at a distance of about 85 m from the inner boundary of the road surrounding the HRWWTP site. While these distances are less than the precautionary 200m, construction noise impacts on surrounding communities will only be temporary. Workers are expected to be affected the most by the potentially generated noise (as detailed in section 6.2.9, occupational health and safety impacts below). The impact is temporary and <u>of moderate significance</u> but can be brought down to <u>low significance if mitigated</u>. Health and safety procedures are detailed in the ESCHMP.

### 6.1.4 Air Quality

The excavation of top soil in construction sites will cause dust emissions that vary according to the type of soil in the specific area and the excavation technique. The dust emissions result in temporary raise in particulate matter in ambient air near construction sites. Also, there are other, relatively minor sources of air emissions, such as construction trucks and power generators.

In controlling dust emissions from excavation activities, certain measures need to be implemented during excavation, soil stockpiling, soil haulage and control of exhaust of fuel combustion machinery.

The following air pollutants are expected in most of the construction activities:

- Fugitive dust emissions ( PM<sub>10</sub>, PM<sub>2.5</sub>)
- NOx and SOx
- CO in case of old motors

# 6.1.4.1 Air Quality Impact Significance

Excavation activities will be mainly limited to the site.

During the construction of the HRWWTP, trucks bringing raw materials and those transferring spoil and construction waste will be moving to and out of the site on a regular basis, thus



affecting the receptors exposed to the roads leading to the HRWWTP site. However, this impact will be of temporary and intermittent nature. The air quality impacts due to the construction of the HRWWTP is considered of moderate significance and can be brought down to <u>low</u> significance if mitigation measures are implemented.

Fugitive emission impacts on air quality should be fully controlled by applying proper health and safety procedures as detailed in the ESCHMP.

### 6.1.5 Soil and groundwater Impacts

Typical construction activities may result in

- 1. Soil and groundwater contamination due to the following:
  - Uncontrolled disposal of hazardous liquids such as spent oils, paints, or any other chemicals/additives used in concrete making and finishing works.
  - Leaching of solid wastes which are randomly disposed of.
- 2. Potential impacts on soil other than contamination include soil erosion.

# 6.1.5.1 Soil and groundwater Impact significance

In general, the soil impacts during the construction of the HRWWTP are considered of <u>Low</u> <u>significance</u> and will be controlled by applying the mitigation measures related to waste management and by maximizing the reuse of the excavated soil. Residual impact is considered negligible.

# 6.1.6 Disturbance of Traffic and Difficulty of Access

The main impact on roads traffic will be caused by the heavy vehicles transporting huge amounts of materials and disposed soil that may cause temporary blocking of the road, but for relatively short period, possibly few hours.

# 6.1.6.1 Disturbance of Traffic and Difficulty of Access Significance

Traffic disturbance impacts during the construction of the HRWWTP is considered of <u>Low</u> <u>significance as it</u> is a transitory problem that can be mitigated by the proper selection access route and implementing a restriction of the time for transportation.

# 6.1.7 Risks of Improper Management of Culturally Valuable Sites

Although no antiquity sites have been identified at the project location, the project exists in an area nominated as a UNESCO Heritage site which raises the possibilities for chance-finds during excavation works. Finding such objects may, if not properly managed, risk their loss or damage during handling/storage in construction site.



In case of chance finds, collaboration should be established between the Ministry of Tourism and Antiquities and the contractor in case of chance finds. These standards and requirements were addressed in the ESCHMP, which has defined procedures for chance-finds of antiquity objects, and measures for protection of antiquity sites during construction activities.

This impact is considered of moderate significance but can be mitigated to low significance.

### 6.1.8 Occupational health and safety impacts

Construction sites are considered the most potentially hazardous and accident-prone parts of any working environment. Excessive exposure to these construction site hazards exposes workers to injury and possible death. To prevent this, contractors should be aware of all possible dangers that can be encountered during normal business operations. According to the safety and health standards every employee shall have sound knowledge of their susceptibility to harm or injury in the workplace.

# 6.1.8.1 Occupational health and safety impact significance

Listed below are the main six construction site hazards identified by the Occupational Safety and Health Administration (OSHA), all of which will be encountered during the construction of the different components of the HRWWTP project.

- 7. **Excavation and Trenching** OSHA has recognized excavation and trenching as the most hazardous construction site operation.
- 8. **Falls** Falling from scaffolding over six feet or a fixed ladder over twenty feet is the most dangerous and common construction site hazard. The usual cause of this incident is slipping, tripping and using unstable ladders. There are many reasons for fall hazards and to eliminate such risks, employers must have a fall protection program as part of any overall workplace safety and health program.
- Stairways and Ladder According to OSHA's construction safety and health standards, stairways and ladders are important sources of injuries and fatalities among construction workers.
- 10. **Scaffolding** –The most potential risk of scaffolding is due to moving scaffold components; scaffold failure related to damage to its components; loss of the load; being struck by suspended materials; electrical shock; and improper set-up. Construction workers who assemble and dismantle scaffolding and work platforms at construction sites face the risk of serious injuries due to falls.
- 11. Use of Heavy Construction Equipment –The main causes of such accidents include: ground workers struck when a vehicle is backing up or changing direction; equipment rollovers that injure the operator; mechanics run over when brakes are not properly set; and



ground workers crushed by falling equipment from backhoes, buckets, and other moving construction vehicles.

12. Electrical Hazards - Electricity is one of the greatest hazards to workers on site. Power line workers, electricians and electrical engineers work continuously work with electricity can face exposure to this hazard on a daily basis.

Due to the high probability of occurrence and the high risk involved, the occupational safety and health impacts during the construction of the HRWWTP are considered of <u>high significance</u> if not properly controlled. The impacts will be controlled to a large extent and be brought down to <u>low significance</u> by applying the mitigation measures listed below.

### 6.1.9 Visual impacts

### 6.1.9.1 Visual Impact Significance

During the construction of the HRWWTP, the project would gradually change the aesthetics and landscape of the areas where the HRWWTP will be constructed. The Visual impacts due to the construction of the HRWWTP is considered of <u>Medium significance</u>.

No mitigation measures are required except constructing an interim fence around the site in order to improve the aesthetics as well as reducing other environmental impacts.

### 6.1.10 Social Impacts

### 6.1.10.1 Child labor

According to the Palestinian National Labor Law No.7/2000, child labor is prohibited especially in dangerous works. Children (below the age of 15 years) work almost in all projects as they receive low salaries and they are less demanding. This risk should be carefully handled in the ESMP and strict obligations and monitoring should be applied in the contractor obligations.

Due to the probability of occurrence and the high risk involved, the Child labor impacts during the construction of the HRWWTP are considered of moderate significance if not properly controlled.

### 6.1.10.2 Temporary Labor Influx

The contractors rely on recruiting workers and technicians during the pre-construction and construction works. The temporary labor influx and presence of additional workers may have impacts on the project areas in terms of:

• **Risk of social conflict:** There are no potential effects of temporary labor influx on the culture of the society in the project areas; this is due to the focus of the implementing companies on the labor, whom are often from areas adjacent to the project areas. This helps in the reduction of the hours of their presence in the project areas, as well as their limitation to the working hours only; as such laborers are not permanently resident during the project duration. Moreover, the temporary workers share the same culture and values as those in the study areas.



- Increased risk of illicit behavior and crime: the implementation companies and the contractors should revise the criminal records of the workers, in order to avoid the risk of illicit behavior and crime in the project areas.
- Increased risk of communicable diseases and burden on local health services: the implementation companies should take care of the workers' health in order to avoid the spread of the communicable diseases.
- Local inflation of prices: The prices of some food commodities and services may rise

All worker should be committed to roles and code of conduct of the contractors to ensure good behaviour and limit any potential conflict with the communities and among each other. It is very likely that impacts related to labour influx will be relevant in the project area; in case the contractors do not comply with the Code of Conduct and explain it to the workers at the construction sites.

It is very likely that impacts related to labor influx impacts during the construction of the HRWWTP are considered of moderate significance, and will be relevant in the project area; in case the contractors do not comply with the Code of Conduct and explain it to the workers at the construction site.

### 6.1.10.3 Gender Based Violence (GBV)

As per the WB 2016 Labor Influx Guidance Note, the scale of labor influx and the absorptive capacity of the local community indicate the significance of the anticipated risk of GBV<sup>9</sup>. The project can lead to an increased risk of Gender Based Violence, as women are particularly vulnerable within the context of construction projects. Gender based violence can be manifested through multiple behaviors including:

- Sexual harassment of women and girls,
- Exploitative sexual relations.

Due to the probability of occurrence and the high risk involved, the GBV impacts during the construction are considered of moderate significance if not properly controlled.

# 6.2 During Operation

6.2.1 Impacts on Water Resources

### 6.2.1.1 Background

Disposal of untreated municipal wastewater in the West Bank is a critical environmental challenge. Currently, the main practices for collecting domestic wastewater are either in main

<sup>&</sup>lt;sup>9</sup> Source: <u>http://pubdocs.worldbank.org/en/497851495202591233/Managing-Risk-of-Adverse-impact-from-project-labor-influx.pdf</u>



sewerage networks or in cesspits. The part collected by networks is often linked with a treatment plant such as Nablus West WWTP and Jericho WWTP. (ESCHIA 2013/2014)

Partially or fully treated effluent from these plants as well as untreated effluent from the areas that have no treatment plants such as Hebron and Tulkarm is then discharged to the valley without treatment. Moreover, the part collected in cesspits either percolates to groundwater aquifers or when evacuated is dumped into open wadies where part of it percolates again to the groundwater causing environmental, health and social problems. (ESCHIA 2013/2014)

In Hebron area, untreated wastewater effluent originates from Hebron City, Al-Fawar refugee camp, Israeli settlements and other wastewater producers and stone cutting industries who dispose of their wastewater into Wadi As-Samen. This Wadi extends from Hebron City upstream and continues southward crossing the West Bank boarder at its southeastern part and reaches the Mediterranean Sea at its final destination downstream. (ESCHIA 2013/2014)

As established in **Table 10**, under section 3.11.5 of this report, the Wastewater of Wadi As-Samen is highly concentrated wastewater, with BOD, COD, TSS and TDS contained at very high concentrations compared to typical values . These pollutants may eventually reach the ground waters, causing contamination to the aquifers.

Treating the wastewater from Hebron will help prevent or reduce discharge of untreated sewage, lessening the pollutant loads in the area.

#### 6.2.2 Impacts on Groundwater Quantity

As noted in the original ESCHIA document, groundwater could offer a sustainable solution to the water shortages in the Hebron area (i.e. 40 Mm3/yr.). Wastewater treatment for Hebron, along with storm water during winter months can provide for an extra 20-30 Mm3/yr.

If the effluent is used in irrigation and stonecutting industries, the proposed HRWWTP will *positively* impact the amount of water available in Hebron Governorate leading to economic, environmental and social impacts.

#### 6.2.3 Impacts on Groundwater Quality

The location of Wadi As-Samen is susceptible to pollution as it is a recharge area to the West Mountain Aquifer Basin (WMAB) and water table is relatively shallow.

The high fractured rocky area easily allows percolation of pollutants to groundwater. Figure 7 shows the directions of groundwater in the upper sub aquifer of the WMAB, the figure illustrates that the percolated water from Wadi As-Samen flows toward the existing wells in western part of Hebron Governorate.





Figure 7: Flow directions in the upper sub-aquifer

Water analysis of wells 15-09/010 and 15-09/12 (located downstream of the proposed site location of HWWTP) in both the original ESCHIA and that carried out for the addendum were used to describe the potential impact of the untreated effluent on groundwater quality. In both cases, high levels of nitrate were noticed, further emphasizing the percolation of polluted water to the aquifer.

Comparing nitrate concentrations of 122.7 mg/l in the downstream wells with normal nitrate concentrations of 15- 20 mg/l in natural groundwater, it can be concluded that nitrate pollutant load percolates to the groundwater in amounts between 107 - 102 mg/l. If the treatment will bring the nitrate level to the WHO acceptable level of 50 mg/l or to the Palestinian Standard acceptable level of 70mg/l, the pollution load will be significantly reduced, eventually leading to improved groundwater quality.

The proposed HRWWTP will *positively* impact the quality of groundwater available in Hebron Governorate leading to economic, environmental and social impacts.

# 6.2.4 Impacts on Irrigation Technologies

While nitrogen levels in treated effluent mainly depends on the treatment technology, the high efficiency of the drip and sprinkler irrigation systems can reduce the loading to the lands, thus reducing the load reaching ground water compared to surface irrigation systems. This argument is further elaborated in section 7.2.6 of the original ESCHIA.



### 6.2.5 Soil and groundwater Impacts

Potential impacts on soil and groundwater during the operation of the HRWWTP also arise from potential leaks. However, these are considered of moderate significance and can be brought down to <u>low Significance</u> if proper mitigation measures are followed.

Other potential impacts on soil and groundwater are due to waste generation, sludge management and also due to effluent use in irrigation (covered in other impacts).

### 6.2.6 Risks Associated with Sludge Handling

The following main environmental impacts are associated with sludge handling:

- Odors can be generated around sludge tanks. The effects of odors can may occur in the areas adjacent/close to sludge tanks inside and outside HRWWTP. These are covered in 6.3.8.
- Odors generated in digested sludge storage tank and disposal sites. These impacts will be reversely proportional with the degree of sludge stabilization achieved. These are covered in 6.3.8.
- Risks of pathogens transfer to workers who shall handle and transport sludge from dewatering tanks, land application, or disposal sites
- If the generated sludge is applied to agricultural land without being sufficiently stabilized, there will be risks for contaminating agricultural products with heavy metals, in addition to the same nuisance and biological risks to farmers.

The expected environmental impacts associated with sludge handling are considered of <u>moderate</u> <u>significance</u> and can be brought down to <u>low significance</u>, if proposed mitigation measures in the ESCHMP are implemented.

# 6.2.7 Risks Associated with Disposal of Final Effluent

The proposed secondary treatment followed by disinfection in the HRWWTPs will normally qualify the final effluent for meeting Palestinian effluent standards for restricted irrigation.

However, there are possibilities that some operational problems may cause noncompliance with these standards. These problems could be:

Discharge of raw sewage directly to the receiving drain through the bypass line, in case of emergencies in the HRWWTP units. The existence of this bypass line is considered a necessity for the hydraulic protection of the HRWWTP. Accordingly, the risks of using this line will be an environmental issue. Although the possibilities may be low, the environmental consequences will be acute, making the impact of <u>moderate significance</u>. Mitigation of this will be proper adherence to design requirements, (even in cases where bypasses happen, at no instance will raw sewage be discharged without treatment) as well as proper maintenance.



Mitigation measures in the ESCHMP have proposed measure for reducing these possibilities to <u>low significance</u>.

- Effluent with high chlorine dosage, that limits the potential of reuse in irrigation
- Occurrence of maintenance problems, unavailability of spare parts, and absence of necessary repairs, especially for electromechanical equipment. Such factors could have effects on the final effluent quality subsequent to reduced treatment efficiency. This issue was raised during the first public consultations and should urgently be addressed, especially owing to the close proximity of the plant to residential areas (where any malfunctioning, may cause environmental nuisance to the neighboring communities).
- The production of chlorination byproducts is another environmental issue, in which the most environmental concerns comes from trihalomethanes (THMs) and halo acetic acids (HAA5) which results from the reaction of chlorine with the organic matter in water. The issue of THMs and HAA5 risks are more commonly related to drinking water supplies, in which the disinfectants reacts with the organic matter in the water source.

Although there is no concrete proof on the health effects of these products, the USEPA indicates that there are enough evidence supporting the need to regulate THMs and HAA5. These evidences advise that such compounds can be carcinogenic and could have reproductive and development effects. Therefore, the USEPA has regulated the disinfection process in water supplies so as THMs and HAA5 concentration should not exceed 80 and 60 parts per billions (ppb) respectively as an annual average in drinking water.

The application of chlorine to wastewater final effluent is expected to produce more THMs and HAA5, than the produced quantities in water supplies, because of the relatively high organic matter in final effluent. However, the risks associated with chlorinated final effluents are significantly less than those associated with drinking water supply in terms of oral exposure of people. Such a risk is of moderate significance and can be brought down to low significance if properly mitigated.

Measures to avoid any negative impacts on effluent quality resulting from maintenance were addressed in the ESCHMP.

# 6.2.8 Odor from HRWWTP

The operation of wastewater treatment plants is normally associated with generation of odors.

Odor is one of the most pronounced impacts of operation and was one of the most concerning to the surrounding/adjacent communities, especially with regards to communities located at distances of less than 500 m. The main sources of odors in the HRWWTP are shown in Figure 8 In terms of strength, sludge tanks will generate the strongest odors.



The odors are generated from wastewater handling facilities due to decomposition of organic matter. The odor generating gases related to wastewater are mainly hydrogen sulphides (H<sub>2</sub>S), ammonia, amines, mercaptans, organic sulphides and skatole. The most effective contributor of unacceptable odor is H<sub>2</sub>S, because it is normally present in wastewater in relatively high concentration, and H<sub>2</sub>S smell can be detected and recognized by normal human olfactory system at very low concentrations.

In addition to odor, output biogas will be loaded with CO2, water vapor, other "trace" elements such as H2S and others (siloxanes). This water combined with H2S can be both toxic and corrosive (formation of sulfuric acid) and can damage pipes and electromechanical equipment.

The exposure to odors could cause poor appetite, lowered consumption of water, impaired respiration, nausea and vomiting. In addition to that there are socioeconomic impacts associated with offensive odors.



Figure 8: Sources of odor in HRWWTP



The impacts of odors are subjective; it could vary from one person to another according to the background odors in the area. Also, people tolerance to odor differs according to their exposure to similar odors. For example, the staff working in WWTPs are generally more tolerant to odors than inhabitants of neighboring residential areas. Odor measurements are therefore done through applying different folds of dilution to the odorous material, and checking the odor detection by a number of persons, which is a subjective means of measurement. Therefore, the best impact evaluation of unsatisfactory odors generated from HRWWTP is complaints from neighboring areas. Distances between sources of odor in the HRWWTP and the neighboring communities in Figure 4 have been measured and are listed in Table 21 below.

Source of Impact	Built up a	rea 1	Built up area 2		Closest Homes (Built up area 3)		Remark		
	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1			
Odor									
Secondary sedimentation tank 1	269	300	296	330	314	304	Mid tank to closest boarder		
Secondary sedimentation tank 2	324	348	242	290	263	251			
Aeration Tank	340	385	420	367	346	272	Mid tank to closest boarder		
Equalization Basin	401	416	454	424	357	310	Mid tank to closest boarder		
Primary Sedimentation Tank	426	446	490	454	380	330	Mid tank to closest boarder		
Pre-thickener, Tank 1	500	490	562	460	416	324	Mid tank to closest boarder		
Pre-thickener, Tank 2	490	497	548	460	401	315			
Digested sludge storage	479	512	538	452	427	301			

Table 21: Distance	between	sources	of odor	and	built	иÞ	areas	(m)	)
			/					1 /	e - 1



Source of Impact	Built up area 1		Built up area 2		Closest Homes (Built up area 3)		Remark
	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	
Digester 1	434	524	527	490	419	370	Mid tank to closest boarder
Digester 2	452	503	524	519	394	336	

Odor impacts are considered of <u>moderate significance</u> but can be reduced to <u>low significance</u> if properly addressed and controlled in the treatment plant as indicated in ESCHMP.

# 6.2.9 Impacts relating to Vectors

Nutrient rich wastewater has the capacity to cause mosquitoes breeding, and as the HRWWTP is relatively close to residential areas (shown in Figure 3), they can give rise to pest and vector mosquitoes. Risks of mosquito breeding however, is generally only introduced with inadequate design and operation and maintenance.

While impacts relating to vectors and mosquitos are considered of <u>low significance in the</u> <u>HRWWTP</u>. Following precautionary measures listed in the ESCHMP will make the impacts <u>insignificant</u>.

# 6.2.10 Air Emissions and Noise

WWTPs that work with the activated sludge process will generate fine spray droplets from the aeration tanks, these droplets could be dispersed for long distances, especially during periods of strong wind activity. These droplets will contain relatively high concentrations of pathogens existing in the aeration tank, and hence could cause infection risks to neighboring areas. The ESCHMP includes measures to minimize these risks to the HRWWTP workers and the neighboring community.

Other than odors, the only source of air emissions during the HRWWTP's operation are the diesel generators in HRWWTP. The impact of such air emissions is considered minor, because the diesel generators are only expected to operate temporary during power cutoffs. The compliance of generators emissions with national law standards will be sufficient to safeguard against unacceptable air emissions impacts to the neighboring areas.

Impacts of air emissions are considered of <u>moderate significance</u> and can be brought down to <u>low significance</u> with implementation of mitigation measures. These are listed in the ESCHMP.



Noise generating sources in the project are lifting station, pumps and aeration blowers, shown in Figure 9. The distance between these units and the neighboring communities (in Figure 4), are shown in Table 22.



Figure 9: Sources of noise in water treatment



Source of Impact	Built up area 1		Built up area 2		Closest Homes (Built up area 3)			
	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1		
Noise								
Inlet Pumping Station		510		541		396		
Sludge Pumping Station		500		471		332		
Filtrate Pumping Station		477		475		338		
Blower Building		425		356		248		
Return Activated and Surplus Sludge Pumping Station		341		325		279		

Table 22: Distance between sources of noise and built up areas (m)

Noise impacts are considered low and can be brought down to <u>negligible</u> to the neighboring sites because the pumps will be contained inside building. During operational phase, exposure to intermittent pumping noise, may be uncomfortable to HRWWTP staff.

Noise impacts are considered <u>moderate significance</u> and can be brought down to <u>low</u>, <u>or even insignificant</u>, to staff if mitigation measures are adhered to.

Measures of containing the noise in the HRWWTP are covered in ESCHMP.

# 6.2.11 Risk of recontamination of effluent

If the HRWWTP goes into operation without an adequate management plan for the effluent, it is likely that effluent is discharged back, to Wadi As-Samen, where it runs a risk of recontamination. A reuse study for the treated effluent is currently being prepared and will be in place before the operations of the HRWWTP start.

Risk of recontamination of effluent is considered of <u>moderate significance</u> but can be brought down to low <u>significance</u> if measures in the ESCHMP are followed.



#### 6.2.12 Impacts due to handling and disposal of hazardous substances and hazardous wastes

The hazardous substances that would be handled in HRWWTPs include liquid chlorine (sodium hypochlorite) used for disinfection, ferric chloride used for chemical phosphorus treatment and diesel for standby generators, lubricating oils and laboratory chemicals.

Sodium hypochlorite is a colorless to yellow liquid that will be used for disinfection of treated waste water in the HRWWTP. It is corrosive and could cause serious eye damage, severe skin burns, damage to respiratory system if inhaled. It is also toxic and may cause damage to gastrointestinal tract if swallowed. Sodium hypochlorite is unstable and therefore chlorine could evaporate to gas state.

The concentration of chlorine in the working environment should not exceed the legal requirement exposure. Certain precautions for safe storage should be considered in chorine buildings. This has been covered in the ESCHMP.

Also, an increase in the specified amount of chlorine for treatment would negatively affect the quality of the final effluent. Moreover, the chlorination byproducts which are produced as a result of chemical reactions of water with chlorine pose risk to human health upon ingestion.

Ferric Chloride is dosed in the anaerobic tank for phosphorous removal in HRWWTP. Ferric chloride is characterized as being a corrosive chemical and contact can severely irritate and burn the skin and eyes. Breathing Iron Chloride can irritate the nose, throat and lungs causing tightness in the chest and lungs and/or difficulty in breathing.

The main environmental risk associated with diesel storage and management is leakage. This is more critical if possible, leaks could not be observed and the diesel then disperses in soil.

Lubricating oils that could be used in the HRWWTP may have some hazardous, especially toxic, properties, however, normally the risks are minimum with handling such oils as the labor normally have high handling awareness. Higher risks will be associated with disposal of empty containers, which should be collected and sent to back to vendors.

Laboratory chemicals can also include different hazardous substances; however, the expected risks are relatively low, because of the low quantities and low exposure possibilities. Again, higher risks could arise from improper disposal of empty containers, which should be collected and sent back to vendors.



Impacts due to handling and disposal of hazardous substances and hazardous wastes are considered of <u>moderate significance</u> but can be brought down to <u>low significance</u> with proper handling. The ESCHMP includes details about the suitable mitigation measures to minimize such risks.

### 6.2.13 Risks of migrating snakes to neighboring communities

According to locals in the area, snakes have been observed at several instances in the project area. Construction activities can result in snakes migrating to the neighboring communities. Risk of such an occurrence is considered of <u>moderate significance</u> and can be brought down to <u>low</u> with proper mitigation measures.

### 6.3 Cultural Heritage Impacts

#### 6.3.1 Vernacular structures

The area of Qilqis is classified as an inhabited Kherbeh, an ancient ruins area that has recently been inhabited. The site of the HRWWTP is in close proximity to these sites. While apparent traces of ancient human activities are scattered over the territory, some spots require more attention and are more likely to host ancient traces than others.

As described in section 7.5.1 of the original ESCHIA, the southern part of the proposed site reveals some vernacular built elements. These elements are more developed than dry stone walls but they need further investigations and excavations from archeologists to elaborate on their characteristics. Since it is not possible to predict what soil conceals beneath its surface, this study recommends a close coordination with the (MoTA) when excavations start, especially after defining the accurate borders of construction.

Archeological sites are protected by the law of antiquities for the year 1966 according to article no 10. The priority measure is avoidance which is crucial to avoid any adverse effects to such sites. Since the whole Kherbeh (Qilqis) is classified as archaeological, it is better to avoid places that show signs of rich human traces.

#### 6.3.2 Caves

Potential impacts of water and sanitation project on caves represent in digging on top of ancient caves and remove their traces. Moreover, the move of heavy machines on in areas of caves and cavities expose on human being's life to danger on the one side and lead to the damage of caves.

There is high possibility of finding caves scattered in the target area; if caves are historic, they should be preserved.



### 6.3.3 Terraces

Terraces are a set of platforms marked on the lands to improve agricultural production and considered a traditional feature of Palestinian heritage. Terraces in the area around are subjected to demolish due to difficult accessibility to the project site. It is highly crucial not to undermine these cultural assets when designing roads toward the project site. Many terraces are laid out in the western slopes that surround the project site. The fragile structure of dry-stone walls that form these terraces requires attention and in order to keep it intact.

Terraces represent are fundamental to the Palestinian landscape, and must thus be preserved and maintained.

### 6.3.4 Agriculture Land use and Vegetation

As introduced in previous sections, important parts of flora are the olive groves, vineyards and indigenous trees. Since the specified project site does not include organized agricultural activities, the potential impact that may affect this component during the implementation of "Hebron Wastewater treatment plant "can be summarized in ripping of olive trees and herbs from the surrounding area during the attempts to provide proper accessibility to the site.



# 7 ENVIRONMENTAL, SOCIAL AND CULTURAL HERITAGE MANAGEMENT AND MONITORING PLAN

# 7.1 Objectives of the ESCHMMP

The objectives of this Environmental, Social and Cultural Heritage Management and monitoring plan is to propose ways for implementing mitigation measures for expected negative impacts and to monitor the efficiency of these mitigation measures based on relevant environmental indicators. The ESCHMP identifies roles and responsibilities to be carried out by the different stakeholders in implementing, supervising and monitoring the environmental performance of the project.

# 7.2 Management and Monitoring Activities During Construction Phase

### 7.2.1 MANAGEMENT OF WASTE GENERATED DURING CONSTRUCTION

### Mitigation measures:

The following mitigation measures are recommended for controlling the impacts associated with waste generated during construction activities:

- 1. Sewage/septage generated during construction should be removed by tankers and disposed of in a WWTP or city sewer. Contractors should allocate certain areas within the construction site for the offices/camps of the construction staff. There should be collection tanks for receiving wastewater from these offices/camps, which should be tightly closed and evacuated frequently to operating WWTPs, There should also be covered bins for the collection of solid waste and the construction contractor should make arrangements with the local authority or a solid waste collector to frequently remove this waste from the site and to dispose it in approved disposal sites.
- 2. Construction waste in WWTP sites should be collected in designated areas inside the construction site and hauled frequently to approved disposal sites by the local authority.

### This should be included in the contractor's management plan.

### Monitoring Activities:

Observation of accumulated waste, in terms of waste stockpiles and waste bins. This monitoring activity will be undertaken at the end of each business day by the contractor and reported in monthly reports

### 7.2.2 Management of Noise and Air Emissions

#### Mitigation measures:

 Air emissions of construction machinery should be within the Palestinian acceptable standards. This could be achieved by including this requirement in the tender document for construction works, and reviewing of contractor documentations about construction machinery exhaust emissions.



- 2. Implement a construction site management plan including the following measures:
  - Store construction materials in pre-identified storage areas.
  - Cover friable materials during storage.
  - Wet the network of unpaved roads on site.
  - Regulation of speed to a suitable speed (20 km/h) for all vehicles entering passing through the project site.
  - Implement preventive maintenance program for vehicles and equipment working on site and promptly repair vehicles with visible exhaust fume.
- 3. Minimization of exposure of construction workers to different noise levels and noise impacts according to the Law standards. This could be achieved through adjusting working hours, breaks, and exposure duration to be within permissible limits. Also, construction workers should be provided with ear muffs, if needed, especially for those working near piling machines.
- 4. Minimize construction through nighttime whenever possible to reduce disturbance to residential areas

The implementation of these mitigation measures shall be the responsibility of the contractor, while PWA will supervise and document the contractor's compliance with the above measures in monthly reports.

Monitoring activities:

- The monitoring of air emissions shall be limited to point sources including exhaust of construction machinery, as monitoring ambient air quality as result from non-point sources dust emissions may be misleading due to the possible interference of external sources of pollution. However, the supervising consultant should observe unacceptable dust emissions and document them in monthly progress reports.
- 2. Measure HC, CO and opacity for construction machinery using a gas analyzer
- Monitoring of noise should also take the above-mentioned strategy. Point sources noise monitoring should be undertaken beside noisy machinery in locations of workers' exposure. Ambient noise should be observed and noise complaints from neighboring locations should be registered.
- 4. Complaints recording would be undertaken by the supervision consultant. When complaints are received, they should be recorded and documented in monthly progress reports.

Physical monitoring of noise and air pollutants shall be the responsibility of the contractor. PWA should ensure that these monitoring activities are carried out by the contractor.

### 7.2.3 Soil and groundwater impact mitigation

Mitigation measures

1. Design and construct an impermeable protective base layer underlying area with potential hazardous liquids storage or use.



2. Implement a site construction management plan including segregation and reuse options of excavated soil.

### Monitoring measures

Document the amount of soil disposed of, and the amount of soil brought to the site.

### 7.2.4 Management of Traffic and Facilitation of Access

#### Mitigation Measures:

Because the control of traffic is the responsibility of the Ministry of Transport, all mitigation measures for safeguarding long delays of vehicles will be undertaken by them. There should be at least one worker, or guard, on duty at the construction site overnight, to help people access and to respond to any falls or accidents.

### Monitoring Activities:

The monitoring of traffic flow on roads shall be undertaken by the Ministry of Transport. The monitoring activities that should be undertaken by project include recording and documenting the contractor's access facilitation and possible, complaints from residents and falling accidents.

### 7.2.5 Management of Structures Stability

#### Mitigation measures:

- During the geotechnical investigations, prior to any hammering and earthworks on surrounding buildings should be investigated. The geotechnical report should include certain measures to be followed by the contractor according to the proximity of surrounding buildings, and the expected features earthworks.
- 2. During construction the contractor should ensure accurate implementation of the recommendations of the geotechnical report. Among the measures that could be employed:
- Apply the excavation slopes recommended by the geotechnical report.
- For providing protection against vibrations, the geotechnical report may recommend establishment of cutoff barrier through a vertical trench, whenever needed, to absorb vibrations.
- The geotechnical report should identify suitable safe slopes and buffer distances to houses during trench excavations, and contractor should ensure implementation of these slopes.

#### Monitoring activities:

The contractor should document his observation on the building's stability, as well as any complaints or suggestions from residents.



#### 7.2.6 Management of culturally valuable sites and procedures for chance find

#### Mitigation measures:

In case chance finds, antiquities or sensitive remains occur during excavation, a night guard shall be secured until the responsible local authorities or the Ministry of Tourism and Antiquities take over. Until that happens, the contractor will be responsible for:

- 1. Immediate hold of excavation works, leaving the antiquity object exactly on its found location, taking photographs to document time and status of the object, assigning guards to watch the found antiquity and contacting the Ministry of Tourism and Antiquities to handle the site.
- 2. Secure the site to prevent any damage or loss of removable objects.

The Project Environmental Officer will be notified, who in turn will notify the responsible local authorities and the Ministry of Tourism and Antiquities immediately (within 24 hours or less). The responsible local authorities and the Ministry of Tourism and Antiquities would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archeologists of Ministry of Tourism and Antiquities. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values. Decisions on how to handle the finding shall be taken by the responsible authorities and by Ministry of Tourism and Antiquities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage. All implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities according to the Environmental Management Plan. Construction works could resume only after permission is granted from the responsible local authorities. This measure is essential to make sure that the proponent has the capacity to implement the provisions of OP 4.11.

3. It is also recommended that MoTA be present during the project and to be continuously consulted.

The contractor will also adhere to the following:

- Prior to construction works the project's construction plan should be presented to the Ministry of Tourism and Antiquities, who shall identify project locations that require providing protection against possible damage to near antiquities
- During the geotechnical investigations, prior to excavation, the effects and locations of earthworks on nearby archeological sites need to be investigated. The geotechnical report should include certain measures to be followed by the contractor according to the proximity of such sites.



### Monitoring activities:

Chance find objects will be documented by the supervision consultant. The documentation should include date, time and exact location of the found object, in addition to the followed procedures until the object has been handled by the Ministry of Tourism and Antiquities.

### 7.2.7 Management of Occupational health and safety impacts

### Mitigation measures

The Contractor shall adopt an <u>Occupational Health and safety plan</u> during the construction phase. According to OSHA standards the main mitigations measures to prevent common construction hazards are:

- Workers must follow safety standards and use protective equipment to minimize hazards while trenching and excavating
- Workers should be trained to identify and evaluate fall hazards and be fully aware of how to control exposure to such risks as well as know how to use fall protection equipment properly.
- Workers must comply with OSHA's general rule for the safe use of ladders and stairways
- The scaffolding hazard shall be addressed as stated by OSHA standards. They give specific requirements for the maximum load, when to use scaffolding, bracing systems and the use of guardrails.
- To prevent Heavy Construction Equipment risk, workers should follow all construction safety guidelines necessary to eliminate the exposure to such injuries and accidents
- The best way to prevent the Electrical hazard is for the workers to be at a safe working distance away from the power lines. Other precautionary measures include guarding and insulating of the vehicle from which they might work. This would help prevent electrical hazards from injuring them while working.

The <u>Occupational Health and safety plan</u> shall also include the international construction standards requirements, including, but not limited to, the following measures:

- Identification of hazard sources to workers
- Eliminating the sources of hazards
- Workers must be trained to recognize potential hazards, use proper work practices and procedures, recognize adverse health effects, understand the physical signs and reactions related to exposures, and are familiar with appropriate emergency evacuation procedures. They must also be trained to how to use the Personal Protective Equipment (PPE).
- Inspection and testing of all equipment and machines
- Appointing an Accident Prevention Officer at the site, to take protective measures to prevent accidents
- Designation of restricted areas, such as construction sites



- Preparation of an emergency response plan
- Provision of necessary rescue equipment
- Elaboration and management of a safety guarantee plan
- Provision of appropriate and sufficient first aid equipment

### Monitoring measures

- Regular reporting of any accidents, as well as records and reports on health, safety and welfare of workers
- Continuous monitoring of all hazardous events.
- Regular inspection of workers against pathogenic agents and provision of immunization when needed

### 7.2.8 Child labor

### Mitigation measures

- The nature of the work assigned to children must be in accordance with the articles mentioned in the Palestinian Labor Law (93-99)
- The ToR to be prepared for both contractor and subcontractors will prohibit any kind of hiring
  minors in the project (Children below 15 years old);
- The ToR also will oblige the contractor/subcontractor to keep a copy of IDs of laborers in order to facilitate the monitoring of the presence of hired staff below 15 years;
- The contractor /subcontractor also will be obliged to maintain daily attendance sheets in order to verify the attendance of workers not include staff below 15 years' old.

### Monitoring measures

- The monitoring of child labor will be intensively presented in the OHS manual to be implemented during operation phase Temporary labor influx
- Monthly reports and grievance log

# 7.2.9 Temporary labor influx

### Mitigation measures

- A code of conduct for workers should be developed, all workers should be trained on. All types of inappropriate behavior of workers should be identified, and the importance of adhering to the code of conduct is emphasized. Code of conduct induction to be done every 2 weeks for the recurrent workers and the newcomers before starting work.
- Apply penalties to workers violating the code of conduct.
- Apply the full requirements related to operating the grievance mechanism including anonymous channels
- Raising awareness of the local populations about the project commitment towards communities' and the measures taken for that through consultations and focus group discussions



### Monitoring measures

- Complaints raised due to labor influx
- Documentation of corrective measures adopted
- Training on Code of Conduct

# 7.2.10 Gender Based Violence (GBV)

### Mitigation measures

- Code of conduct to be developed and signed by sub-contractor. It should include prevention of sexual exploitation and abuse and sexual harassment (SEA/SH) at workplace.
- Apply penalties to workers violating the code of conduct.
- Preparation of appropriate code of conduct that stipulates the different commitment of labor towards community groups and the different behavior that should be avoided.
- Grievance mechanism should be made available to community people

### Monitoring measures

- The monitoring of workers' compliance to the Code of Conduct when interacting with the surrounding communities to avoid behaviors such as GBV.
- Complaints raised due to GBV
- Documentation of corrective measures adopted

## 7.3 Management and Monitoring Activities During the Operation Phase

### 7.3.1 Management of HRWWTP Sludge

### Mitigation measures:

Sludge management is one of the most challenging issues that may face the HRWWTP, because of the large amounts of sludge containing high concentrations of pollutants separated from the treatment process. The sludge which is separated from sedimentation tanks has physical properties of liquids, therefore will be dewatered to ease its management and to comply to Al Minya Landfill requirements.

- Dewatering will be made by filter press to the standards required to meet Al Minya's acceptable limits and to reduce the water for ease of management and transportation.
- As an immediate measure, sludge will be hauled and disposed of in Al Minya landfill. In the future, however, its use as organic soil conditioner/fertilizer will be considered. Further discussion about the two alternatives is given in Chapter 9.
- Workers handling sludge, or working near sludge tanks in the HRWWTP should wear suitable gloves and boots. Hygiene instructions should be disseminated to workers, before they start working. These instructions should be clearly illustrated in posters placed in the offices and rest rooms of workers. This should be monitored by the safety and occupational health engineer in the field.



- Dewatered sludge would be analyzed against the Palestinian standards and the limits contained in Table 23, 24 and 25 according to sampling analysis procedure. If the sludge quality meets legal requirements, it could be reused as an organic fertilizer (when the option is considered).
- If the mature sludge batch cannot be analyzed, or it needs to be removed from the HRWWTP because no further storage space was available, then the sludge should be safely disposed in Al Minya landfill.

Parameter	EQA Decree (2016) Table 1	Concentration limit (USEPA Part 503.13)	Concentration limit ((Jordanian standard) No. 1145/1996)
Zinc	2500	2,800 mg/kg	7500
Copper	1000	1,500 mg/kg	4300
Nickel	200	420 mg/kg	420
Cadmium	10	39 mg/kg	85
Lead	300	300 mg/kg	840
Mercury	5	17 mg/kg	57
Selenium	30	100 mg/kg	100
Chromium	500		3000
Arsenic	2	41 mg/kg	75

Table 23:Limits of certain metals in sludge used as soil conditioner

Table 24:Limits of certain organic and sludge used as soil conditioner

Biological pollutants	Maximum limits
Salmonella	8/10 g dry weight
Fecal Coliform	1000/ g dry weight
Protozoa	0.01 /g dry weight
Helminth eggs	0.3 /g dry weight
Viberio cholerae	Nil
Total Nitrogen	2-3 %
Total Phosphorous	1.5-2 %
К	0.5-2 %
Organic Matter	>= 40 %
C/N	<= 1/35
NaCl	<= 10 %


The Jordanian specifications further indicate threshold pollutant level buildup in the soil, indicating need for monitoring.

Parameter	Addition rate to the elements level Kg/Hectare */ 365 days)	*Maximum permissible average annual rate of PTE addition over a 10-year period (kg/ha) (FAO standards)			
Zinc	140	15			
Copper	75	7.5			
Nickel	21	3			
Cadmium	1.9	0.15			
Lead	15	15			
Mercury	0.85	0.1			
Selenium	5	0.15			
Chromium	150	15			
Arsenic	2	0.7			

Table 25: Addition rate to the elements level Kg/Hectare \*/ 365 days)

Source: Sludge: Uses of treated sludge in agriculture in (Jordanian standard) No. 1145/1996

\*The annual rate of application of PTE shall be determined by averaging over the 10-year period ending with the year of calculation

# Awarded Contractor's Design

- Sludge treatment has been implemented by the awarded bidder.
- Technology used for dewatering is filter press advised in the ESCHIA.

#### Monitoring activities:

- The contractor should undertake continuous monitoring of pH of immature sludge. Logs of pH values should be used for controlling the lime dosing
- If mature sludge will be used in agriculture, it should be sampled each 6 months, which is the estimated period for sludge maturation, and analyzed against the parameters mentioned in Tables 23, 24 and 25.
- A periodical medical check for the workers of the HRWWTP should be undertaken to detect any related disease.

# 7.3.2 Management of Soil and groundwater Impacts

Potential impacts on soil and groundwater during the operation of the HRWWTP arising from potential leaks can be mitigated by:



- Constructing all units of the HRWWTP over a sealed concrete base layer to prevent direct contact with the underneath soil and allow for repair time.
- Design sealed tanks.
- Implement a leak detection plan

#### Awarded Contractor's Design

Is it mentioned that all tanks will be reinforced concrete over a sealed concrete base layer to prevent direct contact with the underneath soil and allow for repair.

#### Monitoring measures

Regular inspection of all components of HRWWTP for any potential leaks

# 7.3.3 Management of final effluent's quality (Disposal of final effluent)

#### Mitigation measures:

In order to reduce the impacts resulting from final effluent quality, the following measures are recommended:

- Effluent quality will comply with the limits indicated in section 2.6.16 and Table 26.
- The plant will be designed such that it is possible to manage operation with one of the process units out of order, without any deterioration of the effluent quality. The design will be able to accommodate uninterrupted flow of wastewater through the HRWWTP even in case of malfunction of major plant components. By-pass of untreated wastewater flows is not permitted. By passes due to taking parts of installation out of operation should not be allowed. In cases of malfunction of major plant components or failure, the plant will still meet 80% of maximum design load and 100% of hydraulic design load. To comply with the requirement, the HRWWTP has to have two parallel lines. During maintenance/repair of one line, the influent will be bypassed to the other line. Bypass lines should be facilitated from different points in the HRWWTP, to offer maximum flexibility.
- A preventive maintenance program should be preplanned annually before the start of the fiscal year. Maintenance in HRWWTPs should be planned during lowest peak hours (such as overnight) and months of lower sewage discharge.
- Ensure that residual chlorine in disinfected effluent does not exceed 1mg/l to meet irrigation requirements (in case it would be used in irrigation). This will be ensured through continuous monitoring of the effluent and by desulphurization.
- In case the waste water will be used in irrigation, it would need to adhere to the local laws, regional regulations and internationally acknowledged standards. These are summarized in Table 26-Table 27 below.

#### Awarded Contractor's Design

• Effluent quality will comply with required values. Chlorination and continuous monitoring of effluent are provided as recommended in the ESCHIA



- The plant has been designed so that it shall be possible to manage operation with one of the process units out of order, without any deterioration of the effluent quality.
- Bypass lines have been designed for in the awarded bidder's tender documents for maximum flexibility.
- Equalization tank has been provided to hold water that has been diverted from primary treatment tank in cases of design quality or quantity nonconformance. Wastewater will be directed to equalization basin to protect the biological treatment if received wastewater quality in according to early warning system was not suitable for biological treatment (inhibition is more than 15%)
- All primary treatment units like screens, inlet pumping station and grit/grease chamber will be sized according to storm water flow. If receiving wastewater quantity is higher than the storm flow, excess flow will be directed to equalization basin to protect the biological treatment.
- The by-pass and distribution chamber will be maintained adjacent to the Primary Sedimentation Tank and if above cases occurs during the operation, the overflow weirs will have the opportunity to direct the wastewater either to Equalization Tank or to discharge to Wadi As-Samen in worst cases. The overflow weir penstocks will have automatic control and will take position according to the measured flow and load together with operators control and decision.

	Palestinian Standards 34-2012Jordanian Standards for permissible limits for groundwater injectionV( treated wastewater standards for irrigation purposes)groundwater injectionV					WHO standards			
Chemical and biological (mg/l)	D	С	В	A	flowers	Field Crops, Industrial Crops and Critical Trees	Fruit trees and aspects of external roads and green spaces	Cooked vegetables, recreations parks, playgrounds and sideways inside cities	
BOD5	60	40	20	20	15		300	30	
TSS	90	50	30	30					
FC	1000	1000	1000	200					
COD	150	100	50	50	50	500	500	100	
DO	<1	<2	<3	<4	<2			<2	
TDS	1500	1500	1500	1200	15	300	200	50	2000
PH	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6.0 - 8.5
NO3-N	40	30	20	20	45	70	45	30	10
NH4-N	15	10	5	5					5
Total N	60	45	30	30	70	100	70	45	
Cl	400	400	400	400	400	400	400	400	
SO4	300	300	300	300	500	500	500	500	
Na	200	200	200	200	230	230	230	230	920
Mg	60	60	60	60	100	100	100	100	60
Ca	300	300	300	300	230	230	230	230	400
SAR	5.83	5.83	5.83	5.83	9	9	9	9	
PO4-P	30	30	30	30	30	30	30	30	2
Al	5	5	5	5	5	5	5	5	
As	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Cu	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Fe	5	5	5	5	5	5	5	5	
Mn	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Ni	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Pb	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Se	0.02	0.02	0.02	0.02	0.05	0.05	0.05	0.05	
Cd	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Zn	2	2	2	2	5	5	5	5	
Cr	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
В	0.7	0.7	0.7	0.7	1	1	1	1	0-2

Table 26: Permissible limits for different parameters of water reclaimed for irrigation



	Palestinian Standards 34-2012 ( treated wastewater standards for irrigation purposes)			Jordanian Standards for permissible limits for groundwater injection				WHO standards	
Chemical and biological (mg/l)	D	C	В	A	flowers	Field Crops, Industrial Crops and Critical Trees	Fruit trees and aspects of external roads and green spaces	Cooked vegetables, recreations parks, playgrounds and sideways inside cities	
E-Coli	1000	1000	1000	100	<1.1		1000	100	
К									0-2

Table 27 WHO's limits

Category	Reuse condition	Exposed group	Intestinal nematodes (arithmetic mean no. of eggs per liter	Fecal coliforms (geometric mean no. per 100 ml°)
А	Irrigation of crops likely to be eaten uncooked, sports fields, public parksd <sup>4</sup>	Workers, consumers, public	<1	< 1000
В	Irrigation of cereal crops, industrial crops, fodder crops, pasture and trees <sup>e</sup>	Workers	< 1	No standard recommended
С	Localized irrigation of crops in category B if exposure of workers and the public does not occur	None	Not applicable	Not applicable

HRWWTP effluent quality of most of the parameters of concern falls within Class B, except for the **NH4-N**, total **N** levels that are considered within class D according to Palestinian Standards PS 34-2012. In other words, since all biological and trace elements of the design are in controlled amounts and are classified as good quality, no health risks are expected as a result of the use of HRWWTP's effluent on workers' health.

While exact permissible crops are not indicated within the standard, the only restriction of crops therefore arises from the following:

- The prohibition of the use of treated wastewater for the irrigation of all kinds of vegetables according to article 8 of PS 34-2012.
- High nutrients levels falling within class D range of water quality according to the PS 34-2012.

To avoid applying nutrients in excess of that required for a balanced crop growth and potentially stimulating excessive growth of the vegetative parts of the crops, an appropriate cropping pattern and/or mixing of the treated wastewater with fresh water to reduce the nutrient application are suggested to solve the problem (User's manual for irrigation with treated wastewater, FAO), particularly the following:

• Avoiding nitrate pollution by utilizing crops that remove nitrogen from soil.

- The use of crop types (such as Sudan grass, Bermuda grass, Sudax, and Rhodes grass) that removes nitrogen from soil can be an effective strategy to avoid seepage of NO3-N through soil and consequent contamination of underground water.
- Scheduling of irrigation.
- Since nutrients present in HRWWTP's treated wastewater falls within the high end, farmers need to be aware of the need to follow proper scheduling of irrigation by controlling the frequency of irrigation and amount of water provided to the crops.
- Selecting an appropriate and efficient irrigation system to ensure high nitrogen uptake efficiency by crops and reduce nitrate losses to the soil (pollution potential). For that purpose, good design, properly installed, and adequate managed drip and micro-irrigation systems are recommended.

Mixing treated wastewater with fresh water, if possible, to reduce the nitrogen loading.

Monitoring activities:

- Continuous monitoring of HRWWTP incoming and outgoing discharges by the contractor. Daily averages should be calculated and documented
- Daily monitoring of influent and effluent water quality at HRWWTP should be undertaken. The daily monitoring should include analysis of BOD, COD, TSS, TKN and total P, total N, fecal ecoli.
- Annual audit of HRWWTP to review performance efficiency shall be undertaken by an individual environmental consultant. The audit should include reviewing all monitoring data throughout the year and recommendations to improve efficiency as appropriate.
- The standards expected to be achieved by the treatment are as in Table 26.



parameter	limit	type of sampling
Biological Oxygen Demand (BOD5)	20 mg/l	8 composite 24 h flow proportional samples
Total Suspended Solids (TSS)	30 mg/l	8 composite 24 h flow proportional samples
Total Nitrogen (TN, as nitrogen)	50 mg/l	4 composite 24 h flow proportional samples
Ammonia as Nitrogen	15 mg/l	4 composite 24 h flow proportional samples
Organic nitrogen	5 mg/l	4 composite 24 h flow proportional samples
Total Phosphours TP	10 mg/l	4 composite 24 h flow proportional samples
Faecal E-coli bacteria	200 MPN/100 ml	4 composite 24 h flow proportional samples
pH	6 to 9	

Table 28: monthly average effluent thresholds for HRWWTP fulfilment requirements (as in the bidding documents)

#### 7.3.4 Management of HRWWTP Odor

#### Mitigation measures:

The most feasible methods for controlling odors are through maintaining high performance of biological treatment of wastewater and chemical treatment of sludge. The treated effluent will be disinfected in the plant so discharge is well aerated and free of odor.

- The contractor should maintain efficient performance of biological treatment efficiency of sludge as mentioned previously. Any complaints due to unacceptable odors should be addressed immediately by identifying the source of unacceptable odor, evaluating the reason for odor emission, and improving the efficiency of the identified unit that caused the odor.
- While no minimum setback standards exist, the maximum possible buffer zones for major odor generating unit processes, namely the inlet chambers, screens, grit removal, sludge pumping stations and sludge thickening tanks should be taken into account. In practical standing, this is the distance between a unit and the closest residential areas. In terms of strength, sludge tanks will generate the strongest odors. For minimum nuisance to neighboring sites, the closer the distance to the neighboring communities, the higher the odor removal efficiency requirements of odor removing systems, namely collection and activated carbon beds described below.
- PWA should establish close communication with the neighboring areas, and assign a staff member in the HRWWTP to receive odor complaints.
- Use of Structurally supported covers for odor control.
- These are retractable, structurally supported covers control odors while providing easy access to the tank's internal components. Structurally supported cover systems allow tanks to be securely covered while providing easy access to the tank's internal components. The cover system could

be made of a sheet of high-strength, UV-protected, coated fabric tensioned across a low-profile aluminum arched frame spanning the tank opening.

Installing Activated Carbon beds, Figure 10 (Odour treatment unit)



Figure 10: Activated carbon beds

In the first stage carbon unit, high flow HF carbon unit utilizes a bed of high activity activated carbon for the removal of reduced sulfur compounds (RSC) and organics.

The HF carbon canister has a removable top and ductwork designed/engineered to facilitate quick and easy changeout of the HF carbon bed. This built-in bypass of the 1st stage carbon unit allows for the continuous treatment of H2S even while the HF carbon bed is being replaced.

The second and third stages employs very effective technology which is simply the most effective means of removing airborne H2S, the most prevalent odorous compound present in wastewater treatment.

This combination produces a complete odor control system that can continuously remove RSC, organics, and up to 50 ppm of  $H_2S$  with 99% time-weighted average efficiency which will result in the best odor reduction possible.

The HF carbon canister has a removable top and ductwork designed/engineered to facilitate quick and easy changeout of the HF carbon bed. This built-in bypass of the 1st stage carbon unit allows for the continuous treatment of H<sub>2</sub>S even while the HF carbon bed is being replaced.

# Awarded Contractor's Design

# Sludge treatment includes all recommendations in the ESCHIA, including :

- Gravity pre-thickener, mechanical sludge thickening, anaerobic digester, gas handling and storage, digested sludge storage tanks, sludge dewatering and odour treatment unit.
- Odourous air will be collected from all odour sources such as; the inlet channels, coarse and fine screens, inlet pump well, grit/grease chamber, gravity thickeners, sludge storage tank, mechanical sludge thickeners and sludge dewatering equipment.



- The odourous air will be treated in the odour removal unit and the limits of odour will be achieved on all places which confirms the contract specifications. Therefore the guarantee to achieve the odour limits will be provided from the Supplier of the odour treatment system which confirm the contract conditions and will be back-to-back.
- The system is considered to be a biological filter and further design details of the odour Treatment System will be prepared with further design submittals.
- Gravity thickeners, digestors and digested sludge tanks are all covered.
- wind barrier trees have been planned around all sources of odours <u>Monitoring activities</u>:
- Record odour complaints received from neighboring areas. The record should include name of the person who has made the complaint, time of complaint, time and duration of unacceptable odour. Complaints records should be reported as in the GRM. The complains officer in PWA should analyze odour complaints and document how each complaint was confronted
- The limits for H2S indicated in Table 29 need to be strictly adhered to.

Table 29: Limit	for Odour (	As in the	Bidding	documents)
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Maximum allowable H2S concentration or Odour dilution value at location	unit	Value
Maximum allowable H2S concentration in building	microgram/m3	45
Maximum allowable H2S concentration site boundry	microgram/m3	45

# 7.4 Management of HRWWTP Vectors

#### Mitigation measures:

Vectors and mosquitos are not expected in the HRWWTP. The most effective way to ensure vector and mosquito free environment in and around the plant is to maintain high performance of biological treatment of wastewater, taking into consideration proper design considerations and following best operational practices (to reduce mosquito breeding). These include:

- Aeration keeps the water agitated thus prevent mosquitos from laying their eggs
- Maintaining adequate depth minimizes potential mosquito breeding. This is to allow for the periodic drowning of any seasonal growth of grasses or semi aquatic vegetation
- Routine maintenance is vital to prevent the creation of conditions suitable for mosquito breeding, including regular removal of floatables, repair of cracks.
- The treated effluent will therefore be disinfected to prevent the breeding of pests and mosquitos.



# Monitoring activities:

Regular inspections for mosquito larvae should be carried out in wastewater tanks and their effluents to determine whether breeding is occurring. Mosquito larval or pupal samples can be collected by dipping into sheltered vegetated zones with a soup ladle. Generally care should be taken not to disturb the larvae by shadows or surface water agitation before dipping, and multiple dips should be performed to adequately assess population numbers.

# 7.4.1 Management of Air Emissions and Noise

# Mitigation measures:

- Fine bubble diffusers with suitably sized blowers rather than surface aeration (as described in 2.6.6) will be used to mitigate noise problem associated with aeration. Noise associated with the blowers will be mitigated by its containment/isolation.
- Cultivate intensive wind barrier trees around aeration tanks that use surface aeration and all sources of noise and odors.
- Ensure compliance of standby generators with emission standards by including certificates of emissions standards provided by the generator supplier.
- With the envisaged maximum number of items of facilities running 'on-load' the sound pressure outside an envelope of 1m radius from any item of Plant shall not exceed 85 dB(A). Where the noise cannot be reduced to a level complying with this requirement, acoustic enclosures shall be provided. Noise levels:
  - Facility installed in a separate room/enclosure: < 80 dB(A) outside the room/enclosure.
  - $\circ$  Control room: < 55 dB(A).
  - Site boundary: < 40 dB(A)
    - Hazardous warning notices indicating ear defenders are to be worn shall be installed at entrances to rooms/enclosures where the sound pressure level exceeds 80 dB(A). Machinery vibration shall not exceed the limits defined in BS7854-1.
- Engineering controls to control noise in HRWWTP will be employed, these include:
  - Redesigning equipment to reduce the speed or impact of moving parts;
  - o Maintaining equipment to replace worn parts and to lubricate all moving parts;
  - o Isolating pumping equipment
  - o Damping noise sources by using rubber pads to reduce vibration and noise; and
  - o Installing absorptive baffles in work areas to absorb generated sounds.

# Awarded Contractor's Design (Noise and Air)

- Fine bubble diffusers have been included in the activated sludge tanks
- Air blowers will be in separate blower house close to the aeration tanks. These will be centrifugal type.



- standby generators with emission standards by including certificates of emissions standards provided by the generator supplier
- The noise residual impacts mentioned in are aligned with ESCIA recommendations
- Acoustic enclosures will be provided for specific equipment such as Blowers and CHP.
- Equipment selection has taken into account the noise and air emission standards
- wind barrier trees around aeration tanks that use surface aeration, all sources of odors and noise.

The different noise mitigation measures that are to be used in HRWWTP are illustrated in Figures 11 to Figure 14.



Figure 11: Absorptive baffles





Figure 12: Isolating equipment



A branch of a steam line has three valves which produce a loud shrieking sound. The branch has two sharp bends which also produce a lot of noise. **Control measure** A new branch is created with softer bends. Tubing pieces are placed between the valves as that turbulene will be reduced or.

Example



Figure 14: Equipment redesign

# Monitoring activities:

- The contractor should monitor exhaust emissions from standby generators against the stipulations of law for carbon monoxide, Sulphur dioxide, nitrogen oxides and total hydrocarbons. The monitoring is to be performed annually during the normal operation of the generators.
- The contractor should monitor noise intensity at locations of workers in pumping stations.
   The measurements are to be undertaken annually under normal pumping stations working conditions.



# 7.4.2 Management of Hazardous Substances and Empty Containers

#### Mitigation measures:

- The location of the chlorine building should be away from workers offices and any source of ignition. The chlorine storage should be right next to the processing area. The chlorine building should adhere to local and international best technical and health and safety practices.
- The concentration of chlorine in the working environment should not exceed 1.5 mg/m3 for long term (8-hours) exposure, and should not exceed 2.9 mg/m3 for short term exposure.
- Empty containers need to be disposed of by specialized waste contractors.

# Monitoring activities:

1. Records of empty containers collected by specialized contractors, or contaminated soil transported to hazardous waste facilities should be kept in the HRWWTP, along with signatures of hazardous waste facility operator acknowledging receipt of the containers.

# 7.4.3 Management of HRWWTP Waste

#### Mitigation measures:

Separated solids from screens should be collected daily in a covered bin, until they are delivered to the solid waste contractor for disposal in domestic solid waste disposal sites. The disposal process should be documented in a contract with the waste contractor indicating disposal location, and should be checked with the local authority

#### Monitoring activities:

Monitoring of solid waste transferred to appropriate disposal sites will be through auditing waste delivery manifests available with contractor.

# 7.4.4 Vernacular structures and caves

The preemptive actions to be taken when dealing with archeological sites:

- Consolidate the structure of the archeological element using means of framework.
- Great attention must be paid to all elements of the archeological site, and call for archeologists to supervise the process of consolidation.
- Prevent any attempt to dump or bury archeological elements in the process of excavation.
- Use of the lightest methods and instruments in excavation and installing pipes around the site.

It is however recommended that all construction works in the area is carried out in close coordination with the (MoTA).

#### 7.4.5 Terraces

Terraces are fundamental to the Palestinian landscape, and must thus be preserved and maintained.



- If any terraces of them were affected, they should be repaired in accordance with compatible techniques and materials.
- It is necessary to rebuild demolished terraces and avoid heavy intervention.
- Terraces are composed of dry-stone retaining walls, vegetation and soil. It is necessary that all these components are recovered when any intervention takes place.

#### 7.4.6 Agriculture Land use and Vegetation

The mitigation measures for dealing with this situation can be summarized by:

- Routing excavation and utility lines at the furthest point of growth of plants, to reduce the number of effected elements.
- Proper scientific transplantation of olive trees is a must when changing excavation routes is not possible, and all equipment needed to accomplish such a process should be always be available.
- The propagation of any herbs and shrubs that can be affected during excavation works.
- Depend on community traditional ecological knowledge in the implementation of propagation and transplantation practices.
- Promote trees planting during before and during project implementation period.

#### 7.4.7 Management and preventing Snakes from migrating to neighboring communities

Mitigation measures

- A systematic capture/relocation of venomous species can be used as a measure in order to make the area safer for inhabitants. This should be made under the supervision of wildlife /biodiversity experts.
- It is important that updated knowledge of the snakes' species and their density in the local area is obtained. This helps in delivering specific advice and proposing effective measures on the ground.
- At local scale, a survey for the area is essential to determine the real need for such measures.

Tables30- Table 33 summarize the Environmental management plans and environmental monitoring activities.



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Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Implementation / Supervision
Impacts on roads			Positive	Construction				
Risks of improper handling of waste generated during construction	<u>Moderate</u> significance	<ul> <li>Arranging disposal of dewatering liquid by tankers in nearest sewers or WWTP.</li> <li>Proper stockpiling, haulage and disposal of non-hazardous, normal construction waste and asphalt waste</li> </ul>	<u>Low</u> significance	Preconstruction and construction	Construction Contractor for implementation	<ul> <li>PIU-PWA for preconstr uction arrangeme nts</li> <li>EQA</li> </ul>	• PIU- PWA for field supervisi on and review of signature on waste manifests during constructi on	Within normal contractor price
Noise	<u>moderate</u> <u>significance</u>	<ul> <li>Avoid working at night hours whenever possible</li> <li>Minimization of exposure of construction workers to different noise levels and noise impacts according to the law standards.</li> <li>Use of ear muffs, if needed, especially for those working near drilling machines.</li> </ul>	<u>low</u> <u>significance</u>	Construction	Contractor	<ul> <li>PIU-PWA</li> <li>Contract and supervisio n consultant to follow the guidelines</li> </ul>	Field supervision	- Contractor normal bid price

Table 30: Environmental Management Matrix during construction



Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Implementation / Supervision
Air emissions	<u>Moderate</u> significance	<ul> <li>Machinery emissions should be within the Palestinian acceptable standards.</li> <li>Store construction materials in pre-identified storage areas.</li> <li>Cover friable materials during storage.</li> <li>Wet the network of unpaved roads on site.</li> <li>Regulation of speed to a suitable speed (20 kmh) for all vehicles entering passing through the project site.</li> <li>promptly repair vehicles with visible exhaust fume.</li> </ul>	Low significance	Construction	Contractor	<ul> <li>PIU-PWA</li> <li>Contract and supervisio n consultant to follow the guidelines</li> </ul>	Field supervision	- Contractor normal bid price
Disturbance of traffic and access difficulty	<u>Low</u> significance	<ul> <li>Place suitable warning signs. Should be clearly visible at night.</li> <li>Assign one worker to be present 24 hours for helping people with difficulty in access or respond to falling accidents</li> </ul>	negligible	Construction	Contractor	PIU-PWA	Field supervision	- Contractor normal bid price



Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Implementation / Supervision
Soil and groundwater	Low significance	<ul> <li>construct an impermeable protective base layer underlying area with potential hazardous liquids storage or use.</li> <li>Site construction management plan including segregation and reuse options of excavated soil.</li> </ul>	negligible	Construction	Contractor	PIU-PWA	Field supervision	- Contractor normal bid price
Risk of improper management of culturally valuable sites	<u>Moderate</u> <u>significance</u>	Apply chance finds procedures to found antiquity objects	<u>low</u> <u>significance</u>	Construction	Contractor who will order immediate stopping of excavation	PWA and Ministry of Tourism and antiquities	Review documentation of chance find procedures	<ul> <li>Possible delays in construction works, including extra costs related to rental of unused equipment</li> <li>Cost of equipment rental to be reclaimed from PWA</li> </ul>
Occupational health and safety	<u>high significance</u>	The Contractor shall adopt an <u>Occupational Health and</u> <u>safety plan</u> during the construction phase.	low significance	Construction	Contractor	PIU-PWA	Field supervision	- Contractor normal bid price



Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of Direct Supervision	Means of Supervision	Estimated Cost of Implementation / Supervision
<u>Child labor</u>	<u>Moderate</u> significance	The nature of the work assigned to children must be in accordance with the Palestinian Labor Law	low significance	Construction	Contractor	PIU-PWA	Field supervision	- Contractor normal bid price
		The ToR to be prepared for both contractor and subcontractors will prohibit any kind of hiring minors in the project (Children below 15 years old);						
Temporary labor influx	<u>Moderate</u> significance	A code of conduct for workers should be developed by the contractor	low significance	Construction	Contractor	PIU-PWA	Field supervision	- Contractor normal bid price
		Raising awareness of the local populations about the project commitment towards communities'						
Gender Based Violence (GBV)	<u>Moderate</u> significance	Code of conduct to be developed and signed by sub- contractor. It should include prevention of sexual exploitation and abuse and sexual harassment (SEA/SH) at workplace.	low significance	Construction	Contractor	PIU-PWA	Field supervision	- Contractor normal bid price
		Grievance mechanism should be made available to community people						



Final Report

# Table 31: Environmental Monitoring Matrix during construction

Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
Risks of improper handling of waste generated during construction	Accumulation of waste	Construction sites	Observation, documentation	Daily field observation and documentation in monthly reports	Contractor	Contractor management costs
Noise and air emissions	Dust emissions	Construction site	Observation, documentation	Daily field observation and documentation in monthly reports	Contractor	Contractor management costs
	Complaints from residents	Construction site	Record and document complaints received from residents	Recording to be once complaint is received. Documentation shall be in monthly reports	Contractor	Contractor management costs
Disturbance of traffic and access difficulty	Accidents, complaints and remarks from residents	Construction site	Record and document complaints received from residents	Recording to be once complaint is received. Documentation shall be in monthly reports	Contractor	Contractor management costs
Risk of improper management of culturally valuable sites	Date, time, locations and status of chance finds	Construction site	Documentation of chance- find procedures	In case an object has been found	Contractor	Contractor management costs
Socioeconomic impacts	Complains from local community	Construction	Receive and document complaints	Complaints to be recorded once received. Documentation to be in monthly reports	Contractor	Contractor management costs
Child labor	The monitoring of child labor will be intensively presented in the OHS manual to be implemented during operation phase Temporary labor influx	Construction	Receive and document complaints	Daily field observation Complaints to be recorded once received. Documentation to be in Monthly reports	Contractor	Contractor management costs



Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
Temporary labor influx	Complaints raised due to labor influx Documentation of corrective measures adopted	Construction	Receive and document complaints	Complaints to be recorded once received. Documentation to be in Monthly reports	Contractor	Contractor management costs
Gender Based Violence (GBV)	Complaints raised due to GBV Documentation of corrective measures adopted	Construction	Receive and document complaints	Complaints to be recorded once received. Documentation to be in Monthly reports	Contractor	Contractor management costs

Table 32: Environmental management during operation

Potential Impact	Impact significance before mitigation	Proposed Mitigation Measures	Impact significance after mitigation (Residual Impacts)	Project Phase	Institutional Responsibility for Implementation	Responsibility of direct supervision	Means of supervision	Estimated Cost of implementation / supervision
Soil and groundwater Impacts	Moderate significance		Low significance					
Risks of improper handling of sludge	Moderate significance	<ul> <li>Awarded Contractor's Design includes all stages that ensures stabilization of sludge including:</li> <li>Sludge treatment</li> <li>dewatering technology (filter press)</li> <li>Continuous effluent monitoring</li> </ul>	Low significance	Operation	Contractor	PIU-PWA	- bidding scoring process	- Contractor's bid



		Provide workers with protective gear and hygiene instructions		Operation	Contractor	PIU-PWA	- occasional field inspections	- Contractor's bid
		Analyze sludge and decide accordingly whether the sludge could be used in agriculture and how is it going to be applied		Operation	Contractor	PIU-PWA, EQA and Ministry of Agriculture	- Review of procedures in progress reports	- Contractor's bid
		Dispose unused sludge in controlled Al Minya landfill		Operation	Landfill operator or Waste contractor assigned by contractor	- Hebron municipality	- Hebron municipality through regular inspections - PWA	Contractor's management costs
Risks associated with disposal of final effluent	Moderate significance	Risk of decontamination of effluent is expected if water is returned to Wadi As- Samen. To avoid such a happening, it is necessary that the work on water and wastewater master plan of the area is expedited and the implementation of the most propriety projects to prevent contamination of treated effluent	Low significance	Operation	PWA	PWA	Cannot be determined until discharge options are known.	Feasibility will have to be carried out for such an option.
		Risk of leaking will be addressed by applying preventive maintenance of structures and equipment to avoid leakage		Pre operation and operation	- Contractor and service provider to provide maintenance schedule	- PIU-PWA and	- PWA to review schedule - Contractor to inspect	- Normal management costs for contractor



• The design of the HRWWTP is such that:	design	Contractor	- PIU-PWA	
<ul> <li>It is possible to manage operation with one of the process units out of order, without any deterioration of the effluent quality.</li> </ul>				
<ul> <li>When malfunction of major plant components fails the plant still has to meet 80% of maximum design load and 100% of hydraulic design load in case of malfunction of main plant components.</li> </ul>				
• Effluent quality will comply with required values.				
<ul> <li>Chlorination provided. Residual chlorine in disinfected effluent will not to exceed 1mg/l to meet irrigation requirements (in case it would be used in irrigation)</li> </ul>				
<ul> <li>Bypass lines have been designed for in the awarded bidder's tender documents for maximum flexibility.</li> </ul>				
<ul> <li>Equalization tank has been provided to hold water that has been diverted from primary treatment tank</li> </ul>				
• All primary treatment units like screens, inlet pumping station and grit/grease chamber will be sized according to storm water flow.				



	Design, operation	and	- Design consultant for designing suitable dosing unit, and extra aeration in biological treatment - Contractor	- PIU-PWA	- PIU-PWA to review and evaluate design	<ul> <li>Dichlorination system and extra aeration requirements are included in the project budget</li> <li>Normal contractor cost</li> </ul>
			- PWA			



Unacceptable odors	Moderate significance	<ul> <li>High efficiency of biological treatment (including the use of anaerobic digesters to reduce odors.)</li> <li>Odor abatement technologies have been incorporated in design.</li> <li>Sludge will be completely stabilized through the following stages:</li> <li>Gravity pre-thickener, Mechanical sludge thickening, Anaerobic digester, Gas handling and storage, Digested sludge storage tanks, Sludge dewatering and Odor treatment unit.</li> <li>Odorous air will be collected from all odor sources such as; the Inlet Channels Coarse and Fine Screens</li> </ul>	Low significance	Operation	Contractor	PWA	•	Review of monthly reports and occasional field inspections Monitoring the maximum allowable H2S concentratio ns on the site boundary. avoid	<ul> <li>Included in above items</li> <li>PWA management costs</li> </ul>
		<ul> <li>Containers, Inlet Pump well, Grit/Grease Chamber, Gravity Thickeners, Sludge Storage Tank, Mechanical Sludge Thickeners and Sludge Dewatering Equipment.</li> <li>Odorous air will be collected from all odor sources such as; the Inlet Channels, Coarse and Fine Screens, Containers, Inlet Pump well, Grit/Grease Chamber, Gravity Thickeners, Sludge Storage Tank, Mechanical Sludge Thickeners and Sludge Dewatering Equipment.</li> </ul>						exceeding these concentratio ns.	
		• The odorous air will be treated in the Odor Removal Unit and the limits of odor will be achieved on all places which confirms the Contract Specifications. Therefore, the guarantee to achieve the odor limits will be provided from the Supplier of the Odor Treatment System which confirm the Contract Conditions and will be back-to- back.							



		Establish communication with neighboring areas		Operation	Contractor, PWA	PIU-PWA, Hebron Municipality	- Review of means of communications	- Awareness sessions - contractor and PWA management costs
		Cultivate wind barrier trees around aeration tanks		Operation	Contractor	PWA	-	<ul><li>Within contractor's bid</li><li>PWA normal price for irrigation</li></ul>
Risks of vectors	Low significance	<ul> <li>Ensure proper aeration</li> <li>tanks have been sized such that they continuously contain deep water.</li> <li>Routine maintenance including the regular control, regular removal of floatables and other flotsam from accumulation points, and the repair of cracks and other failures</li> <li>Disinfection of effluent</li> </ul>	Insignificant	Design and operation	Design consultant (contractor)	PWA/EQA	Regular inspections for mosquito larvae	Within contractor's bid
Risks of handling hazardous substances	Moderate significance	<ul> <li>Design precautions of chlorine building</li> <li>Should be included in contractor's HSE management system</li> </ul>	Low significance	Design	Design consultant (contractor)	PWA	- Review of design reports	- within design price - PWA management costs
		Empty chlorine bottles/containers, oil containers and lab chemicals containers to be returned to vendors		Operation	Contractor	PWA	- Review of cylinders manifests	<ul> <li>Contractor normal costs</li> <li>PWA management costs</li> </ul>



Risks of improper management of solid wastes	Moderate significance	Daily removal of screens waste to Al Minya landfill	Low significance	Operation	Contractor, waste contractor	PWA, Hebron municipality	- Documents review and occasional site supervision	waste contractor charges- PWA management costs
Air Emissions and Noise	Moderate significance	<ul> <li>Fine bubble diffusers have been included in the activated sludge tanks</li> <li>Air blowers will be in separate blower house close to the aeration tanks. These will be centrifugal type.</li> <li>standby generators with emission standards by including certificates of emissions standards provided by the generator supplier</li> <li>The noise residual impacts mentioned in are aligned with ESCIA recommendations</li> <li>Acoustic enclosures will be provided for specific equipment such as Blowers and CHP.</li> <li>Equipment selection will take into account the noise and air emission standards into consideration</li> </ul>	Low significance	Operation	Contractor	Contractor	<ul> <li>Review of procedures reports</li> <li>Review certificate for emission standards from an air quality lab</li> </ul>	- contractor normal price
Affordability of poor people to		Categorize the community according to affordability to pay		Preconstruction	Social Affairs Departments	PWA, Hebron municipality	- Review categorization reports	No cost
project costs		Arrange for government subsidies for non-affordable categories		Preconstruction	Hebron municipality	PWA, Hebron municipality	- Follow-up subsidy arrangements	No cost
		Arrange for installment payments for other categories		Preconstruction			- Follow-up installment arrangements	No cost



Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
Risks of improper handling of sludge	pH of fresh sludge	HRWWTP dewatering	Continuous pH sensors	Continuous for two days after laying fresh sludge (2 days average to be documented)	Contractor/PWA and Yatta Municipality to oversee the process	M&E budget
	Zn, Cu, Ni, Cd, Pb, Hg, Cr, Mo, Se, As, fecal coliforms, salmonella and escharis eggs	HRWWTP dewatering	Taking representative sample and analyze it according to requirements of USEPA	Once each 6 months, or whenever sludge is being sold	Contractor/PWA and Yatta Municipality to oversee the process	- M&E budget
	Dry solid content of at least 20% before it leaves the site of HRWWTP.	HRWWTP dewatering	Check that solid content is within acceptable range for Al Minya landfill (14 to 16%).	Each batch	Contractor/PWA and Yatta Municipality to oversee the process	- M&E budget
	Volatile solids reduction of the sludge in the digesters shall not be less than 38% - In case of aerobic digestion, the oxygen requirements of the digested solids in the sludge shall be no more than 2.0 mg/hr per gram of volatile solids at 20°C. (measure of how stabilized the sludge is)					

Table 33: Environmental Monitoring Matrix during Operation



Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
	Water borne diseases for HRWWTP workers	Identified medical center	Medical examination and lab analysis	Quarterly	Contractor/PWA and Yatta Municipality to oversee the process	
Risks associated with disposal of final effluent	Discharge rate of influents	HRWWTP	- Fixed flow meters and weirs	- Continuous, average flow to be recorded daily	Contractor/PWA and Yatta Municipality to oversee the process	- Normal contractor price
	BOD5, COD, TN, NH4, TSS, TKN and P, Fecal E.coli, PH and CL	HRWWTP influent and effluent effluent of Chlorine Contact Tank.	<ul> <li>Sampling and analysis in HRWWTP lab</li> <li>detected via online CL analyzer on the effluent of Chlorine Contact Tank.</li> </ul>	- Daily	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- M&E budget
	All parameters identified by Palestinian law	HRWWTP effluent		- Monthly	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- M&E budget
	Performance efficiency of HRWWTP	HRWWTP	Detailed environmental audit	- Annually	- Environmental consultant Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- Included in project budget



Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
Unacceptable odors	<ul> <li>Neighbors' complaints</li> <li>H2S concentrations levels on the site boundary</li> </ul>	HRWWTP	Record keeping of complaints Keep records of monitoring rounds	<ul> <li>Record once a complaint is received</li> <li>Analyze and document in monthly reports</li> </ul>	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- M&E budget
Risks of handling hazardous substances	Chlorine concentration in air	Chlorine building in HRWWTP	Chlorine detectors	<ul> <li>Continuous leak detection</li> <li>Leak incidents to be documented in monthly reports</li> </ul>	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- Normal contractor price
	Amount of delivered containers to vendors	HRWWTP	- Checking signatures in waste manifests	- Monthly check of waste documents	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- Normal contractor price
Risks of leakages	Discharge of HRWWTP	HRWWTP	- Readings of HRWWTP flowmeter chambers and weirs and calculate the difference	- Daily	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- Normal Contractor price
Risks of improper management of solid wastes	Waste delivery manifests	HRWWTP and Al Minya landfill	Auditing waste manifests and contracts	Quarterly	Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- contractor management costs



Potential Impact	Monitoring Indicator	Monitoring Location	Monitoring Methods	Monitoring Frequency	Monitoring Responsibility	Estimated Monitoring Cost
Noise and air emissions	CO, SO <sub>2</sub> , total hydrocarbons and NOx	Generators at HRWWTP	Onsite gas analyzer measurement for exhaust	Annually	Environmental consultant Contractor/PWA, Hebron and Yatta Municipality to oversee the process	M&E budget
	Noise intensity, exposure durations and noise impacts	At plant boundaries	Onsite noise meter measurements from representative locations	Annually	Environmental consultant Contractor/PWA, Hebron and Yatta Municipality to oversee the process	M&E budget
Affordability of poor people to participate in project costs	% coverage of house connections of different socioeconomic categories	PWA	Prepare statistics of covered house connections among non-affordable and affordable categories	Quarterly	Environmental consultant Contractor/PWA, Hebron and Yatta Municipality to oversee the process	- PWA, Hebron municipality management costs



Table 34	: Slurry	Management	Action	Plan
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Item	Action	Environmental & Social Risks Avoided	Requirement (Best Practice)	Resources, Investment Needs, Responsibility	Timeline	Target and Evaluation Criteria for Successful Implementation	Status
Specifically, designated disposal site options for slurry	<ul> <li>Khelit Sharbati site was acquired. The site falls at a distance of about 3 Km from the industrial zone.</li> <li>Survey, monitoring &amp; assessment of existing site</li> </ul>	Avoid illegal dumping of slurry which may lead to undesirable impacts on quality of air, water, ecology and community health and safety	<ol> <li>International best practices</li> <li>Local Palestinian legislation (listed in Table xxx)</li> </ol>	Hebron municipality	Done	Land acquisition documents	Done
Engineered design of disposal site	The marble dumping site provided by Hebron Municipality should be developed after the Environment Impact Assessment study. The dumping site should be designed, constructed, operated & maintained by an experienced designer /contractor. It is recommended that the base and sides of the cells are lined with compacted clay lining having low hydraulic conductivity to eliminate any seepage. The dumping site should also provide proper water collection network at the bottom of site for collection of slurry water.		According to EPA's engineered design requirements for industrial waste landfills	Hired contractor under supervision of EQA	Before the operation of the HRWWTP		Pending
Permits and approvals	<ul> <li>Submit updated Environmental and Social Impact Assessment (ESIA) to the Environmental Quality Authority (EQA) for ESIA approval prior to any construction activities</li> <li>Ensure compliance with the requirements of above listed permits</li> </ul>		EQA's Requirements	Hebron municipality	Before the operation of the HRWWTP	Permits obtained in a timely manner i.e. ESIA and other permits	Pending



Item	Action	Environmental & Social Risks Avoided	Requirement (Best Practice)	Resources, Investment Needs, Responsibility	Timeline	Target and Evaluation Criteria for Successful Implementation	Status
Violations identification	Identification of stone cutters practicing unauthorized dumping of slurry and taking appropriate legal action	<ol> <li>Adverse impact on quality of air.</li> <li>Adverse impact on quality of water.</li> <li>Adverse impact on ecology</li> <li>Adverse impact on health (community health and safety)</li> </ol>		Technical assistance and Hebron municipality	Periodical checks that will continue throughout the operation of the plant		Pending
Workers and Community health and safety	<ul> <li>Adopt and communicate grievance procedure for workplace and community concerns related to slurry</li> <li>Ensure the use of PPE equipment especially in the disposal site (when required)</li> <li>Ensure proper disposal and covering of slurry on site to avoid its transport by the wind</li> </ul>	Adverse impact on workers' health and community health and safety including: a. Dust generation and nuisance/health impacts on the local community b. Diseases associated with high levels of air pollutants c. Dust on agricultural lands		Hebron Municipality	During operation of the slurry dumpsite		NA
Monitoring Requirements	<ul> <li>Monthly monitoring of ambient air quality monitoring, mainly particulate Matter (PM10 &amp; PM2.5) on 24 hourlies bases</li> <li>Ground water monitoring, mainly to analyze pH, Conductivity, Suspended Solids (SS), Turbidity, Total Hardness &amp; Total Alkalinity</li> </ul>	<ol> <li>Adverse impact on quality of air.</li> <li>Adverse impact on quality of water.</li> <li>Adverse impact on ecology</li> <li>Adverse impact on health (community health and safety)</li> </ol>		Hebron municipality	Monthly during operation		NA



Item	Action	Environmental & Social Risks Avoided	Requirement (Best Practice)	Resources, Investment Needs, Responsibility	Timeline	Target and Evaluation Criteria for Successful Implementation	Status
Study on industrial waste utilization for diversion of slurry from landfills	<ul> <li>Execution of mutual agreement between private limited company, cement industries and other beneficiary units for transportation &amp; cost sharing</li> <li>Hebron Municipality may investigate the use of stone slurry as a construction material for non-load bearing structures</li> <li>Hebron Municipality may investigate possible incorporation of marble slurry in road pavement, construction of sub-grade layer by replacing a percentage of in-situ soil</li> </ul>	<ol> <li>Limited available landfilling space</li> <li>Reducing handling volumes of slurry and therefore the:         <ul> <li>Adverse impact on quality of air.</li> <li>Adverse impact on quality of water.</li> <li>Adverse impact on ecology</li> <li>Adverse impact on health (community health and safety)"</li> </ul> </li> </ol>		Hebron municipality	Before the operation of the HRWWTP		Pending



# 8 SIGNIFICANT ENVIRONMENTAL, SOCIAL AND CULTURAL HERITAGE RISKS

Risk Management Plan (RMP) is a process for proposing proactive risk management as part of the overall management of the HRWWTP. The management plan assists in outlining possible risks that might adversely impact the project and offering according mitigation measures. A risk by definition is an event that is likely to occur and could have negative impact to a project if that risk occurs.

Proper implementation of risk management will increase the HRWWTP's likelihood of success. Risk management is a continuing process that endures throughout the life of a project. It includes processes for risk management planning, identification, and control. Since new risks can be identified at any time during the project operation, some of these processes need to be updated. Carrying out a risk management exercise decreases the likelihood of risk occurrence and the impact of events adverse to the project.

Risk identification will generally start before project initiation, and the number of risks is expected to increase as the project proceeds and matures. When a risk is identified, it is assessed to ascertain the probability of occurring, the degree of impact. The probability of occurrence and the impact of the event on the project is the basis for assigning the risk degree (high, medium, low). As risk is identified, it is important that mitigation measures are proposed.

The main components of a risk management plan are:

- 1. Recognize the potential risk events and the potential impacts if risk occurs.
- 2. Investigate the risk event to determine the risk degree.
- 3. Propose mitigations measures to reduce the probability and/or impact of an adverse risk.

Table 35 outlines the risks identified in the project and mitigation measures proposed.

# 8.1 Risk of industrial waste reaching the plant

In the original ESCHIA it was assumed that the discharge of slurry from stone cutting, and chromium from tanneries into sewers in Hebron would be terminated by the time the Project would be operational. While this is the optimum situation, there exists a risk that this practice will continue at the time the HRWWTP becomes operational.

The design wastewater pollutant loads are as in Table 35. These are the values after which damage could occur to the operations.

Table 35:	Design	wastewater	pollutant	load
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		TSS	COD	BOD	TN	TP	COD/BOD
design values	g/c.d	60	140	60	10.8	1.9	2.3
	mg/l	888	2.070	888	160	28.1	

# 8.2 Risks to plant operation (investment)

The slurry may severally affect aeration and biological processes in the HRWWTP.



While this is the case, the impacts can be minor, or even negligible if properly mitigated. Mitigation measures have already been taken into account in the bidder's design, that incorporates for "early warning" monitoring equipment and allowances. These include electronic sensor system (turbidity meter) and bypass systems that were already incorporated. The turbidity meter can be used to control the operation of the plant according to the influent wastewater pollutants design load including slurry concentrations, as in Table 32.

#### Influent Electronic Sensors in Awarded Contractor's design

- Online pH, Temperature, Conductivity, Turbidity, NH4-N and COD analyzers will be provided on the inlet manhole of the WWTP. After further discussions with the instrument suppliers the location of the online analyzers would be preferred to be taken to downstream the Grit/Grease Chamber.
- Inlet flow will be measured on the pressurized line of the Inlet Pumps.
- The sampler will be located after the Grit/Grease Chamber.

# 8.3 Risks in delivering effluent quality (As a result of large pollutant loads)

While incorporating design measures to prevent slurry from reaching the plant, the equipment will cause shutdown of the system whenever slurry exceeds the set limit. While the automated shutdown will preserve the investment (HRWWTP), there will be risk that raw sewage will bypass without treatment.

To mitigate such a risk, it is necessary that Hebron municipality works closely with PWA to enforce the law on industries and impose proper disposal to the proposed sites.

Because of the delay in the approval of the Khelit Wafy site, the long-term optimal solution for slurry dumping, a number of short term and long-term mitigation measures have been realized by Hebron Municipality to avoid and prevent trucks emptying of the slurry in the sewer network leading to the HRWWTP location. These include:

- 1. Short term
- Khelit Al Sharabati landlords have shown willingness to rent the lands (surrounding the existing slurry dumpsite) to Hebron Municipality. Once the agreements are made, the capacity for dumping site will be increased, and can serve dumping for an additional year.
- Bani Na'eem quarried opening, previously disregarded due to the resident's rejection over health concerns, has been reconsidered, taking into account and addressing all the concerns. Currently, the site is undergoing an approval process.
- Hebron Municipality is in search for new private sector dumping site locations, like Khalail Al Moghrabi.
- 2. Medium and long term
- Donors have pressured the Israeli side, pushing for a documented approval for Khelit Wafy. After donor intervention and numerous meetings held between the Palestinian and Israeli sides to obtain an approval on Khelit Wafy, a verbal approval was obtained.
- The chamber of commerce and the environment authority in the main stakeholder with Hebron Municipality in the slurry issue, where is going now the studies to reuse the slurry in the cement factory and filter press usage.



 Now, Palestinian negotiating the Israeli civil administration to how the trucks will reach the Khelit Wafy dumping site because of the location in area C.

This will be carried out in addition to capacity building activities to ensure proper awareness of both the disposal requirement as well as the consequences of improper discharge to sewers. PWA, along with Hebron municipality will make the factory owners aware of the benefits of the project in delivering treated water for industrial purposes at lower costs than what they pay for normal tap water.

#### Awarded Contractor's Design

The Primary Sedimentation Tank design has been done according to high TSS removal rate of 60 % for average flow conditions versus highest hydraulic retention time of 2,2 hrs. During storm flow conditions the hydraulic retention time will be 0,9 hrs. and solids removal rate will be expected about 50 % in the worst case.

Besides, the scraper bridge travelling speed will be selected in order to let the settled sludge on the tank bottom to be scraped by the scraper bottom arm.

On the other hand, the SS load is not a major parameter on the design of Primary Sedimentation Tanks and generally vary between 1.5 to 34 kg/m2/d. For Hebron WWTP Primary Sedimentation Tank solid load will be around 29 kg/m2/d.

Therefore, there will be no need to provide lamella settlers to provide additional surface for particles to settle and the selected Primary Sedimentation Tank surface area and the volume will have enough reservation for reaching the expected SS removal efficiency.

Additionally, the sludge hoppers at the tank bottom are dimensioned (V=73,6 m3) to handle the settled sludge volume (298 m3/d) for about 4 hrs. Actually, the Primary Sedimentation Sludge Pumps will operate for 12 hrs. per day having a capacity of 25 m3/h for each. (2 mains, 1 standby).

After Primary Sedimentation Tank, the wastewater will be directed to Equalization Tank via gravity by means of the distribution chamber because of two reasons as follows:

• If receiving wastewater quality in early warning system is not suitable for biological treatment (inhibition is more than 15%), wastewater will be directed to equalization basin to protect the biological treatment.

• All primary treatment units like screens, inlet pumping station and grit/grease chamber will be sized according to storm water flow. If receiving wastewater quantity is higher than the storm flow, excess flow will be directed to equalization basin to protect the biological treatment.

The by-pass and distribution chamber will be maintained adjacent to the Primary Sedimentation Tank and if above cases occurs during the operation, the overflow weirs will have the opportunity to direct the wastewater either to Equalization Tank or to discharge to Wadi As-Samen for worst cases. The overflow weir penstocks will have automatic control and will take position according to the measured flow and load together with operators control and decision.

# 8.4 Risks that the recommended Site's permit is delayed

The recommended option for slurry disposal on the long term is Khelit Wafy site, as it meets all technical requirements in terms of capacity, distance and convenience to the Palestinians. Hebron municipality is therefore required to expedite the approval process so that it is ready to receive industrial waste by the time the project becomes operational as discussed in Section 8.3.



As a long-term mitigation, Hebron municipality might need to explore options of reuse, such as inviting private sector investors to build cement plants and utilize the slurry as a raw material. While this could be an option, it would need to be investigated in depth for technical feasibility and its impact on the area.

# 8.5 Risks that industrial violations (illegal dumping into the sewer system) continues despite offering of disposal options

Violators may always exist, despite the support of Hebron municipality in the provision of a convenient dumping solution. It is therefore very important that enforcement of the law is taken seriously by Hebron municipality and that it works in parallel with the construction of the HRWWTP plant so that by the time it is operational, violations are reduced to the limit that can be taken by the plant.

# 8.6 Risks that industrial Chromium from tanneries reaches the plant

The discharge of chromium from tanneries would inhibit the nitrification process and render sludge unusable for agricultural use. The tannery industries, however, are already equipped with Cr6+ precipitation and therefore do not pose any risks to the biological process in the HRWWTP.

# 8.7 Risks that industrial loads from olive mills and slaughterhouses reach the HRWWTP

While it is recommended that slaughterhouses and olive oil factories construct pre-treatment units for their waste products to prevent it from reaching the plant, the risk from these industries is very low due to their very little numbers. In addition, olive mills only operate seasonally, making the risk even smaller.



Fable 3	6: Risk	's manage.	ment plan
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Component/Criteria	Review of Risk	Risk Rating	Mitigation measure	Responsibility	Time	Corrective Action in case of occurrence			
Project Technical Risks / Risks to the Unit operations of the plant									
Technical complexity	<ul> <li>Most of the technology used is conventional to treatment plants. No dependence of project design on untested or unfamiliar technologies or processes</li> <li>PWA have many experiences with running similar projects that are currently operational.</li> </ul>	Low	No mitigation is required	None	None	None			
Capacity of Electronic system (sensors) and Bypass	A risk that the sensors are under designed- slurry reaching the plant is at greater amounts than design capacity, causing plant shut down.	Medium	It is expected that by the time the HRWWTP is operational, all technical, legal and capacity building requirements are being implemented and slurry reaching the plant is minimum.	Consultant, Contractor	During Design	<ul> <li>Take reasonable design amounts into consideration</li> <li>These amounts need to be continuously monitored.</li> </ul>			
Condition of Electronic system (sensors) and Bypass	Risk of malfunctioning of sensors, causing slurry to reach the plant	Low	Sensors will need to be continuously maintained to avoid any breakdowns to the system. A standby system is also recommended to ensure continuous coverage.	Contractor	Operational phase	<ul> <li>Continuous maintenance</li> <li>Standby system</li> </ul>			
Industrial waste									


Component/Criteria	Review of Risk	Risk Rating	Mitigation measure	Responsibility	Time	Corrective Action in case of occurrence
<ul> <li>Risk that slurry discharge practice in HRWWTP site continues at the time the plant is operational</li> <li>Risk that slurry discharge practice in manholes continues</li> </ul>	Slurry hauled and dumped on the HRWWTP site will result in entry of slurry to HRWWTP, possibly in amounts greater than the planned capacities, causing sensors to shut down the system. If the incident is occasional, only occasional shutdown will happen. If the practice itself is the trend at the time of operation, the wastewater treatment plant will cease to deliver to its original treatment capacity, even though the investment itself will not be affected.	medium risk if properly mitigated	<ul> <li>Monitoring of illegal connections Slurry needs to be disposed of in Khelit Sharbati site or rerouted away from the plant</li> <li>Hebron municipality to tie licensing renewal of stone cutting industries with a certain slurry amount delivered by each factory to Khelit Sharbati site</li> <li>Security appointed at the HRWWTP to prevent illegal trucked and hauled slurry from disposing on the HRWWTP site</li> <li>introduce secure covers to manholes upstream of the plant</li> <li>PWA need to work together towards</li> </ul>	Municipality & Councils in the project area, PWA, Security Forces.	Operational	*Legal and judicial accountability *Take appropriate action to minimize time the non- operational time



Component/Criteria	Review of Risk	Risk Rating	Mitigation measure	Responsibility	Time	Corrective Action in case of occurrence
			<ul> <li>implementing the law</li> <li>Technical team to work with stone cutting industries to ensure ending the practice</li> </ul>			
Chromium discharges from tanneries	Currently, tanneries dump waste material in sewage stream and treated at the Israel Plant. The Israelis charge the Palestinians a monthly 13000 ILS for each ton of wastewater treated.	No risk to the project	No mitigation is required	Municipality & Councils in the project area, PWA, Security Forces.	Operational	<ul> <li>Legal and judicial accountability</li> <li>Take appropriate action to minimize time the nonoperational time</li> </ul>
Slaughterhouse discharges	<ul> <li>Nature of waste is similar to municipal wastes, but with higher pollutant loads.</li> <li>Numbers of slaughterhouse industries are insignificant</li> </ul>	No risk to the project	<ul> <li>Monitoring is required to follow the load trend</li> <li>Law enforcement</li> </ul>	Municipality & Councils in the project area, PWA, Security Forces.	Operational	<ul> <li>Legal and judicial accountability</li> <li>Take appropriate action to minimize time the non-operational time</li> </ul>
Transportation costs to treatment sites	High volumes of slurry transported to treatment site, could incur unacceptable transportation costs to factory owners, resulting in recurrence of illegal dumping of slurry.	Low	*Each stone cutting factory should have a pretreatment manufacturing for the slurry or alternatively have one central pretreatment facility properly designed to dewater slurry and reduce its volume, accordingly the transport costs. *Capacity building *Law enforcement	Municipality & Councils in the project area, PWA	Operational	*Legal and judicial accountability *Take appropriate action to minimize time the nonoperational time



Component/Criteria	Review of Risk	Risk Rating	Mitigation measure	Responsibility	Time	Corrective Action in case of occurrence
			should be applied by PWA and Hebron municipality			
Moisture content of slurry affecting the dumpsite performance	slurry without pretreatment dumped into dumpsite, causing instability	Low	*Each stone cutting factory should have a pretreatment manufacturing for the slurry to bring water down to acceptable limits, above which it will not be accepted. Implementing criteria for moisture content of slurry received in Khelit Wafy should go hand in hand with law enforcement to avoid illegal dumping.	Municipality & Councils in the project area, PWA, Security Forces.	Operational	
High costs of onsite slurry pretreatment units	The high costs of pretreatment units may result in rejection by stone cutting industries	Low	*Because the cost of the pretreatment unit is 40,000 US dollars and to encourage stone cutting factories to invest in this unit there should be incentives from the governments like tax deduction.	Municipality & Councils in the project area, PWA, Security Forces.	Pre-Operations	Implement properly designed central facility and provide treatment with a fee. Consultant of the Technical Assistance completed a feasibility study for the implementation of a centralized slurry pre- treatment plant. Two sites were proposed: (i) the



Component/Criteria	Review of Risk	Risk Rating	Mitigation measure	<b>R</b> esponsibility	Time	Corrective Action in case of occurrence
						Livestock Market and (ii) a land near the temporary dumping site at Khalet Al Sharabati. The municipality of Hebron has allocated the animal market land for central slurry pre-treatment plant. A detailed design is required and work is expected to commence, subject to COVID-related restrictions. Bank's funding partner (AFD) has shown willingness to provide funds for this facility.
Risks that the recommended Site's permit is delayed			<ul> <li>Because of the delay in the approval of the Khelit Wafy site, the long-term optimal solution for slurry dumping, a number of short term and long-term mitigation measures have been realized by Hebron Municipality, including:</li> <li>Short term</li> <li>Khelit Al Sharabati landlords have shown willingness to</li> </ul>			



Component/Criteria	Review of Risk	Risk Rating	Mitigation measure	Responsibility	Time	Corrective Action in case of occurrence
			rent the lands (surrounding the existing slurry dumpsite) to Hebron Municipality. Once the agreements are made, the capacity for dumping site will be increased, and can serve dumping for an additional year. Bani Na'eem quarried opening, previously disregarded due to the resident's rejection over health concerns, has been reconsidered, taking into account and addressing all the concerns. Currently, the site is undergoing an approval process.			



Component/Criteria	Review of Risk	Risk Rating	Mitigation measure	Responsibility	Time	Corrective Action in case of occurrence
			<ul> <li>Hebron Municipality is in search for new private sector dumping site locations, like Khalail Al Moghrabi.</li> <li>Medium and long term</li> <li>Donors have pressured the Israeli side, pushing for a documented approval for Khelit Wafy. After donor intervention and numerous meetings held between the Palestinian and Israeli sides to obtain an approval on Khelit Wafy, a verbal approval was obtained.</li> <li>The chamber of</li> </ul>			
			commerce and			



Component/Criteria	Review of Risk	Risk Rating	Mitigation measure	Responsibility	Time	Corrective Action in case of occurrence
			<ul> <li>the environment authority in the main stakeholder with Hebron Municipality in the slurry issue, where is going now the studies to reuse the slurry in the cement factory and filter press usage.</li> <li>Now, Palestinian negotiating the Israeli civil administration to how the trucks will reach the Khelit Wafy dumping site because of the location in area C.</li> </ul>			
• Laws and regulation	15					
law enforcement is not properly carried out		Medium	<ul> <li>Capacity building to officials including Municipality &amp; Councils in the project area.</li> </ul>	Municipality & Councils in the project area, PWA, Security Forces	Pre-operation and continuous renewal of training rounds	Capacity building



Component/Criteria	Review of Risk	Risk Rating	Mitigation measure	Responsibility	Time	Corrective Action in case of occurrence
			PWA, Security Forces to train them on coordinating together to ensure proper enforcement			
Environmental Risks						
Discharges of sewage downstream of the HRWWTP with a potential of pollution of the effluent, water wells pollution.	If water from HRWWTP are discharged to Wadi As- Samen, it will be decontaminated	medium risk if properly mitigated	<ul> <li>Explore options of discharging treated effluent including:</li> <li>Expedite the work on water and wastewater master plan of the area</li> <li>Implementation of the most propriety projects to prevent contamination of treated effluent</li> </ul>	PWA	Pre-operation	Carry out feasibility study to explore the different mitigation measures.
Natural Disasters						
Seismic Event	May result in structure damage and broken pipes	High but can be mitigated	<ul> <li>Following the Israeli and Palestinian seismic design criteria</li> <li>Following the PA construction regulations</li> </ul>	Consultant, Contractor	During Design and Construction Phase	<ul> <li>Stop all mechanical equipment.</li> <li>Inspect all installations immediately after earthquake and report any structure failure.</li> <li>Anticipate follow-up tremors.</li> <li>Identify intact basin(s) within the HRWWTP</li> </ul>



Final Repor	t
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Component/Criteria	Review of Risk	Risk Rating	Mitigation measure	Responsibility	Time	Corrective Action in case of occurrence
						<ul> <li>where raw sewage or treated effluent can be diverted.</li> <li>Stop discharge for agricultural reuse.</li> <li>Prepare a damage control report</li> </ul>
	** Stop of mechanical part *Increase the wet flow	Medium	Install the HRWWTP elements at a suitable elevation.			- Monitor all installations and water bodies.
Flash Flood			Protect the HRWWTP from flooding.	Consultant & Contractor.	Construction Phase	- Conduct complete site inspection when flood subsides.
			Install equalization tank.			- Stop discharge for agricultural reuse.
					During Design and Construction	- Activate standby system
Power Failure	- Stop the treatment process	Medium	Provide standby power.	Consultant & Contractor.	Phase	- Investigate source of power failure.



# 9 ANALYSIS OF ALTERNATIVES

The objective of the analysis of alternatives at this stage is to verify the analysis made on the 2014 report in the light of the new baseline conditions near the project location. Some of such alternatives include no project alternative, dewatering, aeration technologies, options for sludge management and options for industrial zone waste management.

# 9.1 No project alternative

A "No project" scenario, is a continuation of the sanitation situation in the area, meaning water borne diseases, psychological stress resulting from odors, vectors, stagnant water, unavailability of appropriate urban drainage.

The HRWWTP will offer all communities, a noticeable improvement in environmental, health and livelihood including:

- Prevention of seepage of raw untreated sewage water to the groundwater and consequently an improvement in its water quality.
- An improvement to the current acute odor/vectors problems resulting from the running sewage wastewater.
- Reduce the health and social hazards of raw sewage on the community
- Promote economic gains and social benefits arising from construction/operation jobs
- Improve sanitation services

These benefits of the project were confirmed during consultations carried out with community members (described in the last two chapters) who voiced general positive consensus of the HRWWTP and expressed immense need for the project.

Most consulted individuals and community members emphasized the project's contributions in upgrading the inhabitant's quality of life, improving public health, reducing water borne diseases, improving psychological stress resulting from odors, vectors, stagnant water, unavailability of appropriate urban drainage, ... etc.

Some individuals from Al Heila village have expressed concerns on the project due to close proximity to their houses. Having considered their concerns on environmental impacts of the project, however, the consultant has found the gains to greatly outweigh the consequences, which can be almost non-existent with proper mitigation. Contrary to their concerns, Al Heila residents will benefit greatly from the improvement of the current sanitation condition and the replacement of running sewage by a treatment plant.

Moreover, the HRWWTP will directly contribute to achieving the objectives of the regional master plan project, which targets significant improvement to sanitation and water resources management in the project area through:



- Treatment of the current wastewater stream now discharged in Wadi As-Samen,
- Reduction of nutrient loads to the Wadi and to the Eastern Aquifer from untreated wastewater discharges;
- Sustainably managed treatment capacity of projected additional wastewater loads in the future, with a thirty-year planning period to be considered;
- Increase of water availability for irrigating farm lands;
- Reduction in the annual wastewater treatment charges levied by the Israeli Occupation Authorities;

Other benefits will include:

- Increase organic matter for the lands benefiting from treated biosolids applications, if feasible, and
- Increase in Biosolids available for other uses if determined to be beneficial.

The HRWWTP will be continuously monitored by a dedicated Monitoring and Evaluation unit (M&E) who will be responsible for verifying the expected improvements of the project.

# 9.2 Site Selection

### 9.2.1 Alternatives and Selection Criteria for HRWWTP Site

Four sites, namely Ad Dhahrya, Yatta, Hebron and Bani Na'im Sites were originally considered as potential locations for the RWWTP.



Figure 15: Alternative suggested sites for regional WWTP



While Bani Na'im and Ad Dahiriya Sites were found favorable compared to the other two, Hebron Municipality and PWA were not able to secure the sites (both sites have been reserved for other purposes).

The Hebron site was therefore identified as the best suited available site and was approved by all parties including the Joint Water Committee and the Israeli Civil Administration of the West Bank at the time of the previous feasibility studies which completed in 2005 for implementation of the first phase of the Hebron Master Plan.

Being the only currently available site, analysis within this section has been used to verify its suitability rather than to carry out a weighing exercise against the other initially suggested (but unavailable) sites. This approach investigated the flaws identified earlier and examined how they were dealt with. Comparison with other sites was only carried out to verify its performance in comparison with the other previously recommended sites, Table 37.

The Hebron site is located 2 to 3 km south of Hebron city at approximate coordinates 98,500 n and 160,000 e and north of El Heila village. The area has a relatively flat topography, is classified as high to moderate value agricultural land is located on a flood plain in Wadi as-Samen. Initially, the Hebron site (current location) was eliminated from a constructability perspective because of its positioning within Wadi Al-Nar (Al-Khalil), location which required major site work (including the need for extensive rock blasting and removal.). Its location on the bed of a wadi/ flood plain made it susceptible to flood risks, i.e. To allow natural crossing of runoff upstream of the HRWWTP without causing any flooding at the site, a wadi diversion was designed. The rerouting of the wadi allows the HRWWTP units to be constructed in the Wadi while diverting the runoff from the land upstream through the HRWWTP without the risk of flooding. A hydraulic flood routing model of Wadi As-Samen was developed to support the diversion implementation of the Wadi.

To overcome the constructability challenges and avoid rock blasting (which is not permitted), the contractor designed a layout for the treatment units in a way that suit the site constraints and such that excavation requirements are minimized. Units have been designed to be located at different levels to minimize the excavation. Heavy excavators and earthmoving equipment were mobilized for excavating through hard rock. This includes special rock saws (quarry saw) to cut areas of very hard rock. Excavated rock has been stored on the site to be processed and used as backfill material around the structures and landscape the site.

The following points verify the basis of Hebron site selection:

- Land acquisition as afore mentioned.
- The distance from neighbors/few neighbors.
- Natural landscape of the wadi.
- The proposed site is near to the existing sewer collection system.



- The proposed site will contribute to solve pollution problem of the wadi caused by stone cutting industries, mainly the slurry. The industrial wastes generated from the industrial area in Hebron city will be separated from the municipal wastes.
- The readiness of stone cutting industries and farms to reuse treated wastewater.



	Ad Dahriya site	Hebron Site	Bani Naeem
Location	The Ad Dhahriya site is located approximately 4km southeast of the town of ad Dhahriya and 2 km north of Khirbat Zanuta (coordinates 87,500 n and 149,000 e on the Palestinian grid system).	<ul> <li>2 to 3 km south of Hebron city at approximate coordinates 98,500 n and 160,000 e.</li> <li>WWTP site located south of Hebron City and north of El Heila village</li> </ul>	<ul> <li>Located southeast of the town of Bani Naim.</li> <li>Site is 8-10 km southeast of Hebron city at coordinates of 97,500 N and 173,500 E</li> </ul>
Land type, area available, ownership and appropriation	Not available- The owner is private and refused to sell it to Governorate	<ul> <li>This site was selected earlier for the HWWTP and was approved by all parties including the Joint Water Committee and the Israeli Civil Administration of the West Bank back at the time of the previous feasibility studies which was completed in 2005 for the implementation of the first phase of the Hebron Master Plan. As a consequence, all</li> <li>attempts shall be made to utilize this site for the HWWTP.</li> <li>Owned by PWA, would be best to utilize this site for the HRWWTP.</li> <li>The site includes sufficient land for construction of the initial and ultimate stages of Hebron Regional</li> </ul>	Not available- mosque built

Table 37: Comparison between alternative sites for sitting the Regional wastewater facility



	Ad Dahriya site	Hebron Site	Bani Naeem
		WWTP.	
Constructability (Site access, topography and slope, geotechnical and foundational conditions)	• Flat valley that is potentially suitable for construction works.	• The proposed site was originally identified as somewhat difficult for construction due to elevation difference across the plant site.	
		• The lower sections of the plant site are located in the Wadi flood plain, at an ox-bow of Wadi As-Samen and flood proofing measures will be required.	
		Both constructability issues were     overcome	
Potential aquifer impacts	Located in the southwest of the	HWWTP is located within the south-	The Bani Na'im site is located in the
	hydrologic divide separating the	The formations that are outcropping in	Eastern groundwater basin.
	western and eastern groundwater basin.	the plant site are classified as recharge areas for the aquifer.	Groundwater flow is primarily
	It is located in the recharge area of the	Water table is shallow in the area of the	eastward, towards the dead sea. The
	western basin where groundwater	HWWTP.	upper aquifer is dry, and the
	basins are downward and groundwater	This however, is not expected to be a	piezometric surface of the lower
	is flowing to the south west. Depth to	problem, since all tanks are made of	aquifer is very deep (about 132 km
	groundwater is relatively shallow based	reinforced concrete and are therefore	below the ground surface), making the
	on data from adjacent wells. Surficial	leak proof.	site less susceptible to aquifer impacts.
	geology consists of fractured and		
	porous carbonate rocks that form a		



	Ad Dahriya site	Hebron Site	Bani Naeem
	potable upper aquifer.		
Site reuse potential, land suitability	• The site area is relatively.	<ul> <li>The two core areas identified for TWW reuse in Yatta and along Wadi As-Samen are easily accessible from the proposed site (high quality arable lands for near full utilization of the TWW produced at the plant). Therefore, the site wastewater effluent reuse potential is quite high throughout the year.</li> <li>stone cutting industries are willing to reuse treated wastewater in their industries.</li> </ul>	Bani Naeem site has a high potential for reuse and approximately 1100 ha of suitable agricultural area. The land is immediately available for reuse effluent application with no need to change existing agricultural practices. There is enough reuse area available for full plant buildout.
Proximity to existing and future urban areas	• The site area is relatively unpopulated	<ul> <li>Relatively unpopulated except for El Heila village. This however is not problematic because:</li> <li>Unit operations have been built further than the minimum precautionary 200 m indicated by EQA</li> <li>The HRWWTP is North of the village, and is therefore upwind</li> </ul>	The Bani Naim site is in a remote area that is not likely to have adverse impacts on urban populations. The closest settlement is considered too far for noticeable impacts.
Floodplain elevation, need for flood	The AdDahiriya is located within the	To allow natural crossing of runoff	Treatment site is bound by two small



	Ad Dahriya site	Hebron Site	Bani Naeem
protection	historical flood channel of Wadi Al Nar	upstream of the WWTP without	wadi channels to the north and south.
	(Al-Khalil). The plant would have had	causing any flooding at the site, a wadi	Flood elevations are indicated by the
	to be constructed in the higher	diversion was designed. The rerouting	absence of vegetation and cut banks
	elevations along the side of the main	of the wadi allows the HRWWTP units	along the wadis. Flood control would
	wadi channel.	to be constructed in the Wadi while	be needed.
		diverting the runoff from the land	
		upstream through the WWTP without	
		the risk of flooding.	
Potential population served	The site is in one of the most southerly and lowest areas in the governorate and could theoretically service the largest ultimate population.	• The proposed location of the HRWWTP will also allow for future connection of the sewer systems from the surrounding communities, thus making the plant a truly regional facility.	
		<ul> <li>The proposed plant site will initially serve most of the population in Hebron city and can be extended in the future to serve all of Hebron and surrounding communities if it is suitably graded and prepared.</li> <li>The construction of the HRWWTP will enhance and improve the</li> </ul>	
		health and environmental concerns of the adjacent downstream communities	



	Ad Dahriya site	Hebron Site	Bani Naeem
Site visibility and aesthetics (views, traffic, noise and odor potential)		• The proposed plant site is located in a valley, 100 m below any existing housing units and any potential odor, noise or other problems are expected to be minimal with proper implementation of mitigation.	



In conclusion, the site as acquired for the HWWTP is suitable for construction of the facility, notwithstanding land preparation difficulties that may occur due to the big elevation differences observed.

### 9.3 Alternatives for managing sludge

Sludge processing steps beyond the dewatering stage are specific to the ultimate disposal option chosen. Land disposal sludge, for example, must be stabilized prior to final application, either through digestion prior to the dewatering step, through composting, lime/chemical conditioning, or heat-drying subsequent to dewatering. Landfilling, on the other hand, has less stringent requirements.

#### 9.3.1 Landfilling in Al Minya Landfill

Since sludge reuse in Palestine is still in its infancy, one viable option for currently managing sludge in HRWWTP is arranging for its disposal in a sanitary landfill.

Prior to disposal, biosolids must undergo a number of additional treatment processes. In general, all biosolids must be stabilized before further processing even though lime stabilization and some forms of composting may be carried out with unsterilized sludge. Note that stabilized sludge may also be used in these processes.

In this stage of the project biosolids are stabilized through thickening (dewatering) and preferably anaerobic digestion before being land filled, as use of biosolids is still not permitted.

Private sector involvement might be interesting to reach the required scale for feasibility.

This option involves the truck delivery of stabilized, dewatered sludge to a sanitary landfill where the sludge is spread and compacted. At the end of each day's work the sludge is covered with a layer of soil. As the landfill is completed, a deeper layer of earth is compacted over the fill and planted to control erosion. If it is of good quality, sludge can be mixed with the final cover to condition the soil.

At the time of the finalization of the original ESCHIA, two sites were put forward as potential options for waste disposal, i.e. the Yatta dumpsite and the Al Menya sanitary landfill. Yatta dumpsite has reached its full capacity and is currently closed. Having been built and operational since 2015, Al Minya landfill is currently the most suitable landfilling option.

Al Minya sanitary landfill is located south east of Bethlehem governorate, between Al Minya and Kissan villages, a few kilometers south of Toqua town. Being in the heart of the southern part of the West Bank (17km southern east of Bethlehem city and 25km northern east of Hebron city) the landfill serves cities, villages and communities in the southern West Bank. The location of Al Minya landfill relative to the location of the waste water treatment plant is shown in Figure 16.



Figure 16: Location of Al Minya Landfill relative to HRWWTP



Figure 17: Lining layers of Al Minya

The area of Al Minya landfill site is 265 dunums. The landfill is designed to occupy 200 dunums and is divided into 8 cells. The landfill has a design capacity of about 4.9 million m3 over the project lifetime of 20 years. Al Minya landfill currently serves more than 0.8 million inhabitants and is expected to receive around 560 tons of MSW per operating day. The first four (4) cells of Al Minya landfill have been constructed and are near closure. Four more cells have been designed and will be constructed in the future.

Al Minya landfill has a complete engineered lining layers, Figure 17, gas collection and leachate system.

Based on meetings carried out with Eng. Ahmed Sokar and according to Al Minya's operational manual, dehydrated sludge from wastewater treatment plants falls within the main seven waste categories that the landfill is licensed to handle. It is however, necessary that the sludge meets the technical specifications, i.e. Appendix C of the European waste catalogue and the dewatering requirements, having a minimum dry solids content of 20 %.

Table 36 below shows the sludge specifications indicated in the concept design. If these specifications were followed by the contractor's design, sludge from HRWWTP will be suitable for landfilling in Al Minya.

Criteria	HWWTP
Sludge volume (m <sup>3</sup> /d)	305
Distance from HRWWTP (km)	Almost the same distance from the HRWWTP to the Halmyra Landfill suggested in the concept design report
Dewatering	Belt press sludge dewatering processes are employed in the HRWWTP.
sludge stabilizing	anaerobic digestion prior to dewatering, used as a sludge stabilizing technique, results in a sludge suitable for landfilling.
Solids contents indicated in the conceptual design	According to the "Sludge Thickening, Digestion and Dewatering Systems HRWWTP Basis of Design Report" (conceptual design), the sludge cake needs to be stabilized and reduced to a dry solid content of at least 20% (dewatered biosolids production) before it leaves the site of HRWWTP. The digested sludge will be considered stable if in accordance with the following: - Volatile solids reduction of the sludge in the digesters shall not be less than 38%
	- In case of aerobic digestion, the oxygen requirements of the digested solids in the sludge shall be no more than 2.0 mg/hr. per gram of volatile solids at 20°C.
polymer usage	Yes

Table 38: Sludge technical specifications

The Biosolids wastes will be transfer to Al Menya Landfill where is located around 32 km away from the HRWWTP location.

Special care should be taken if polymers are used for coagulation purposes, as these additions give the sludge slimy, slippery properties that can be problematic in handling and operation. While sanitary landfilling of sludge is well developed and has served as one of the most prevalent methods of disposal for many years, it is necessary that proper engineering and operational designs of Al Minya are reviewed to ensure proper operation, if HRWWTP's sludge will be accommodated.

A preliminary acceptance (No Objection) has been received from Al Minya landfill operators and Hebron Municipality indicating mutual consent for sludge disposal in Al Minya (Annex 13) It is also recommended that an agreement is made between Hebron municipality and Al Minya landfill operators before the design of the new cells to ensure mutual agreement and compatibility between the landfill requirements, its design and sludge characteristics. This has been included in Annex 14.

#### 9.3.2 Land use and use as fertilizer

Another possible low-cost, land-based disposal alternative for HRWWTP sludge is the composting option.

Sludge has a high content of organic matter that can help conserve soil organic matter, and stimulates biological activity in the soil. Sludge reuse is environmentally the best solution compared to disposal in landfills and is the most appealing solution for sustainable sludge management.

The ability to compost sludge and use for agricultural purposes offers farmers access to low cost organic fertilizers at reliably available supplies. According to a similar recent previous study carried out by the consultant in Gaza, Israeli imported fertilizers costs around 850 shekel per ton compared to a 300 shekel/T for sludge making sludge competitive.

Composting is a method of biological oxidation of the organic matter in sludge by thermophilic organisms. Under good conditions and proper monitoring, composting can dewater the sludge and destroy its odorous components, destroy or reduce the disease producing organisms in the sludge because of the elevated temperature, and produce an aesthetically acceptable and useful organic product.

In the composting process, dewatered sludge (typically at 20 percent solids) is delivered to the site and is usually mixed with a bulking agent. The bulking agent increased the porosity of the sludge to ensure aerobic conditions during composting. If the composting material is too dense or wet, it may become anaerobic, thus producing odors. If it is too porous, the temperature of the material will remain low, delay the completion of the composting, and reduce the killing of disease organisms.

Following composting, the product is removed and cured in storage piles for 30 days or longer. This curing provides for further stabilization and pathogen destruction. Prior to or following curing, the compost may be screened to remove a portion of the bulking agent for reuse or for applications requiring a finer product. The compost can also be used without screening. Removal of the bulking agent reduces the dilution of the nutrient value of the compost. The compost is then ready for distribution.

As with landfilling, the major costs associated with sludge composting relate to its dewatering, transportation to the composting site, operation and maintenance costs for the composting operation.

The feasibility of this alternative depends of availability of area and requires a dewatered sludge with high total solids to be possible to manage it by heavy trucks and machines.

While composting is a recommended option, it should be noted that that Palestinian law only allow limited use for certain crops.

The risks associated with land use of sludge is discussed in section 6.2.6.

The Israeli and US regulations specify the requirements for two different classes of biosolids that can be applied to land: Class A and Class B. Class A biosolids are suitable for application on agricultural lands, Class B biosolids can be applied in forestry area or used for fertilization of fodder production and industrial crops.

EQA's decree also indicates limits on crop limitations for sludge composting. These are shown in Table 37.

Table 39:	Crop	limitation	on	agricultural	use	of trea	ted sludge	,
				0				

Field crops**	Fruits and vegetables*	Fruits and vegetables**
Wheat- barley- Corn- Lentils- Sesame- chickpeas	Watermelon- cantaloupe-ground berries- Cucumbers-parsley-watercress-Mulukhiyah- Tomato-lettuce-potato-pepper - Eggplant- pumpkin-carrots-cabbage- Cauliflower- kale-radish- Spiniage -onions-garlic-Taro- Peas-green beans- beans	Olives-citrus fruits-palms-almonds-guava— banana-apples-mango- grapes#

\* Treated sludge is not allowed to be used as compost

\*\* Treated sludge is allowed to be used as compost

# Treated sludge is not allowed to be used as compost if traditional planting methods are used

Where compost is used for agricultural purposes, the produced sludge should meet the quality parameters stated in USEPA Part 503 Rule Class A and the Palestinian standards discussed in section 6.2.6.

The difference between the two classes is defined by three parameters:

- The concentration of pollutants like heavy metals;
- The concentration of pathogens (bacteria, parasites, viruses);
- The attractiveness of the biosolids to disease transmitting vector organisms, like rats, rodents, mosquitoes and other insects.

Pollutants like heavy metals are generally incorporated in biosolids and cannot be removed by economically feasible technologies. The pathogens can be removed by a combination of temperature and residence time. Vector attraction reduction can be met using sludge stabilization methods and irrespective as to whether the biosolids are reused as Class A or Class B, stabilization is required. Alternatives for dealing with industrial wastes

The area served by the proposed HRWWTP is characterized by the presence of hundreds of stone and marble-cutting industries. The process of stone cutting is done under wet conditions to cool the machinery. As water goes, through the process, it mixes with fine solids, creating "slurry". Many factories collect the slurry in settling pools or silos for water reuse and a few have the capability to dewater the slurry, extracting greater quantities of water for reuse. Depending on the waste material, the slurry and cake is either disposed of on agricultural land, on open areas, designated disposal sites, or in the municipal main sewer line Stone cutting factories discharge their wastewater (Slurry to the sewer system as an average quantity of 500 (m<sup>3</sup>/day). This leads to high concentrations of sawdust in the wastewater reaching the sewers, in addition to serious clogging in the system.

The slurry eventually flows along Wadi Al-Samen south towards the HRWWTP making it a threat to the plant's operations. Unless properly dealt with, the slurry could cause clogging and possible hindrances to the plant operations and its actual wastewater handling capacity.

#### 9.3.3 Slurry dumpsites

#### 9.3.3.1 Alternative sites suggested

Several disposal sites were previously examined for suitability, especially formerly quarried sites. Most of these however, were either too far from the industrial zone, making them unattractive for the factory owners, or were rejected by the communities (as that located at the city of Banynaen) in fear that the dried slurry may have health impacts on their members.

During the consultations, two sites were mentioned, an old treatment plant between Al Beirein suggested by the Israelis, Figure 18 and Khelit Wafy site, Figure 19. Since Al Beirein option was not supported by the communities, Khelit Wafy's final approval was not secured and actual field work on the WWTP has already commenced, it was necessary to introduce an alternative temporary site (that would be immediately available to accept slurry) to end slurry disposal in the public municipal sewerage network and protect the massive investment. A third site, namely Khelit Sharbati, Figure 20 was consequently suggested as an emergency site.

All three suggested sites are close to the industrial zone and are therefore economic and affordable to the factory owners. Table 38 provides a comparison between various technical features of the three sites.

Criteria	Khelit Sharbati	Kelit Wafy Site	Al-Beerein
Suitability for slurry/performance	Khalat Al Sharabati is considered the best alternative as an emergency plan, reasons being	<ol> <li>An EIA has already been completed for the Khelit Wafy site and was accepted by the local authorities.</li> </ol>	The site used to be an old WWTP
	<ul> <li>Close proximity to the Hebron industrial zone, distance - affordable haulage distance to stone factory owners. This improves chances of adherence to the project and its success.</li> </ul>	2- Due to its size, Khelit Wafy is considered the most suitable. Can take slurry for up to 10 years.	
	<ul> <li>EQA approval already issued</li> <li>The (I.C.A), through communication with the (P.C.A) Office (Palestinian liaison),</li> </ul>		

### Table 40: Comparison between the three sites

Criteria	Khelit Sharbati	Kelit Wafy Site	Al-Beerein
	<ul> <li>approved verbally (Verbal No Objection) of the Khelit Al-Sharabati proposed dumpsite, and they issued instruction for immediate slurry haulage to the site</li> <li>(I.C.A) approved the use of the entrance located on the peripheral road, which is the most important element for the success of the project.</li> </ul>		
Site Description	Previously used as agricultural land cultivated with cereals. Currently abandoned open area. When the slurry dumpsite reaches its full capacity, it is proposed that the land is reused in agriculture (Vine yard).	The targeted area Khelit Wafy is located in Hebron City in a Wadi between mountains (low lands valley)	Located on high lands, however, no settlements exist downstream the wind direction
Area	Initial land area approximately 15 donums	Khelit Wafy occupies a total area of 200 donum, making site sufficient to accommodate slurry for about 10-12 years.	Area is 17,000m2 – very limited given the current capacities of the old WWTP components-
Rent Information	Rented agreement made between Marble Stone Cutting Committee and the landowner- 20 Shekels per truck, 2 years agreement	7700 USD/year for 500-700 m3. Rental has been ongoing for the past two years	No information available (private area)
Hauling Distance and cost of transportation	About 2 Km-Acceptable cost of transportation	about 3.7 km - Acceptable costs of transportation	about 3 km - Acceptable costs of transportation
External influences	Agreement made already between Younis Rajabi, the owner of the land and The Chamber of Commerce and Industry's Stone Sector Committee. Need for Israeli formal approval. Verbal approval and	Negotiations have been open between Hebron Municipality and the Israeli side and all relevant required studies and documents were submitted, but the approval is being delayed for no specific justification. <sup>10</sup>	Suggested by Israelis for slurry disposal

<sup>&</sup>lt;sup>10</sup> Israeli Civil Administration Affairs (I.C.A) during the site meeting on 2nd April 2017 gave their initial approval (No Objection Verbally as usual) to allow for slurry haulage to Khelit Wafy but they asked for more details about ownership documents of the proposed site, meanwhile the Israeli Civil Administration (I.C.A) helped in issuance of some ownership documentation for the new Khelit Wafy site.

Criteria	Khelit Sharbati	Kelit Wafy Site	Al-Beerein
	agreement however, has been made.		
Community Acceptance	Acceptable- no objections to the site from community	Acceptable- no objections to the site from community as no close settlement exist	Settlements are present in the suggested site. Choice of site will require resettlement of community
Accessibility and infrastructure	<ul> <li>Hebron Municipality provided major improvement for the dirty road conditions with a total length of road 650 meters and an average width 5 meters, the work was delivered as road widening works, road leveling works, road base coarse paving 3250m<sup>2</sup>.</li> <li>Hebron Municipality implemented the upstream drainage channel to convey Storm water through the dumpsite.</li> <li>Hebron Municipality established a segment of sewerage Pipeline for the future proposed sewage network in the area, especially the part that passes through the land of the Khelit Al- Sharabati proposed dumpsite, the implemented sewerage pipeline is 16" diameter and 95- meter length.</li> <li>Hebron Municipality implemented an open channel 2m x 2m and 180-meter length to help. tankers. to</li> </ul>	No infrastructure	Infrastructure is readily available- site is accessible

After initial (No Objection) from the Israeli side an agreement was made between Hebron Municipality and the landowner of Khelit Wafy in which HM Interred in an agreement to hire the dumpsite of Khelit Wafy from the owners with a an annual rental fee of 7700 Jordanian Dinars, total area of 200 donoms this was paid for the year 2017 and 2018.

After obtaining verbal approval from the (ICA) Israeli Civil Administration, no feedback or comments have been received from the (ICA) and site modification was proposed.

Criteria	Khelit Sharbati	Kelit Wafy Site	Al-Beerein
	discharge the slurry load from the top of the hill up to the dumpsite the lower valley. The majority of this work was implemented as rock excavation channel.		
	• Hebron Municipality implemented a steel fencing surrounding the slurry storage area,		
	• Warning and safety signs to provide enough precaution measures to protect the public from reaching the site, and along the track of the dirty road.		
Distance from nearest settlement		around 200 meters	Very close, a matter of meters



Figure 18: Site in Al Beereen



Figure 20: Khelit Sharbatti Site

While the three sites are considered technically acceptable, using the site in Al Beirein, would require resettlement and relocation of current communities which makes the option neither acceptable to the Palestinians, nor a preferred option to the consultant. Al Beirein site's capacity is also very limited. While Khelit Wafy is the best option in terms of capacity, Hebron municipality has not been able to obtain Israeli's approvals as described above. *Khelit Sharbati is therefore considered the most suitable option until further progress is made in Khelit Wafy.* 

Khelit Sharbati phases employs naturally existing basins that will be developed to obtain the site. These include three distinct phases, 15,014 m2, 7789m2 and 1372 m2 respectively. All documents received relating to the agreement are included in Annex 16. The site already started receiving slurry since mid-November, 2019.

The site receives slurry from stone cutting factories in the industrial zone thus reducing the loading on the sewer system and decreasing the chances of clogging of the new wastewater treatment plant in the future.

#### 9.3.3.2 Main works progress made by Hebron Municipality to prepare Khelit Al Sharabati Slurry Dumpsite

The following was carried out by Hebron Municipality to prepare the site for receipt of slurry:

- 1- Earth works and brown soil removal from the valley and soil embankments construction (for slurry storage)
- 2- Major improvements for the dirty road including road widening, lengthening and base course paving on total length of which is 650 meters and average width of 5 meters
- 3- Excavation of an upstream drainage channel to convey storm water through the dumpsite.
- 4- Part of sewerage Pipeline for the future proposed sewage network in the area, especially the part that passes through the land of the **Khelit Al-Sharabati** proposed dumpsite.
- 5- Hebron Municipality excavated an open channel that is 2m x 2m and 180-meter length to help tankers discharge the slurry load from the top of the hill up to the dumpsite the lower valley.
- 6- Installing of 300-meter-long and 2 meters high steel fencing around the slurry storage area. The fence includes three steel gates at entrance of the storage slurry site, another at the top of the hill of the slurry discharge channel, and another one at the main entrance from the peripheral road.
- 7- Installation of a warning and safety signs along the dirty road to warn the public and children of the site.

#### 9.3.4 Use of slurry in industry (long term)

Khelit Al Sharabati site and all other alternative disposal options are considered temporary disposal solutions, owing to the land limitations. On the long-term, recycling plans need to be considered for slurry reuse, and consequently decrease the volume of material in need for disposal.

Since calcium carbonate (limestone) is a major constituent in cement, slurry from the marble industry could theoretically be suitable for use as cement raw material.

According to a recent progress report issued by Hebron Municipality on industrial waste management, mention was made on an initiative made by a private investor to manage slurry. It was also stated that the initiative received general consensus from all national and international stakeholders to support the private sector in implementing the cement factory project.

Actual work of cement factory is expected to start within 14 months.

### 9.4 Alternatives for receiving domestic wastewater for treatment

To receive and pump domestic wastewater from the villages that do not have a sewage system, a sump needs to be accounted for in the HRWWTP design to receive wastewater from mobile tankers. Sumps are usually located outside the plant and are equipped with a submersible pump that lifts water from the sump to the sewage storage tanks.

The sump and tank should be flexibly designed to deal with different standard truck sizes ranging from 3m3 from to 12 m3.

The location within the wastewater treatment plant is indicated in Figure 21 below. A typical sump pump plan and cross section is depicted in Figure 22.



Figure 21: Proposed location of sump pump within plant



Figure 22: Typical plan and cross section of sump pump

#### Sumps for receiving wastewater in awarded design

- Sewage Trucks will bring sewage to WWTP Inlet. The Coarse Screen Building will provide the necessary area for trucks to empty the sewage to the inlet of the WWTP.
- The number of the expected trucks will depend on the served population.

# 9.5 Alternatives for treated effluent

It is proposed that most of the treated wastewater from the HHRWWTP be reused in agriculture with the long-term objective of zero discharge of treated flows to the Wadi. Currently, there are limited irrigation systems within Hebron and the adjacent communities. Therefore, reuse of the treated wastewater will require installation of new irrigation systems and training of farmers in the reuse of treated wastewater (TWW).

The "Update Feasibility Study for Hebron Governorate Regional Wastewater Management Project" has identified lands that can be irrigated with TWW and the type of crops that may be irrigated, while satisfying current regulations. Moreover, the project also includes identification of conceptual facilities for conveying the TWW to the selected lands.

# 10 STAKEHOLDER ENGAGEMENT AND PUBLIC CONSULTATION

The public consultation chapter aims to highlight the key consultation and community engagement activities and their outcomes. In addition, the chapter outlines the key issues to be discussed when holding the consultation activities.

Throughout the various consultation and engagement activities, the work teams recorded the different reactions of the community and the governmental stakeholders towards the proposed project.

Public consultation activities have been implemented during the preparation of the site-specific studies. The public consultation activities scheduled are the following:

- Scoping consultation activities were conducted in August, September and October 2018
- A public consultation session (scoping session) was conducted on 14 October 2018 in Hebron Governorate
- A public consultation session (scoping session) was conducted on 16 October 2018 in Hebron Governorate
- Final public consultation session was conducted on 13 June 2019 in Hebron Governorate (See Annex 10)

# 10.1 Legal Framework for Consultation

Consultation activities (i.e. scoping, interviews, focus group discussions, public consultations) with various stakeholders and community people in the host communities were held for the proposed project. These activities were conducted to be in compliance with:

- WB policies relevant to disclosure and public consultation, namely,
  - o World Bank Procedure (BP 17.50)
  - World Bank Operational Policy (OP 4.01)
- Palestinian regulations relevant to public consultation
  - o Palestinian Environmental Law 7/1999
  - o Palestinian Environmental Assessment Policy

# **10.2 Consultation Objectives**

Objectives of various consultation activities are summarized as follows:

- Define potential project stakeholders and suggest their possible project roles;
- Disseminate comprehensive information about the project to enable stakeholders to identify their concerns, needs, and recommendations;
- Listen to their comments, ideas and concerns and recording the same for follow up;
- Document stakeholder feedback and enhance the ESCHIA accordingly;

- Identify the most effective outreach channels that support continuous dialogue with the community;
- Avoid any misconceptions about the project and properly manage expectations;

Key principles of effective engagement include:

- Providing meaningful information in a format and language that is understandable and tailored to the needs of the target stakeholder group(s);
- Information should be shared in advance through consultation activities and decision-making;
- Information should be easily accessible for stakeholders to access it and that are culturally appropriate;
- Respect for local traditions, languages, timeframes, and decision-making processes;
- Inclusiveness in representation of views, including ages, women and men, vulnerable and/or minority groups;
- Processes free of intimidation or coercion;
- Clear mechanisms for responding to people's concerns, suggestions, and grievances.

### 10.3 Defining relevant stakeholders

According to IFC Guidance Note 1 (2012), a stakeholder is defined as "Persons, groups or communities external to the core operations of a project who may be affected by the project or have interest in it. This may include individuals, businesses, communities, local government authorities, local nongovernmental and other institutions, and other interested of affected parties".

Therefore, the first step in the process of stakeholder engagement is stakeholder identification; that is, determining who the project stakeholders are and what they should be grouped under. Most importantly, identifying stakeholder representatives is key to carrying out consultations seamlessly. These representatives not only inform the project with their valuable information, but they also serve as a communication channel to disseminate information to large numbers of stakeholders and receive information from them.

Once stakeholders are identified, a primary analysis is applied to identify their respective level of engagement. The stakeholder analysis tool is used to group stakeholders according to their effect and support pertaining to the project.

the following table represents the stakeholders contacted and engaged during the consultation activities and events:

Categories	Stakeholder Groups	Role/ Concern		
Primary Stakeholders				
Potential Communities in     Affected       • Yatta Municipality     •       • Yatta Municipality     •       • EL Heila Village     •       • Kharbet Umrah     Beit Umrah       • Khelit Ibrahim	Community leaders	<ul> <li>They are the main stakeholders.</li> <li>They have the experience and the knowledge and they have a strong impact on the local community especially at rural areas.</li> <li>They will be responsible of communicating with the Project and their community people.</li> </ul>		
<ul> <li>Beit EL Shiha</li> <li>Dora</li> <li>EL Faware</li> <li>EL Taware</li> <li>EL Faware</li> <li>Hebron Municipality</li> <li>Qilqis</li> <li>Khelit Eldar</li> </ul>	The community's people Women Young people The elderly	<ul> <li>They are the potential Project Affected Persons, i.e. households and communities that will receive impacts (positive/negative) as a result of the project.</li> <li>They have interests in the project as they might get a job opportunity</li> <li>They will receive the impacts of the project. Additionally. given their vulnerable status they might be severely affected by positive or negative impacts</li> </ul>		
Governmental sector	Yatta and Hebron Municipalities	• The main role of the municipality is supporting the project by providing the various permissions needed.		
Environmental sector	Palestinian Environmental Quality Authority	<ul> <li>It is responsible for reviewing and approving ESCHIA as well as monitoring implementation of the Environmental Management Plan.</li> <li>It is responsible for monitoring the compliance to environmental requirements.</li> </ul>		
Project Owner	Palestinian Water Authority (PWA)	<ul> <li>PWA is the owner of the project as well as the main government authority concerned with supervising the project activities and implementation of the project.</li> <li>It oversees activities of the Environmental and Social Management Plan</li> </ul>		

Table 41: Main stakeholders identified for the project

Categories	Stakeholder Groups	Role/ Concern	
Financial Donors	The World Bank (WB) Agence Française de Développement (AFD) European Union (EU)	• It is the financing and regulating entity.	
Beneficiaries Hebron Municipality		<ul> <li>The main beneficiaries from the project that may be subject to some positive/negative impacts. They play a significant role in the project's success and sustainability.</li> <li>Hebron municipality is considered an operator as well after finalizing the construction and the operation by the consultant for 5 years.</li> </ul>	
	Health Directorate	<ul> <li>They provide the health services to the local units.</li> <li>It studies the community's health conditions related to the existence of the sewage channel near to their houses and to the potable water wells.</li> </ul>	
	The Directorate of Agriculture in Hebron	• It is responsible for developing a plan to reclaim and rehabilitate the lands located in Wadi El-Samen that are affected by the wastewater.	
		• It is interested in benefiting from the produced water from the treatment process for tree-planting	
Other Governmental Entities	Directorate for Antiquities	• It has a major role in providing the maps that illustrate the archaeological areas near the Project area and providing the procedures followed to avoid affecting the archaeological areas by the construction and operation works	
	Industrial Area of Hebron	• It is responsible for the disposal of the slurry produced by the stone factories that is discharged in domestic sewage land fills	
	Chamber of Commerce in Hebron	• It participates in meetings with Hebron municipality and the ministries and provides the required documents in order to determine a location in Kellet Wafy area for the disposal of the slurry related to the stone factories	

Categories	Stakeholder Groups	Role/ Concern
	Water Sector Regulatory Council	• Works as a monitoring body for the water and sanitation sector
Secondary Stakeholders		
Traders and Suppliers	Traders (small scale stores)	• They provide workers with food and amenities.
	Small contractors	• They may be affected because they are situated at the project's adjacent areas.
Civil Society	NGOs (regional, local) Specific union of NGOs	<ul> <li>They support the local community by providing capacity building activities and finding alternative livelihood opportunities during construction.</li> <li>They play an active role in any awareness-raising activities related to the project.</li> <li>They are responsible of sharing information with the community.</li> <li>They may provide support during the valuation and compensation process.</li> </ul>
Media	Television Representatives Newspaper Websites Editors Social Media	• They disclose information about the project.

The abovementioned stakeholders were consulted using various tools i.e. individual interviews, group meetings, and public consultation. They are the main participants of the public consultation conducted during (August, September, and October 2018). However, some of them were interviewed at their place of work in order to enable them to spell out their concerns and worries freely.

# 10.4 Consultation Methodology and Activities

In the current study, consultation activities were held over two rounds that occurred during the preparation of the site specific ESCHIA. The consultation process conducted during the preparation of the ESCHIA was dynamic and evolving; i.e. it adapted with the nature and expectations of the host community. The process also engaged the local leadership and the parties involved in agriculture, Sanitation Sector, Industrial, and health activities; so, to reach out to various groups among the Affected people. Focus has been on the consultation activities were conducted with the community people to identify their opinions, inquires, and concerns towards the project.
The Consultant carried out stakeholder engagement activities through three phases in August, September and October 2018, and the last phase was in June 2019 (final public consultation session). Through the following methods: In-depth interviews<sup>11</sup> with government officials in different stakeholders, Focus Group Discussions(FGDs) with community members and officials in <sup>12</sup> Municipalities, Group Meetings with community stakeholders, and Public consultation sessions with all stakeholders.

#### First Phase - Scoping consultation activities

The Consultant conducted a number of consultation activities and scoping sessions. The used research tools have varied, comprising individual meetings held with government officials in different sectors related to the Project, with a view of giving them the opportunity to express their opinions and concerns in a liberate and transparent manner. A number of group discussion sessions was conducted and involved individuals and local communities' representatives situated in the Project area, with a focus on El Heila area which is considered the nearest community to the Project area. The aim was to identify their perspective of the Project and its importance to the members of the community, as well as to receive and record their concerns and requests related to the Project, and to inform them about the mitigation measures to be considered (See Annexes 1,2,3<sup>.13</sup>)

#### Second Phase - Public consultation sessions

The Palestinian Water Authority in cooperation with the Consultant-EcoConServ Environmental Solutions, held two public consultations sessions to Give description of the project, and to Present some findings of the study. The sessions were held in Hebron Governorate premises with the presence of the Deputy Governor of Hebron. The first session was devoted to the officials of Hebron municipality and the affiliated villages, in addition to the government officials in the related different sectors. The second session was devoted to the officials of Yatta municipality and the affiliated villages, as well as, the government officials in the concerned different sectors. The purpose was to allow all the participants to freely express their opinions and to open the door to discussions. Those sessions also included community representatives, especially those nearby the WWTP (e.g. Qilqils, Khelit El Dar, El Heila, and members of the municipal councils)

<sup>&</sup>lt;sup>11</sup> In-depth interviews: In depth interviews are one to one meeting and with clear objective where the findings are used in the research. A number of in-depth interviews with project stakeholders have been performed, also an interview agenda has been prepared to guide through the topics that require to be discussed during the interview.

<sup>&</sup>lt;sup>12</sup> Focused group discussion (FGD): Are group discussion of 5 to 10 participants that are chosen based on their common background or selected based on sharing common interest. FGD allows knowing the practices and setting of the area. It is effective tool in delivering local community facts in relatively short period which can vary from 45 min to 60 min depending on the participants' time availability.

<sup>&</sup>lt;sup>13</sup> Annex 1 contains the attendance sheets of all scoping consultation activities and full list of the stakeholders (Government agencies and community members). Annex 2 contains the MoM for individual interviews and FGDs with community people in the communities within the scope of the project, in addition to Annex 3, which contains MoM with residents and representatives of El Hiela district.

## 10.5 Scoping consultation activities

The research team for this study has adopted multi-dimensional consultation activities that enable the marginalized, voiceless, youth and women to gain information about the project. As well as, gaining information about their concerns and worries that regarding the project during various implementation phases. Following are the main consultation activities to date:

- 4- The study team visited the project area in order to define various stakeholders. Stakeholder engagement plan has been developed for the different communities,
- 5- Based on the identification of stakeholders, various questionnaires and guidelines were prepared in order to engage:
  - The residents in the project area
    - o The Community leaders
    - o Community representatives (EL Heila Village)
    - The community's people
    - o Women
    - Young people and Elderly
  - Governmental Organizations and Authorities
    - o Governor of Hebron
    - Heads of Municipalities
    - o Health Directorate
    - The Directorate of Agriculture in Hebron
    - o Directorate for Antiquities
    - 0 Industrial Area of Hebron
    - o Chamber of Commerce in Hebron
  - o Water Sector Regulatory Council
- Palestinian Environmental Quality Authority
- NGOs
- Project owners Palestinian Water Authority (PWA)
- 6- All activities conducted were documented with photos and lists of participants in order to guarantee an appropriate level of transparency.

The following topics were presented and raised during the consultation activities and sessions were:

- Introduction about the project and other relevant water and wastewater projects by PWA
- The proposed new project and future projects associated with it in Yatta municipality
- The disclosure of information relevant project and it is activities. All information disclosure took place by presenting non-technical executive summary,
- Scope of the updated ESCHIA

- Anticipated environmental and social impacts and the mitigation measures.
- Grievance mechanism by which the general public and other stakeholders can raise concerns, which the Municipality/PWA will handle in a prompt and consistent manner.

The following figure shows each administrative level of consultation with previous groups.



Figure 23: Relevant stakeholders in each administrative level

Table 42: Summary of Consultation Activities in Project Areas

Stakeholders		Number	
		Males	Females
	Community leaders	6	0
Potential affected communities	Community representatives (EL Heila Village)	6	0
	community people	39	12
Governmental Organizations and	Office of the Governor of Hebron	2	1
Authorities	Heads and Municipalities Officials	8	2
Environmental sector Palestinian Environmental Quality Authority		1	0
	Health Directorate	1	0
	The Directorate of Agriculture in Hebron	2	2
Other Covernmental Entities	Directorate for Antiquities	1	0
Other Governmental Endues	Industrial Area of Hebron	1	0
	Chamber of Commerce in Hebron	5	0
	Water Sector Regulatory Council	1	0
Project owner	Project owners Palestinian Water Authority (PWA)	2	1
Civil society	NGOs in Yatta and Hebron Municipalities	2	2

The data collected on the different stakeholder groups was analyzed. The key objectives of the consultation activities in the project areas are:



What are stakeholders' *expectations* from the Project?



What is the *perception* of stakeholders towards the Project?



What is the *position* of stakeholders from the Project?



How can stakeholders *cooperate* with the Project?

1- Define/refine potential project stakeholders and suggest their possible project roles

2- Identify the most effective outreach channels that support continuous dialogue with the community Thereafter the results will provide proper documentation of stakeholder feedback and enhance future stakeholder engagement activities accordingly. The following shows photos of some meetings with the project's stakeholders.



The first Scoping session with the people of EL Heila and the municipality of Yatta in the presence of the WB and the PWA



The second Group Meeting with the people of EL Heila in the presence of the WB and the PWA



The Third Group Meeting with the people of EL Heila in the presence of PWA



The fourth Group Meeting with the people of EL Heila in the presence of PWA and Deputy Governor of Hebron and Director of the Hebron Governor's Office



The Fifth Group Meeting with the people of EL Heila in the presence of PWA Figure 24: Photos of interviews with representatives of the people of EL Heila



Meeting of the team Work with the Governor of Hebron



Meeting of the team Work with the head of Hebron Municipalities



Meeting with students and teachers of the girls' secondary school in Yatta Municipality



FGD with director and school staff of the girls' secondary school in Yatta Municipality



Scoping consultation session with the residents of Yatta Municipality



Group Meeting with Community leaders in Qalqas



Group Meeting with Community leaders in Khelit El Dar





Meeting with one of the officials in Minya land fill Group Meeting with Community people (Women) in Yatta Municipality

Figure 25: Photos of scoping consultation activities

# 10.5.1 The results of the Scoping consultation activities

## The results of consultation activities are presented in the following table.

Table 43: Key comments and concerns that raised during the Consultation activities

Stakeholders		Comments/Concerns Raised
Potential communities	affected	<b>Perception Towards the Project:</b> For any developmental project, the community perception towards the project is important for its success. The group discussions also reported that they look forward to developmental projects Especially with regard to water and sanitation problems, and receive greater social services.
	The interviews with the members of local communities, locate area and who may be affected by it, indicated that this type important to the lives of people. Furthermore, the Pro- importance given the dangerous environmental and hea community suffers from due to the sewage channel, which ri- threating its safety and security. The children and animals that to reach to the other side are at a risk since the channel divides community's lands. The results of the field observations and the focus group dis that the residents of El Heila area, affiliated to Yatta municip affected by the establishment of the treatment plant since th the closest to the proposed plant location. Accordingly conducted several consultation sessions (reached five consulta the representatives of the local community of El Heila area, the Project was defined, also their concerns and project relat perceived. The consultation sessions also presented the fut the Water Authority will work on and which targets the con- municipality. The Consultant illustrated the mitigation measur adhere to in order to eliminate the detriments that might be ca- the construction or the operation of the Project ). The conce of El Heila people were presented in detail in section 10.7 Th Consultations with Yatta and El Heila Communities. (The re-	The interviews with the members of local communities, located near the Project area and who may be affected by it, indicated that this type of projects is very important to the lives of people. Furthermore, the Project has a great importance given the dangerous environmental and health problems the community suffers from due to the sewage channel, which rises to the level of threating its safety and security. The children and animals that cross the channel to reach to the other side are at a risk since the channel divides and separates the community's lands.
		The results of the field observations and the focus group discussions indicated that the residents of El Heila area, affiliated to Yatta municipality, are the most affected by the establishment of the treatment plant since their households are the closest to the proposed plant location. Accordingly, the Consultant conducted several consultation sessions (reached five consultation sessions) with the representatives of the local community of El Heila area, through which the Project was defined, also their concerns and project related requests were perceived. The consultation sessions also presented the future projects which the Water Authority will work on and which targets the communities of Yatta municipality. The Consultant illustrated the mitigation measures the Project will adhere to in order to eliminate the detriments that might be caused either during the construction or the operation of the Project ). The concerns and Requests of El Heila people were presented in detail in section 10.7 The Analysis for the Consultations with Yatta and El Heila Communities. (The minutes of meeting and the list of participants are attached Annex 2, 3).
		<b>Expectations from the Project:</b> The meeting has led to the acceptance of the attending representatives of El Heila residents to execute the Project for the benefit of the public interest. However, the representatives indicated some requests that are directly related to establishing the WWTP Project and other requests that are indirectly related to the Project. The indirect requests are associated with: the suffering of El Heila residents for 40 years, and to-date from the damages of the wastewater stream, and that they will not directly benefit from establishing the Project. In addition to the probability that El Heila residents may be negatively affected by the Project and to prevent this and to achieve the community benefits and to avoid any negative impact on any party,

Stakeholders	Comments/Concerns Raised
	considering that these demands will benefit El Heila residents and Yatta municipality <sup>14</sup> . The concerns and Requests of El Heila people were presented in detail in section 10.7 The Analysis for the Consultations with Yatta and El Heila Communities.
	<b>Position from the Project:</b> El Heila community stressed that acceptance of the aforementioned requests is an important matter to determine their position on the Project; they considered these requests the guarantee of the Project sustainability.
	El Heila community believes that these requests are not in accordance with its declining living conditions, as some attendees complained about poor infrastructure of El Heila in terms of: water scarcity and lack of sanitation network, at the same time the Project's presenters want to "bring us the wastes of Hebron to be treated nearby our households". El Heila has a problem with the chuckholes which are sometimes faced with leakages to drinking well water available. A health clinic is found at El Heila, which the Ministry of Health and the Directorate intends to shut down. An electricity network is found which was extended at the expense of the residents, as well as, the construction of the neighbourhood school.
	Throughout the first scoping session with the residents of El Heila, and Yatta municipality, it has been attended by 35 persons (the list of attendees is attached in Annex 1). Some of the participants threatened to declare their rejection of the Project in case covering the stream was disregarded, since they are badly affected by the stream from Wadi As-Samen whose water comes from Hebron and the settlements. Their consent was linked with adhering to the aforementioned requests.
	The Consultant conducted 4 sessions with representatives of El Heila residents after the aforementioned meeting (that was held at the hall of El Heila mosque on the 15 <sup>th</sup> of August 2018), throughout meetings their above requests were indicated. Also, the findings of the study were shared with the attendees, comprising the mitigation measures during construction and operations phases, noise treatment technology, doors, and pests. In addition to, presenting the complaints and grievance mechanisms related to the Project.
	The recommendations of the local community towards the Project did not only comprise the views of El Heila residents, but the Consultant was also keen on identifying the recommendations of the community of the areas located on the stream overlooking Wadi As-Samen (Qilqis-Khelit El Dar- El Fawar- Doura- Khelit Beit Amra- Khelit Ibrahim-Beit El Sheiha) towards the Project. The members of the aforementioned communities expressed their strong support of the Project and stressed on its utmost importance, which is a necessary requirement to improve their health conditions. They also pointed out that the expansion of projects related to wastewater is an urgent need, and should be carried out in accordance with an integrated system of projects that guarantee

<sup>&</sup>lt;sup>14</sup> The MoMs with the representatives of EL Heila community and the list of attendance in Annexes 1, 3

Stakeholders	Comments/Concerns Raised	
	connecting the former areas to the sewage network (See Annex 2).	
<ul> <li>Governmental sector</li> <li>Environmental sector</li> <li>Other Governmental Entities</li> </ul>	<b>Perception Towards the Project:</b> The interviews conducted with the governmental agencies and officials reflected their positive attitude towards the Project, they emphasized on the urgent need for water and sanitation projects, as well as, and to cover Wadi As-Samen stream for its severe health and environmental effects. The Heads of Municipalities (Yatta- Dora- El Zahiriya) stated that they do not directly benefit from the Project, however they highlighted that the Project has great importance to their protection from the resulting damages of Wadi As-Samen passing through their lands. In addition to the contribution of the wastewater projects to the improvement of the environment and preserving groundwater (See Annex 4).	
	The interviews with <b>Hebron municipality and the Chamber of Commerce illustrated</b> the problem of the disposal of slurry produced by the stone factories (Manasheer El Hagar). The President of the Chamber of Commerce confirmed that slurry is a significant problem which affects the sanitation network and leads to its shut down. He stated that the leaking slurry from Hebron stone factories runs for about 40Km, separating the agricultural lands, until it reaches the Shoket Israeli plant, which collects and treats the sanitation to benefit from it and charges the Authority for the refining and treatment fees.	
	The officials of the Chamber of Commerce referred to the initiative undertaken in cooperation with Hebron municipality in 2016 to find a land fill for the slurry in Khelit Wafy that is distant from the residents. Accordingly, the Chamber of Commerce conducted 15 visits prior to applying for a permit for this location in Khelit Wafy. The location was leased and Hebron Municipality helped to connect with the owners to lease the land. The Chamber of Commerce participated in the discussions with the Civil Administration, which approved leasing the location. Although Hebron municipality is committed to paying the rental value of the land, the approval of the Israeli side to operate the identified location in Khelit Wafy as a licensed land fill for the disposal of slurry, is not yet obtained and is considered an obstacle for the Project.	
	Eng. Bahgat Jabareen, Environment Quality Authority of Hebron Municipality explained that the number of complaints, received from all the residents of the towns through which Wadi As-Samen passes; contaminated by the wastewater and the slurry of stone factories, has increased. He also indicated that some complaints from Yatta residents comprise their objection to establishing the wastewater treatment plant near their households. <sup>15</sup>	

<sup>&</sup>lt;sup>15</sup> The Consultant conducted a meeting with Eng. Bahgat Gabareen, Environment Authority Official of Hebron municipality at the beginning of the field work (the first half of September) which required the Consultant to conduct a number of interviews and meetings with the residents of Yatta municipality with a focus on Al Heila area (the nearest households to the project). The purpose of the consultation activities was to identify the community's concerns and requests related to the Project. The Consultant was keen on providing them with adequate information about the Project and the project-specific grievance mechanism, in addition to recording their requests and presenting them in the findings

Stakeholders	Comments/Concerns Raised	
	The officials at the Directorate of Health said that they received many complaints about the wastewater passing in the valleys which leads to the spread of diseases and mosquitoes. The Directorate of Health raises public awareness about the dangers of sewage to the residents and sometimes provides them with insecticides to eliminate widespread pests such as rats or distributes sanitization tablets for water wells. They pointed out the lack of environmental health studies and definite figures about the number of infected people with diseases related to sewage. The Directorate of Health organizes guiding campaigns to reduce the impact of insects on the health of the residents.	
	<b>Expectations from the Project:</b> The Heads of Municipalities had several requests, which are:	
	• Establishing a similar plant for El Zahiriya Municipality to serve the residents of Yatta and El Zahiriya and the surrounding villages.	
	• Establishing a sanitary network for the households in these municipalities to be connected to the plant	
	• Water, Environment and Agriculture Authorities should consider studying the reclamation of thousands of areas that had been contaminated by the water of Wadi As-Samen for 40 years.	
	• Clean up Wadi As-Samen stream in preparation for winter by removing the dirt and blocks that hinder the flow of the torrent and therefore may expose the stream to flood during winter.	
	• Actively monitoring over the stone factories and tanneries to avoid dumping the wastes of their factories in the stream, as the result is an increase in the damage caused by the passage of Wadi As-Samen in their lands.	
	It should be noted that the Environmental Quality Authority is expecting full compliance with environmental standards and regulations. The treatment plant should be equipped with latest technologies for absorbing odors, noise and insects.	
	The Health Directorate Officials expect the Project to eliminate the health and environmental problems as a result of Wadi As-Samen, which reduces the risks posed to the population.	
	<b>Position from the Project:</b> Almost all government offices and agencies have showed their willingness to support the Project by providing the basic services required to operationalize the Project.	
	<b>Cooperate with the Project:</b> The Heads of the municipalities of Yatta and Hebron confirmed their readiness to provide all support to the project and to	

of the consultation activities. Moreover, meetings with the El Heila community have been held to present the findings of the study and the set of projects that is expected to be implemented by the Water Authority, which targets the residents of Yatta municipality.

Stakeholders	Comments/Concerns Raised
	cooperate with the Water Authority for the success and sustainability of the Project due to the benefits that will affect all communities overlooking the stream.
NGOs	<b>Perception towards the Project:</b> The NGOs identified the importance of the project, which is an essential step to address the suffering of the areas located in Wadi As-Samen run off. That is loaded with wastewater from the streams of Hebron and some settlements near the valley, and its impact on their health since insects, rodents and mosquitoes spread along the length of the stream and cause many diseases to the residents (See Annex 5).
	<b>Position from the Project:</b> NGOs are supportive of the Project and are willing to participate in any social initiatives and activities implemented by the Project Owner with the purpose of engaging the local communities.
	<b>Expectations from the Project:</b> The members of the NGOs expect that the Project Owner will increasingly engage the local communities in the upcoming stages by implementation of an integrated system of water and sanitation projects, and the rehabilitation of agricultural land located on Wadi El-Samen.
	<b>Cooperate with the Project:</b> The members of the NGOs are willing to participate in any awareness campaigns targeting the local communities on the importance of maintaining water and sanitation projects
Project owner PWA	Meetings were held with members of PWA, in order to:
	• Identify the scope of the project
	• Discuss the information to be disseminated among project affected people and to clarify how this information should be appropriately communicated to them
	• Attend group discussions with the Community people of El Heila as well as focus groups discussion in Hebron and Yatta
	Provide support documents

## 10.6 Public scoping sessions

The Palestinian Water Authority in cooperation with the Consultant-EcoConServ Environmental Solutions, held two public consultations sessions to Give description of the project, and to Present some findings of the study. The sessions were held in Hebron Governorate premises with the presence of the Deputy Governor of Hebron. The first session was devoted to the officials of Hebron municipality and the affiliated villages, in addition to the government officials in the related different sectors. The second session was devoted to the officials of Yatta municipality and the affiliated villages, as well as, the government officials in the concerned different sectors. The purpose was to allow all the participants to freely express their opinions and to open the door to discussions. Those sessions also included community representatives, especially those nearby the HRWWTP (e.g. Qilqils, Khelit El Dar, and members of the municipal councils).

The list of invitees included EQA regional branches, Heads and Municipalities Officials, NGOs, governmental media centers, and various government employees (Annex 6, 7). In cooperation with the consultant and office of the Governor of Hebron, invitees were informed of the date and location of the Public Consultation. Participants were invited through:

- Invitations sent by PWA and the Head of Hebron and Yatta Municipalities via Faxes and e-mails.
- Telephone communication by PWA and the Consultant.
- Invitations sent by the officials of the Hebron governor's office to governorate stakeholders and Municipalities
- Invitations sent by the Municipalities to community leaders and governorate stakeholders

The following topics were presented and raised during the public consultation sessions were:

- Introduction about the project and other relevant PWA
- The proposed new project and future projects associated with it in Yatta municipality
- Project activities
- Scope of the updated ESCHIA
- Anticipated environmental and social impacts, mitigation measures and monitoring plans

#### 10.6.1 First Scoping Session

The First public consultation was held in Hebron Governorate (Hebron Governorate Building) on the 14 October 2018. The session was moderated by the following:

- Three consultants from EcoConServ (environmental and social)
- Two representatives of PWA
- Governorate representative
- Municipality representative
- Two representatives of Palestinian Environmental Quality Authority

## 10.6.1.1 Participants Profile

The event was conducted on the 14th of October 2018. Forty-one (42) people attended the consultation event. They are segregated into 73 % males and 27 % females.

Table 44: Distribution	of participants	by profession
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Stakeholders	Number	Percentage
Community leaders	2	4
Community people	12	28
Office of the Governor of Hebron	2	4

Heads and Municipalities Officials	3	7
Palestinian Environmental Quality Authority	2	4
Health Directorate	1	2
The Directorate of Agriculture in Hebron	3	7
Directorate for Antiquities	2	4
Chamber of Commerce in Hebron	1	2
Water Sector Regulatory Council	1	2
Technical Assistance Project Team	3	7
Project owners Palestinian Water Authority (PWA)	4	10
NGOs in Yatta and Hebron Municipalities	6	17

## 10.6.1.2Summary of the Discussions

The session started by an opening speech for Dr. Khaled Dodeen, Deputy Governor for Hebron Governorate, in which he welcomed the attendees and expressed his pleasure for opening the session. He stressed Hebron's Governorate's interest and support for all projects targeting sustainable development, meeting the community needs and improving infrastructure. Dr. Dodeen added that water and sanitation projects is a basic demand for all municipalities and villages, this type of projects will improve the environment, health and individuals' living conditions in the marginalized communities away from the city center and overlooking the Stream.

Engineer Murad Fuqaha welcomed the attendees and thanked Hebron Governorate for hosting the session, supporting the project and participating in the consultation sessions with the community people at El Heila area in Yatta Municipality. Also, he showed his appreciation for Hebron Municipality for their cooperation in inviting all the relevant parties to attend the session and supporting this project and others improving the environment in Hebron. Eng. Faqaha made a presentation introducing water and sanitation projects targeting various areas in Hebron Governorate, namely Yatta Municipality. He clarified that this project is within the Palestinian Government plan to develop the water and sanitation sector and invest in infrastructure. Moreover, he explained the objectives of the project which take into consideration settling the suffer of the community members in Yatta, El Heila, Beit Omra and the areas along Wadi As-Samen. For 40 years and until present these people had been suffering the harms of the wastewater stream including spread of mosquitoes, mal odors, noise and affecting the agricultural lands on Wadi As-Samen.

Dr. Tarek Genena – Environmental Expert EcoCoServ Consulting Firm presented the objective of the session in the context of the project. He began by providing background information about the project then a detailed description of the project, indicating all the potential environmental impacts of the project, the

methodology of the ESCHIA report, the mitigations of the environmental and social impacts and a management plan.

Dr. Anan Mohamed – Social Expert EcoConServ Consulting Firm, pointed to the objectives of the social study. She described the project area and the positive and negative social impacts of the project. This included discussing the methodology of how the negative social impacts will be mitigated. As well as the consultation activities undertaken by the consultant with the communities in the project area. The consultant also discussed the proposed grievance mechanism for the project as a component of the community management plan.

After the presentations, an open discussion took place where the attendees were given the chance to give their feedback about the ESCHIA and the issues related to the project.



Panel of Speakers



Consulting Firm Environmental Expert, Dr. Tarek Genena EcoConServ



presentation of the project



Marwan Al Akhdar Hebron Municipality Project Coordinator



Head of Environmental Quality Authority, Hebron



Representative of the PWA



Comments from the participants





Female participants

Figure 26: Photos of the first public consultation session

# 10.6.1.3 Questions and comments

Table 45: Key comments a	and concerns raised	during the	bublic consultation
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Issue	Questions and comments	Response
Operation Technology	The technology used in the plant operation, will it be on the highest level and in accordance with the international standards to ensure the reduction of the emitted noise and odours?	The study includes the techniques used in operating the plant, as presented to you shortly. To ensure this, the operation specifications will be in accordance with modern and advanced systems to reduce emitted noise and odours and avoid spread of insects and mosquitoes.
Noise and odour control technology	The head of Health Directorate in Hebron confirmed that the study will include all the good measures for construction and operation, however, what really matters is the commitment to these standards during actual implementation to reduce the consequent health damages.	The water Authority will be committed to all the construction and operation standards presented in the study.
Slurry resulting from stone cutting facilities (stone saws)	Officials of the chamber of commerce and the environment authority confirmed that it is really important for Hebron municipality to finalize the necessary licences for the site designated for slurry disposal at the stone cutting facilities, before starting the construction of the plant. Continuing the disposal of stone facilities wastes in Wadi As-Samen stream will damage the plant and hinder the sustainability of operation.	Hebron municipality rented a site in Khelit Wafy for ten years, to be renewed for another five years, for slurry disposal, this site is located in area C. There is an obligation to pay the rent value for two years, site usage depends on the approval of the Israeli party which takes time. The consultant clarified that the study will include alternatives in the design of the plant for slurry separation at the beginning of the treatment process.
Sludge disposal	How the sludge resulting from the treatment process will be disposed? Ensuring the importance of sludge transfer and avoiding its accumulation or storage in the plant location, due to consequent environmental and health damages.	The consultant explained that the sludge will be transferred to Al Minya landfill as presented in the study results. The consultant's team held a meeting with the acting manager of Al Minya landfill to make sure of the current and future capacity of the landfill. The landfill administration explained that the capacity of Al Minya landfill is 8 basins, two of which are filled and closed. Meanwhile five are completely empty. They expressed their willingness and cooperation to

Issue	Questions and comments	Response
		receive sludge from the treatment plant.
Sludge usage alternatives	Does the study include alternatives for sludge usage in agriculture as organic fertilizer or in industry as fuel, instead of dumping in Al Menya landfill? Does the study include models of using sludge in agriculture and industry in other countries?	The official of the Environment Authority explained that the Palestinian laws prohibit usage of sludge in industry in the meantime. The consultant showed that the current study includes proposed alternatives for using sludge in agriculture and presents models for this usage in other countries, as shortly presented to you.
Rehabilitating the agriculture lands on both sides of Wadi As-Samen stream.	Does the project include a clear plan for rehabilitation of agricultural lands damaged by wastewater stream over the past 40 years, as it is important to do this?	The official of the water authority explained that currently there is no clear plan to rehabilitate the agriculture lands located along the stream (Wadi As-Samen). However, the coming period will include cooperate with relevant ministries to implement projects in this regard. The relevant municipalities will participate in this study to know the size of these lands, being a basic demand for community members in this area.
Presenting the demands of the local community in Khelat El Dar?	<ul> <li>The local community in Khelat El Dar and Qilqis areas committed not to issue building licences for houses near the plant's location since notifying them during developing the previous ESCHIA. In turn the project or upcoming projects should target the following issues should fulfil some of their needs, including:</li> <li>Paving the main road to the plant</li> <li>Establish sanitation network and connect it to the sewerage trunk line that will discharge to the WWTP</li> <li>Rehabilitate the damaged agricultural lands</li> <li>Solve the problem of the slurry in stone facilities</li> <li>Rehabilitate the streets leading to the plant for easy access</li> </ul>	The official of the water authority explained that the Water Authority has a package of water and sanitation projects that will be implemented in the near future. All the demands of the local community will be registered and taken into consideration. It will be communicated to the concerned bodies and municipalities for rapid implementation. The current phase of the project will concentrate on Wadi As-Samen, which result in various environmental and health damages that the community suffer from long time ago. Also, it concentrates on establishing wastewater treatment plant for Hebron municipality.

Issue	Questions and comments	Response
Using treated water	<ul> <li>To what extent will be the benefit of water produced after the treatment process?</li> <li>Will it be suitable for agriculture use?</li> <li>Is there a study for the types of trees and crops that can be irrigated with this water?</li> <li>Will the water quota be distributed on neighbouring areas?</li> <li>Will it be for money?</li> </ul>	The official of the water authority illustrated that currently, there is no clear plan for using treated water in agriculture, but in the coming period there will be independent studies and coordination with concerned bodies in the ministry of agriculture. Currently, the reuse of treated wastewater would be addressed in the design study of Wadi As- Samen conveyance pipeline.
Increasing the value of water and sanitation bills as a result of the project	Was the issue of increasing the value of water and sanitation bills, because of the project, discussed during the interviews and the scoping sessions?	The social consultant explained that this was one of the issues discussed with the local community members. They expressed their agreement on this in return for water and sanitation services. Community members in the municipalities of Yatta, El Zahria, Dora expressed their need to have a sanitation system for their houses instead of the current one which cost them a lot.
Monitoring the operation of the plant	It is important to monitor the plant after operation to ensure sustainable efficient operation. The monitoring structure should include a specialized committee including the municipalities and parties representing the neighbouring community to guarantee transparency.	All the previous suggestions are included in the monitoring plan and the project's environmental and social management plan. The consultant explained that the environmental management plan, presented to you shortly, include effectuating social participation through concerned civil society organizations The official of the water authority explained that all the suggestions will be taken into consideration in the coming phases of the project.
Wastes of tanneries and slaughter houses	Effectuate monitoring on leather facilities which dispose their waste in the stream, also wastes generated in slaughter houses and dead animals which increase pollution of the stream	There are agreements regarding disposal of hazardous wastes generated from leather facilities, in which they should abide by. All these will be reviewed in the next phase to protect the plant's safety and efficiency.
Waste treatment	What are the types of wastes to be treated in the plant?	The plant is concerned with treatment of municipal wastewater only.

Issue	Questions and comments	Response
Archaeological areas	The official of the antiques directorate in Hebron asserted that the project should provide them with all the plans of establishing the project including digging canals and roads to identify its relation with the archaeological sites in Hebron.	The official of the water authority expressed the importance of coordination with antiques directorate and updating it with all the project plans to make sure that it is far from archaeological sites. This is considered one of the major standards of the project.
Awareness	Awareness programs should be developed to increase individual's awareness of water and sanitation projects significance and value for the community	In the meantime, there is cooperation between the water authority and the technical support team for water and sanitation projects in Hebron and affiliates. It concentrates on capacity building and efficiency development programs for Hebron Municipality. In the next phase it guarantees developing awareness programs for community.

## 10.6.2 Second Scoping Session

The second public consultation was held in Hebron Governorate (Hebron Governorate Building) on the 16 October 2018. The session was moderated by the following:

- Three consultants from EcoConServ (environmental and social)
- Two representatives of PWA
- Governorate representative
- Municipality representative
- Two representatives of Palestinian Environmental Quality Authority

## 10.6.2.1Participants Profile

The event was conducted on the 16th of October 2018. Forty-two (47) people attended the consultation event. They are segregated into 72 % males and 28 % females.

Table 46: Distribution of participants by profession

Stakeholders	Number	Percentage
Community leaders	5	10
Community people	12	26
Office of the Governor of Hebron	3	6
Heads and Municipalities Officials	7	15
Palestinian Environmental Quality Authority	5	10
Health Directorate	1	2
The Directorate of Agriculture in Hebron	3	6
Industrial Area of Hebron	1	2

Technical Assistance Project Team	2	4
Chamber of Commerce in Hebron	1	2
Project owners Palestinian Water Authority (PWA)	2	10
NGOs in Yatta and Hebron Municipalities	5	10

10.6.2.2 Summary of discussions

The session started by an opening speech for Dr. Khaled Dodeen, Deputy Governor for Hebron Governorate, in which he welcomed the attendees and expressed his pleasure for opening the session. He stressed Hebron's Governorate's interest and support for all projects targeting sustainable development, meeting the community needs and improving infrastructure. Dr. Dodeen added that water and sanitation projects is a basic demand for all municipalities and villages, this type of projects will improve the environment, health and individuals' living conditions in the marginalized communities away from the city center and overlooking the Stream.

Engineer Murad Fuqaha welcomed the attendees and thanked Hebron Governorate for hosting the session, supporting the project and participating in the consultation sessions with the community people at El Heila area in Yatta Municipality. Also, he showed his appreciation for Hebron Municipality for their cooperation in inviting all the relevant parties to attend the session and supporting this project and others improving the environment in Hebron. Eng. Fuqaha clarified that this project is within the Palestinian Government plan to develop the water and sanitation sector and invest in infrastructure. Moreover, he explained the objectives of the project which take into consideration settling the suffer of the community members in Yatta, El Heila, Beit Omra and the areas along Wadi As-Samen. For 40 years and till present these people had been suffering the harms of the wastewater stream including spread of mosquitoes, mal odors, noise and affecting the agricultural lands on Wadi As-Samen.

Mr. Ibrahim Abu Zahra "Abou Fouad", Mayor of Yatta municipality, welcomed the attendees and thanked the Governor of Hebron for hosting the session. He expressed his pleasure of the project and that it is considered one of the important projects for the community in Yatta and the surrounding areas in Wadi As-Samen. He asserted his support for the project and willingness to provide any assistance for the project's team.

Dr. Tarek Genena – Environmental Expert EcoConServ Consulting Firm presented the objective of the session in the context of the project. He began by providing background information about the project then a detailed description of the project, indicating all the potential environmental impacts of the project, the methodology of the ESCHIA report, the mitigations of the environmental and social impacts and a management plan.

Dr. Anan Mohamed – Social Expert EcoConServ Consulting Firm, pointed to the objectives of the social study. She described the project area and the positive and negative social impacts of the project. This included discussing the methodology of how the negative social impacts will be mitigated. As well as the consultation activities undertaken by the consultant with the communities in the project area. The consultant also discussed the proposed grievance mechanism for the project as a component of the community management plan.

After the presentations, an open discussion took place where the attendees were given the chance to give their feedback about the ESCHIA and the issues related to the project.



Panel of Speakers

Consulting Firm Environmental Expert



Representative of the PWA



Mayor of Yatta Municipality





Comments from Community representatives





Comments from the participants



Head of Environmental Quality Authority, Hebron



One of the officials of the Directorate of Agriculture



Female participants



Figure 27: Photos of the second public consultation session

# 10.6.2.3 Questions and comments

Table 47: Key comments and concerns raised during the public consultation

Issue	Questions and comments	Response
Capacity of the plant	To what extent would the treatment plant accommodate Hebron's wastewater?	The official of the water Authority explained that after finalizing construction and operation works, the capacity of the plant is supposed to accommodate more than 80 % of Hebron's wastewater.
Noise and odour control	What is the technology which the plant will use to reduce noise and	The study includes the techniques used in operating the plant, as presented to you

Issue	Questions and comments	Response
technology	odours?	shortly. To ensure this, the operation specifications will be in accordance with modern and advanced systems to reduce emitted noise and odours and avoid spread of insects and mosquitoes.
Calculating the flow of the stream	Has the wastewater flow to the plant been calculated?	One of the measurements that's was carried out by the consultant is flow measurement
Disposal of waste generated during operation	How will the wastes generated from the operation of the plant be disposed (e.g. filters)?	Al Minya landfill is equipped to accommodate for all wastes from the WWTP.
Slurry resulting from stone cutting facilities (stone saws)	Some of the attendees discussed the disposal of slurry generated from stone cutting facilities, and what are the proposed solutions?	Hebron municipality rented a site in Khelit Wafy for ten years, to be renewed for another five years, for slurry disposal. Site usage depends on the approval of the Israeli party which takes time.
		It's worth mentioning that an ESIA study was conducted for the dump site and submitted to the Israeli side, and now bending their approval for the site.
		The consultant clarified that the study includes analysis of Alternatives (in chapter 9), the design of the plant for slurry separation at the beginning of the treatment process, in case there is no site allocated for slurry disposal or the stone facilities did not perform their obligation. And alternatives for the dump site.
Sludge disposal	How will the sludge, resulting from the treatment process, be disposed? Ensuring the importance of sludge transfer and avoiding accumulation or storage in the project site due to its environmental and health damages.	The consultant explained that the sludge will be transferred to Al Minya landfill as presented in the study results. The consultant's team held a meeting with the acting manger of Al Minya landfill to make sure of the current and future capacity of the landfill. The landfill administration explained that the capacity of El Minya landfill is 8 basins, two of which are filled and closed. Meanwhile five are completely empty. They expressed their willingness and cooperation to receive sludge from the

Issue	Questions and comments	Response
		treatment plant.
Sludge usage alternatives	Does the study include alternatives for sludge usage in agriculture as organic fertilizer or in industry as fuel, instead of dumping in Al Menya landfill? Does the study include models of using sludge in agriculture and industry in other countries?	The official of the Environment Authority explained that the Palestinian laws prohibit usage of sludge in industry in the meantime. The consultant showed that the current study includes proposed alternatives for using sludge in agriculture and presents models for this usage in other countries, as shortly presented to you.
Emergency plan	Does the study include an emergency plan (such as shortage in electricity)	The consultant confirmed that the environmental impact assessment study includes emergency plan included in the Environmental and social management plan, presented to you shortly.
Rehabilitating the agriculture lands on both sides of Wadi As-Samen stream.	Does the project include a clear plan for rehabilitation of agricultural lands damaged by wastewater stream over the past 40 years, as it is important to do this?	The official of the water authority explained that currently there is no clear plan to rehabilitate the agriculture lands located along the stream (Wadi As- Samen).
Presenting the demands of the community in Yatta and El Zaheria municipality	<ul> <li>The attendees from municipalities representatives and villages asserted their suffering for 40 years due to the stream and its consequent health and environmental damages. They expressed their need for some development projects and summarise it as follows:</li> <li>Providing job opportunities to the local community in Yatta and El Khela</li> <li>Establish sanitation network in Yatta and its surroundings</li> <li>Rehabilitate the agricultural lands on both sides of the stream</li> <li>Benefit from treated water in irrigation especially in porth</li> </ul>	The official of the water authority explained that the Water Authority has a package of water and sanitation projects that will be implemented in the near future. All the demands of the local community will be registered and taken into consideration. It will be communicated to the concerned bodies and municipalities for rapid implementation. The current phase of the project will concentrate on Wadi As-Samen, which result in various environmental and health damages that the community suffer from long time ago. In addition, it concentrates on establishing wastewater treatment plant for Hebron municipality.

Issue	Questions and comments	Response
	<ul> <li>drought.</li> <li>Include Yatta community in capacity building programs</li> <li>Establish a pipeline transferring wastewater Yatta municipality and parallel to Wadi As-Samen.</li> </ul>	
Using treated water	<ul> <li>To what extent will be the benefit of water produced after the treatment process?</li> <li>Will it be suitable for agriculture use?</li> <li>Is there a study for the types of trees and crops that can be irrigated with this water?</li> <li>Will the water quota be distributed on neighbouring areas?</li> <li>Will it be for money?</li> </ul>	The official of the water authority illustrated that currently, there is no clear plan for using treated water in agriculture.
Distance between the plant and the nearest house in Yatta.	The distance between plant's centre and the nearest house in El Heila area should be measured accurately, being the most damaged.	The consultant explained that the study team accurately studied the distance between the plant's center and the nearest house, as mentioned in the presentation supported with photos for the measuring process and the attendance of two representatives of the local community.
Monitoring the operation of the plant	It is important to monitor the plant after operation to ensure sustainable efficient operation. The monitoring structure should include a specialized committee including the municipalities and parties representing the community to guarantee transparency.	All the previous suggestions are included in the monitoring plan and the project's environmental and social management plan. The consultant explained that the environmental management plan, presented to you shortly, include effectuating social participation through concerned civil society organizations The official of the water authority explained that all the suggestions will be taken into consideration in the coming phases of the project.

Issue	Questions and comments	Response
		This will be addressed in the TA component as HM employees will be trained to operate and maintain the plant properly.
Awareness	Awareness programs should be developed to increase individual's awareness of water and sanitation projects significance and value for the community	In the meantime, there is cooperation between the water authority and the technical support team for water and sanitation projects in Hebron and affiliates. It concentrates on capacity building and efficiency development programs. In the next phase it guarantees developing awareness programs for community. Also, there will awareness programs that would be conducted for the purpose of wastewater management in cooperation with different NGOs and civil society

#### 10.6.3 Conclusion

The key message from the consultation events carried out for this project is that the public and government's acceptance for and support to the project are very strong.

- The session showed that, despite the concerns of some attendees, it was emphasized that the project is important and has a role in achieving development. Attendees agreed that it is a national project, one that belongs to the public.
- The results of the two consultation sessions showed consent of some of the attendees on some issues including:
  - In both sessions the attendees asserted the importance of the project and the urgent need for similar projects in other municipalities.
  - The importance of settling the slurry disposal site in El Khela and finalizing the necessary licenses and approvals as soon as possible before starting the construction works of the plant.
  - o Sludge disposal and capacity of El Minya landfill.
  - o Dangers and harms which the local community suffer from due to Wadi As-Samen stream.
  - The attendees were concerned about discussing the issues related to noise, odors and insects' control being one of the significant negative impacts of the plant's operation.
  - Local community members were concerned about the water resulting from the treatment process and that it should be used for agricultural purposes and poultry breeding. This should be done according to studies and plans to avoid harming the crops.

- Representatives of the municipalities have some demands (discussed in the previous table) that should be taken into consideration. Officials should cooperate to put it into actions.
- The attendees ensured the importance of monitoring the implementation and operation of the plant, complying with all the highest standards. Also, effectuating monitoring over the tanneries and facilities especially stone cutting.
- Community members need awareness programs about the importance of water and wastewater projects and their continuous maintenance
- The attendees confirmed that they do not have any objections towards the project, "especially in the second session concerned with Yatta municipality". However, they insisted on the importance of the project and willingness to exert efforts for project success; attendees stressed on the importance of implementing the demands of the municipalities, which were presented in the consultation sessions and meetings with community people.

# 10.7 Final Public Consultation

### 10.7.1 Final Public consultation Session

The final public consultation was held in Hebron Governorate (Hebron Governorate Building) on the 13 June 2019. The session was moderated by the following:

- Two consultants from EcoConServ (environmental and social)
- Two representatives of PWA
- Governorate representative
- Municipality representative
- Palestinian Environmental Quality Authority representatives

The list of invitees included:

- Hebron Governorate,
- Municipalities concerned with the project (Hebron, Yatta, Dura, Qilqis, Khelit Eldar, and El Zahiriya),
- Environmental Quality Authority,
- Directorates of (Agriculture, Tourism, Education, Health, Social Development, and Interior),
- Leaders, community representatives, and community people located near the project area (El Heila Village, Kharbet Beit Umrah, Khelit Ibrahim, Beit EL Shiha, and EL Faware)
- NGOs,
- Media centers in the Hebron Governorate and Municipalities,
- Various government sectors (Water Sector Regulatory Council, Chamber of Commerce, and Industrial area).

In cooperation with the Consultant, invitees were informed of the date and location of the Public Consultation at least two weeks ahead. Participants were invited through:

- Invitations sent by PWA via Faxes and e-mails.
- Telephone communication by PWA and the Consultant.
- Invitations sent by Hebron Governorate via Faxes and e-mails.
- Addressing the relevant municipalities (Yatta, Hebron) to publish the invitation on their official websites.
- Invitations sent by the consultant to governorate stakeholders
- Telephone communication by the Consultant with community leaders to confirm the invitation of community members within the project area

### 10.7.2 Participants Profile

The event was conducted on the 13th of June 2019. Sixty-Five (65) people attended the consultation event. They are segregated into 72 % males and 28 % females.

#### Table 48: Distribution of participants by profession

Stakeholders	Number	Percentage
Community representatives (EL Heila Village)	4	6
Community people	15	24
Office of the Governor of Hebron	3	4.5
Heads and Municipalities Officials	3	4.5
Palestinian Environmental Quality Authority	4	6
Directorate of Health	4	6
The Directorate of Agriculture in Hebron	7	10
Industrial Area of Hebron	2	3.5
Chamber of Commerce in Hebron	1	1.5
NGOs in Yatta and Hebron Municipalities	3	4.5
Directorate of Antiquities and Tourism	2	3.5
Directorate of Education	3	4.5
Directorate of Social Development	4	6
Directorate of Interior	1	1.5
Project owners Palestinian Water Authority (PWA)	9	14

Project Environmental Consultant EcoConServ	2
The World Bank WB	3

#### 10.7.3 Summary of discussions

The session started by an opening speech for **Engineer loai Qaisi, General Director of Planning and Development Hebron Governorate**, he welcomed the attendees and expressed his pleasure for opening the session. He stressed the importance of the project to improve the environment in Hebron governorate. He pointed to the need for southern areas for water and sanitation projects. He explained the keenness of Hebron governorate to support development projects, which contribute to meeting the needs of infrastructure this type of projects will improve the environment, health and individuals' living conditions.

Engineer Murad Fuqaha Project Manager and the Representative of PWA, welcomed the attendees and thanked Hebron Governorate for hosting the session, and supporting the project. In addition, he showed his appreciation for Eng. Loai Qaisi for his cooperation in inviting all the relevant parties to attend the session. Eng. Fuqaha clarified that the project is but one small part of an overall optimistic plan that aims at covering the whole Southern part of the West Bank and the improvement of the overall sanitary conditions of the area. PWA operates with clear vision and takes their wastewater and sewage treatment needs very seriously. Eng. Fuqaha provided background information about the project phases (Past, current and future).

**Dr. Anan Mohamed – Social Expert EcoConServ Consulting Firm**, pointed to the objectives of the social study. She described the results of the community consultation activities carried out by the study team. This included discussing the methodology of consultation activities. The consultant presented the most important results of consultation activities, which is summarized in; the project has received general acceptance from the majority of the communities, a number of people have concerns regarding the project (El Heila Village), listing of the concerns, legitimate concerns that were taken seriously. Some concerns are on the way to implementation while working to respond to the remaining concerns regardless of their relationship to the project. She added; the consultation session is held today as part of the completion of consultation activities to present the results of the study. The results of the second consultation will be analyzed in the final report.

**Dr. Tarek Genena – Environmental Expert EcoConServ Consulting Firm**, presented the objective of the session in the context of the project. He began by providing a detailed description of the project, indicating all the potential environmental impacts of the project, the methodology of the ESCHIA report, the mitigations of the environmental and social impacts and a management plan. He explained; the project aiming to reduce the environmental pollution from wastewater. This will be done through engineering controls to mitigate all environmental concerns/impacts including Noise, Odors, Air quality, Sludge management, Slurry management. Environmental concerns/ Risks (Environmental Impacts) and response from the consultant's judgment (Mitigation measures, management and monitoring plan).

Engineer Abd El Nasser Kahla – Complaints Management Department PWA, presented the Grievance Mechanism GRM of the project, GRM will facilitate the involvement of those potentially affected by or interested in a decision, to establish the continued response to involvement of community. He Clarify complaint channels, how to deal with complaints, the duration of complaint resolution. He stressed on the benefit of the Grievance Mechanism is to maintain project sustainability and community participation.

After the presentations, an open discussion took place where the attendees were given the chance to give their feedback about the ESCHIA and the issues related to the project.



Consulting Firm Environmental Expert

Panel of Speakers



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Representative of the PWA
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Mayor of Yatta Municipality



Community representatives of El Heila village



Comments from the participants



Head of EQA, Hebron



Representative of Hebron Municipality





Female participants



Attendance of the session

Figure 28: Photos of the second public consultation session
## 10.7.4 Questions and comments

Table 49: Key comments and concerns raised during the public consultation

Issue	Questions and comments	Response		
Issue The benefits of the project on the municipality of Yatta Project negative impacts on neighboring areas The demands of the community of El Heila village Calculating the flow and the capacity of the plant	<ul> <li>Questions and comments</li> <li>Mr. Musa Makhamra, The former mayor of Yatta municipality; and from El Heila Representatives</li> <li>He thanked the consultant and the PWA for inviting him to attend the meeting,</li> <li>Referred to the consultation activities that were conducted with the residents of El Heila by the consultant,</li> <li>Asked why the ESCHIA study had been delayed since the date of the land purchase in 2005,</li> </ul>	ResponseEng.LoaiQaisiHebronGovernorateAll what is done in this project is through the participation of the local community either in the preparation of the complaints system or the consultation. I reject the idea that this project will not be done because it serves infrastructure and deserves community support.Hebron Governorate approves all the demands of El Heila local community, and will cooperate		
Distance between the WWTP and the nearest house in Yatta.	• Why the current project does not include the entire southern area and is limited to Hebron Municipality only,	with all concerned parties to implement these demands; In the interests of the region residents and serve the project.		
	• The WWTP is expected to have significant negative impacts on the largest residential area near to the WWTP location El Heila,	The Governorate is interested in water and sanitation projects, but it is important to mention the high cost of building drainage networks.		
	• The WWTP location must be moved to the end of Yatta line; So as not to contaminate the groundwater wells in the area,	The PWA has a project to study all the needs of the southern region of water and sanitation "Master Plane".		
	<ul> <li>He presented the requests of the residents of El Heila that were written in the minutes of meeting that took place in Hebron Governorate in the presence of the representatives of El Heila residents, the consultant, the deputy governor and the representative of the PWA:         <ul> <li>Implementation of a carrier line of concrete passages (considering</li> </ul> </li> </ul>	Eng. Murad Fuqaha PWA In response to the calculation of the amount of water flowing; it was done by a specialized company; the flow was calculated very accurately. It should not be planned for such projects that require a lot of money without preparation of accurate studies. Eng. Murad confirm an accurate study and calculation were		

Issue	Questions and comments	Response
	the necessary intakes) parallel to the stream of the current waste stream inside the borders of	conducted for the flow rate in proportion to the capacity of the station.
	Yatta municipality in the future to transport wastewater, to start implementing this line before initiating the construction of the treatment plant.	Studies on Wadi As-Samen coverage project have already begun, and a budget has been allocated for this project. The PWA works seriously to meet the needs of local communities
	• Preparation of all plans, studies and the tables of quantities, besides working on obtaining the required permits for a whole sewage system for Yatta municipality and dividing it into phases for execution.	On the subject of signing an agreement between the Water Authority and the local community of Yatta; A Memorandum of Understanding has already been signed between the PWA, Yatta Municipality and Hebron
	<ul> <li>Implementation of water network for the unserved areas in the municipality</li> <li>Implementation of a sewage</li> </ul>	Municipality. The agreement aims to address Yatta municipality concerns in relation to the probable environmental and social impacts resulting from the WWTP.
	<ul> <li>network to El Heila community in parallel to the execution of the carrier line.</li> <li>Rehabilitation of the agricultural</li> </ul>	The studies and designs of the project for the construction of the carrier line have already been prepared, and a budget has been allocated for it.
	lands and adjacent areas of Wadi As-Samen through coordination with the relevant authorities, including paving the street connecting El Heila and Wad Abu Al Fol	With regard to the problem of the low price of land located in the Wadi As-Samen stream, the project of covering Wadi As-Samen will address this problem. It will provide the opportunity to
	He added that the previous demands represent the minimum demands of the	rehabilitate and reuse these lands. The PWA is working hard to
	• Has the capacity of the W/W/TP boop	complete water projects in Yatta municipality and provide financial
	studied to avoid future problems?	support for this. All the demands of the local
	• He expressed his objection to the decision sent to Yatta municipality by	community are registered and taken into consideration. It will be

Issue	Questions and comments	Response		
	the EQA regarding the prevention of building permits for 200 meters from the WWTP site	communicated to the concerned bodies and municipalities for rapid implementation.		
	• What happens if the WWTP fails or does not absorb the increase rates?	Eng. Bahgat Jabareen, EQA Hebron		
	<ul> <li>He added, speaking about the problem of Yatta municipality's share of drinking water and the importance of increasing it,</li> <li>Residents of El Heila have been suffering for 40 years from the</li> </ul>	He explained that one of the basic requirements for approving the ESCHIA study is the consultations with the communities located near the project; this was done at the request of EQA, With regard to the construction ban at a distance of 200 m from the project site; this is the task of Yatta municipality as an		
	negative effects of the passage of Wadi As-Samen through their land, which has affected its quality and lowered its price			
	• He stressed that the construction of the carrier line is a basic requirement for the inhabitants of El Heila to accept the project, and called for signing an agreement between the people of El Heila and the PWA in this regard,	He added that local community representatives could access the ESCHIA study after the EQA approval; to ensure that the ESCHIA addressed all the concerns and questions of the local community		
	• He pointed to the possibility of raising that issue in court "a case" against the project, and prevent the project construction.			
GRM,	Mr. Mohamed Hijazi from El Heila Representatives	Eng. Murad Fuqaha PWA		
Objection to the project	<ul> <li>The community should participate in the project Grievance Mechanisms,</li> </ul>	A clear complaints mechanism has been established to provide local communities with the opportunity		
	• Stressed the importance of signing an agreement between El Heila people and PWA	to supervise the project by submitting complaints of any errors or damage from the project at its various stages.		
	• Expressed his objection to the project by saying "I am as a citizen from El Heila I reject the project"	Eng. Bahgat Jabareen, EQA Hebron He explained that the presence of		

Questions and comments	Response
	Hebron Municipality in today's session to monitor and follow-up procedures for consultation with the community, and how to identify the concerns of local communities and ensure addressed in the study.
	The project monitoring plan includes: a) self-monitoring by a competent staff member from within the plant, b) Community monitoring carried out through the grievance mechanism, c) Government monitoring carried out through the supervisory role of many government agencies involved in the project.
<ul> <li>Mr. Ibrahim Abu Zahra "Abou Fouad", Mayor of Yatta municipality,</li> <li>He expressed his pleasure of the project and that it is considered one of the important projects for the community in Yatta and the surrounding areas in Wadi As-Samen.</li> <li>He confirmed that an agreement had been signed between Yatta Municipality, the PWA and Hebron Municipality; the agreement guarantees the rights of Yatta residents in case of a breakdown of the plant.</li> <li>Stressed the importance of the carrier line project</li> <li>Pointed out the importance of Yatta Municipality benefits from the treated water</li> </ul>	Eng. Mohib El Jabari, Member of Hebron Municipality Council He explained that this project cost the municipality of Hebron a lot of money, it is a consumer project and not a product of profit, it is not necessary to talk about ownership of the project, but it is necessary to talk about the obligations related to its management, The plan to utilize the water resulting from the treatment does not include the Municipality of Hebron, the municipality of Hebron does not have agricultural land that needs irrigation. Water from treatment cannot be locked, it will benefit all municipalities and villages located on the project area. The station will reduce the cost to the government to be paid to the
	<ul> <li>Questions and comments</li> <li>Mr. Ibrahim Abu Zahra "Abou Fouad", Mayor of Yatta municipality,</li> <li>He expressed his pleasure of the project and that it is considered one of the important projects for the community in Yatta and the surrounding areas in Wadi As-Samen.</li> <li>He confirmed that an agreement had been signed between Yatta Municipality, the PWA and Hebron Municipality; the agreement guarantees the rights of Yatta residents in case of a breakdown of the plant.</li> <li>Stressed the importance of the carrier line project</li> <li>Pointed out the importance of Yatta Municipality benefits from the treated water</li> </ul>

Issue	Questions and comments	Response
		treatment. He confirmed that the Hebron Municipality with the Wadi As- Samen coverage project before the WWTP project.
Grievance Mechanisms	A citizen from the Yatta municipality The grievance mechanisms must include the municipality of Yatta as one of the main channels for filing the complaint	Head of Grievance Unit, PWA The PWA Grievance Mechanisms includes multiple ways to file a complaint: a) Telephone communication with PWA, b) Submit the complaint to the official responsible in the project site, c) E-mail, d) The complaint can also be submitting to the municipal office. The complaint will be resolved within a maximum of two weeks. All complaints must be resolved.
Slurry resulting from stone cutting facilities (stone saws)	Some of the attendees discussed the disposal of slurry generated from stone cutting facilities, and what are the proposed solutions, and why the filter project stopped	Eng. Murad Fuqaha PWA The US project (filter) is already one of the solutions to the problem, the problem will be resolved in the near future through the official licenses of Khalit Wafy
Using treated water	Officials from the Directorate of Agriculture Is there a strategic plan for using treated water? The treated water should be used in agriculture under the supervision of the agricultural departments	Eng. Murad Fuqaha PWA The use of treated water is being studied and a strategic plan is being developed The treated water will certainly be used in agriculture under the supervision of the Ministry of Agriculture and you will be notified

#### 10.7.5 Conclusion

- PWA operates with clear vision and takes their wastewater and sewage treatment needs very seriously
- The project is but one small part of an overall optimistic plan that aims at covering the whole Southern part of the West Bank and the
- The project has received general acceptance from the majority of the communities except for the representatives of El Heila residents
- The views of El Heila community representatives from the project were mixed between objection and refusal and conditional consent to sign a memorandum of understanding and implement a number of projects
- The representatives of El Heila local community had the opportunity to express their opinion about the project, and to present their demands
- El Heila community representatives presented their objection to the WWTP project formally to the WB representatives at the end of the public consultation session
- The PWA appreciates all objections made for logical reasons, and ensure that all potential concerns and impacts of the project have been studied, and to take them into account in the environmental management plan, as well as the design of the plant; to avoid any negative effects impacts.

Engineer Murad indicated at the end of the session that any new inputs will be taken into account in the ESCHIA study, He stressed that the Wadi As-Samen coverage project will be completed before the operation of the WWTP.

## 10.8 The Analysis for the Consultations with Yatta and El Heila Communities

Based on the assessment of social conditions in the study area, the Valued Receptor<sup>16</sup> VR identified for this project is the community of El Heila village in Yatta municipality, as it is the nearest residential area to the project site. The VR is selected depending on the extent to which it is affected by the overall fundamental activities of the project (during the construction and operation phases).

<sup>&</sup>lt;sup>16</sup> A Valued Receptor (VR) can be defined as any part of the environment or society that is considered important by the developer, operator, general public, or any non-governmental or governmental organisation involved in the assessment process. Importance is determined on the basis of cultural values and public concern.

As a result, several consultation activities were conducted with the community of El Heila village during different time intervals, started from 2012 until the mid of 2019. This section will illustrate the results of the analysis of the conducted consultations, as well as analysing some of the correspondences between Yatta municipality, EQA, PWA and the World Bank, especially the MoUs and MoMs. in order to evaluate the concerns of El Heila community and Yatta municipality, and determine its relevance to the project impacts.

#### 10.8.1 The Analysis Methodology

The appraisal for the concerns has been carried out using the scale below. Concerns that are considered requests irrelevant to the project have been assigned a "N" Status.

Issues classified as low, medium, or high; that those are legitimate concerns relating to possible impacts of the project. The significance has been assigned depending on the degree to which the impacts are addressed by the ESCHIA mitigation measures.

#### The basic criteria for defining an impact include:

Significance	Definition	Concern Significance
Nil	Classified as a request and not a concern related to the project	Ν
Low	Legitimate concerns that would affect a small proportion of the VR	L
Medium	Legitimate concerns that would affect a moderate proportion of the VR	М
High	Legitimate concerns that would affect a large proportion of the VR	Н

Table 50: The basic criteria for defining the impact

## 10.8.2 Analysis of Correspondences

The Consultant has analyzed a number of correspondences, Minutes of Meetings and Memorandums of Understanding (See Annex 8, 9). The following table shows the results of this correspondence analysis

Subject	The date	The sender	The recipient	The context of the correspondence
Objection to the location of the HRWWTP	3/5/2015	Representatives of some of the surrounding villages (El Hila, Wadi El Sada, Beit Umra, Jib Huber)	The President and Municipal Council of Yatta	Objection to the location of the HRWWTP, and to emphasize the suffering from the damages of the wastewater stream "Wadi Samman" on their land and health. In addition to their request to transfer the station to another alternative location at the southern border of the city of Yatta (See Annex 8).
Withdrawing Yatta Municipality objection to the establishment of the HRWWTP	1/6/2015	The previous mayor of Yatta municipality (Mr. Musa Makhamra)	World Bank	Withdrawing Yatta Municipality objection to the establishment of the HRWWTP, illustrating the importance of the Project and highlighting that their concerns have been addressed by the Palestinian Water Authority. This is reflected in the below text:
				<ul> <li>"Yatta Municipality is highly appreciated the efforts and the generous support from our partners to this important project which will solve important problem in the area. And also, we highly appreciated the interest of the relevant entity and our partners by their meetings and their field visits, with their understanding to our fair demands. We would like to assure you to withdraw our previous objection, and disregards our previous letter dated on the 4<sup>th</sup> of May 2015, since all our fears and requests has been addressed through the relevant entity (Palestinian Water Authority, Ministry of Local Government) and no longer exist. "(See Annex 8).</li> <li>In light of the previous correspondence, it is clear that Yatta Municipality, represented by Mr. Musa Makhamra, the Mayor at that time, agrees to the establishment of the Hebron Regional Wastewater Treatment Plant Project HRWWTP.</li> </ul>
EQA's response to a	21/9/2015	Eng. Adalh Al Aterh	The previous mayor	The EQA appreciates the keenness of the Municipality of Yatta to

Subject	The date	The sender	The recipient	The context of the correspondence
letter from the Municipality of Yatta (10/9/2015)regarding the objection to the site of the HWWTP		Head of the EQA	of Yatta municipality (Zahran Abu Qubeta)	protect the human from the effects of the damages of the wastewater stream "Wadi Samman". The EQA is looking forward to the success of the PWA and the Municipality of Hebron in providing the necessary financial support for the construction of the treatment plant for the city of Hebron and the surrounding areas.
				The EQA was surprised from the request of Yatta Municipality to stop this important and strategic project to preserve the environment in Palestine. Please note that after reviewing the EIA study, Yatta Municipality will benefit from this project as well as El Fawar, Halhul and Bani Naim in the future (See Annex 8).
Request urgent intervention to stop the environmental disaster in the city of Yatta	1/11/2015	The previous mayor of Yatta municipality (Zahran Abu Qubeta)	Eng. Adalh Al Aterh Head of the EQA	- The environmental disaster related to the damages of the wastewater stream "Wadi Samman" to the municipality of Yatta, which caused the contamination of the water of the city's only underground well, and the Ministry of Health has stopped this well.
				- Objection to the proposed site of the HRWWTP project.
				- Explain what the ESCHIA study of the Wastewater Treatment Plant contains to many inaccuracies that are far from the truth; especially regarding the location and the absence of residential communities; The area of El Heila is 100 meters away from the plant site.
				- We also clarify that the municipality of Yatta does not demand the suspension of the project, as you mentioned in your previous letter; but we demand public money management on the basis of maximum and fair benefit (See Annex 8).

Subject	The date	The sender	The recipient	The context of the correspondence
EQA's response to the concerns of Yatta Municipality regarding Hebron Wastewater Treatment Plant HWWTP, and the effects of the untreated	2/2/2016	Eng. Bahgat El Gabareen, EQA Regional Director- Hebron	Mr. Musa Makhamra, the former Yatta Municipality Mayor	<ul> <li>EQA's response confirmed the following:</li> <li>All the environmental and social probable impacts of the Project have been studied and are considered during the design of the Plant, as well as, the used techniques and the preparation of tender documents to guarantee mitigation of these impacts and to be within high quality international specifications and standards.</li> </ul>
health and environment.				• Yatta Municipality should consider the proposed location of the Treatment Plant and to prohibit construction in the surrounding area of the location at a distance of not less than 200m, by not providing construction permits (See Annex 8)
Memorandum of Understanding	28/3/2018	The signatory parties First Party: The Palestinian Water Authority Second Party: Hebron Municipality Third Party: Yatta Municipality		The agreement aims to address Yatta municipality concerns in relation to the probable environmental and social impacts resulting from the Wastewater Treatment Plant Project in Hebron. The three parties have agreed to a number of obligations for each party to implement and operate the project in a secure manner which ensures that the concerns of Yatta Municipality are addressed and that they do not object to establishing the project (See Annex 9).
Memorandum of Agreement	7/10/ 2020	The signatory parties First Party: Palestinian Water Authority Second Party: Hebron Municipality Third Party: Yatta Municipality and Local Community (Al-Hileh) Fourth Party: Hebron Governorate		representatives of Al-Hileh community, who objected the Project, signed an agreement that they accept the location of the Project. Community representatives agreed to support the works in the Hebron WWTP in conjunction with the government fulfilling their development demands, including construction of the Wadi As-samen sewage line (See Annex 21).

It is clear through the analysis of the content of the previous correspondences that:

- The correspondence showed that the residents of Yatta Municipality suffered from the health and social damages of the wastewater stream "Wadi Samman" on their lands over many years. This is one of the main factors of their opposition to the HRWWTP project in the past years; this is due to their feeling that the main beneficiary from the project is the Hebron Municipality, while the municipality of Yatta and other municipalities lack infrastructure projects for sewage water.
- Some correspondence indicated that the Yatta municipality had not been refused the project; but they demand public money management on the basis of
  maximum and fair benefit.
- The continuous follow-up of the Environmental Quality Authority to resolve the problems related to the complaints of the Municipality of Yatta from the damage associated with wastewater stream "Wadi Samman", as well as complaints related to the location of the station.
- The MoU defines the responsibilities and roles of all signatory parties, which helps solve the problems that hinder the HRWWTP project.
- The MoU clarifies that, the acceptance of the Project by the community was attained, represented by Yatta Municipality as the official body representing the members of the community in the municipality.
- The PWA works to solve the environmental problems of the Yatta municipality, through a series of projects, primarily coverage of the wastewater stream "Wadi Samman" project, which will contribute to reducing environmental and health damages.

#### 10.8.3 Analysis of community concerns

The following tables illustrate the needs and the concerns raised by the community people in El Heila village and Yatta municipality during the consultation activities conducted over different timescales. The PWA was keen to address these raised concerns.

Concerns	Mitigation Measures	Reference	Concern Significance	Mitigated Concern
The Project should be designed and constructed to operate against the latest international standards and best practices	The contractor will design and build the HRWWTP respecting all limits for emissions, noise, odors specified in the environmental management plan. The operator will carry out all maintenance properly and in a timely manner to avoid any system breaks.	Limits provided within the bidding documents Chapter 6- ESCHIA 2018 Impacts assessments Chapter 7- ESCHIA 2018 management plan	Н	L

#### Table 52: Analysis of Community Concerns

Concerns	Mitigation Measures	Reference	Concern Significance	Mitigated Concern
Covering the sewage stream in Wadi As- Samen before the construction of the WWTP (13 km)	It has been agreed to start covering the Wadi before start of construction. The agreement is to cover 14.0 km. NIS 30 mil allocated by PNA; procurement of services ongoing.	The contract to prepare the design of the pipeline will be signed soon, and it will be finalized within five months, then the procurement process for the construction contractor will start	N	Ν
The Project should incorporate measures to mitigate negative environmental impacts of this facility on the neighborhood, including odors, spread of mosquitoes, or flooding of sewage water from the plant.	<ul> <li>Odor</li> <li>Limits were provided in the bidding documents.</li> <li>Structurally supported covers in for main odor releasing stages have been specified as a design requirement in ESCHIA management plan.</li> <li>Biogas collection covers followed by activated carbon scrubbers in sludge treatment process have been specified as a design requirement in ESCHIA management plan.</li> </ul>	Limits provided within the bidding documents Chapter 6- ESCHIA 2018 Impacts assessments Chapter 7- ESCHIA 2018 management and monitoring plan	Н	L
	Noise Limits have been provided in the bidding documents to be incorporated in the DSI's design. noise dampeners and isolating pumping equipment and blowers (the main sources of noise) design requirements have been included in the ESCHIA management plan	Limits provided within the bidding documents Chapter 6- ESCHIA 2018 Impacts assessments Chapter 7- ESCHIA 2018 management and monitoring plan	Μ	L

Concerns	Mitigation Measures	Reference	Concern Significance	Mitigated Concern
	<b>Mosquito</b> Hebron municipality will take responsibility for mosquito control. Addressed in the tender. No mosquitos are expected under normal conditions.	Limits provided within the bidding documents Chapter 6- ESCHIA 2018 Impacts assessments Chapter 7- ESCHIA 2018 management and monitoring plan	Μ	L
No solid substances (sludge) shall be disposed of in the Project site at any point in time or for any reason whatsoever	<ul> <li>Dewatering technologies</li> <li>Analyze sludge and decide accordingly whether the sludge could be used in agriculture and how is it going to be applied</li> <li>Sludge will be transported for disposal to Al Menya if not reused</li> <li>Addressed in the tender. Recommendation provided in ESCHIA including</li> </ul>	Limits provided within the bidding documents Chapter 6- ESCHIA 2018 Impacts assessments Chapter 7- ESCHIA 2018 management and monitoring plan	Η	L
Operating a system for follow-up, monitoring and control that should be represented by the affected parties and communities, comprising Yatta municipality and El Heila residents, to promote social control and accordingly guarantee efficient operation of the plant	<ul> <li><u>The contractor will take full responsibility for continuous monitoring as follows (also detailed in the monitoring plan)</u></li> <li><u>Monitoring of Construction</u></li> <li>Daily field observation and documentation in monthly reports of waste</li> <li>Daily field observation and documentation in monthly reports to monitor dust emissions and noise</li> </ul>	Limits provided within the bidding documents Chapter 6- ESCHIA 2018 Impacts assessments Chapter 7- ESCHIA 2018 management and monitoring plan	H	L

Concerns	Mitigation Measures	Reference	Concern Significance	Mitigated Concern
	• Record and document complaints received from residents to monitor Disturbance of traffic and access difficulty			
	Monitoring of Operation			
	<ul> <li>Monitoring of Operation</li> <li>Monitoring of sludge characteristics including pH, Zn, Cu, Ni, Cd, Pb, Hg, Cr, Mo, Se, As, fecal coliforms, salmonella and escharis eggs, Dry solid content, Volatile solids (limits provided in the monitoring plan)</li> <li>Water borne diseases</li> <li>Monitoring of effluent characteristics including Discharge rate of influents, BOD5, COD, TN, NH4, TSS, TKN and P, Fecal E.coli, PH,</li> <li>Monitoring of Unacceptable odors through neighbors' complaints and by monitoring H2S concentrations levels on the site boundary</li> <li>Monitoring of hazardous substances, mainly chlorine by monitoring chlorine concentration in air and closely reviewing the amount of delivered containers to vendors</li> <li>Monitoring of solid wastes</li> <li>Monitoring of air emissions parameters CO, SO<sub>2</sub>, total hydrocarbons and NOx</li> </ul>			
	Yatta municipality can be involved in social control			
	and in the monitoring of operation, including Yatta			

Concerns	Mitigation Measures	Reference	Concern Significance	Mitigated Concern
Flooding of sewage water from the plant	• The designer (DSI) will abide to the following requirements of section 3.10.1 in the bidding documents:	Indicated within the bidding documents	М	L
	• The plant shall be designed so that it shall be possible to manage operation with one of the process units out of order, without any deterioration of the effluent quality.			
	• The design has to accommodate uninterrupted flow of wastewater through the HRWWTP even in case of malfunction of major plant components.			
	• When malfunction of major plant components fails the plant still has to meet 80% of maximum design load and 100% of hydraulic design load in case of malfunction of main plant components.			
	<ul> <li>By-pass of untreated wastewater flows will be completely avoided.</li> <li>By passes due to taking parts of installation out of operation will be completely avoided.</li> </ul>			
	Will be addressed in the DSI			
Allowing all septic Sewage discharge trucks that are operating within the boundaries of Yetta municipality to discharge its load in the plant	The possibility of absorbing the wastewater of Al- Hila village in the treatment plant and the transport mechanism is currently being studied by the consultant who is designing the treatment plant	PWA will investigate the possibility of transferring and treating El Huila community wastewater	N	N
After the commissioning of the plant,	MoU signed with PWA, Yetta municipality, and	(MoU 28 March 2018 Annex	М	L

Concerns	Mitigation Measures	Reference	Concern Significance	Mitigated Concern
Hebron municipality should commit to operating it by their personnel with the same quality standards, operational efficiency, treatment level and stages to which the plant was designed. In addition to hauling the treated products to landfills/landfills outside the project area and its borders, preventing transformation of the plant into a sanitary adversity and providing all spare parts and required maintenance to any component of the plant before the occurrence of any malfunction	Hebron municipality (MoU 28 March 2018 Annex 10) indicating Hebron's responsibility in monitoring and ensuring proper operation of the plant. Responsibilities of all parties including Hebron municipality, the contractor and PWA have been addressed within the management plan.	10) Chapter 7- ESCHIA 2018 management and monitoring plan		
Hebron Municipality is committed to performing all the maintenance and enhancement work required for the optimum operation of the plant in order to preserve the plant and prevent any negative environmental impact on the neighbourhood	MoU signed with PWA, Yetta municipality, and Hebron municipality (MoU 28 March 2018 Annex 10) indicating Hebron's responsibility in monitoring and ensuring proper operation of the plant. Responsibilities of all parties including Hebron municipality, the contractor and PWA have been addressed within the management plan.	(MoU 28 March 2018 Annex 10) Chapter 7- ESCHIA 2018 management and monitoring plan	М	L
Training and utilizing human resources from El Heila and Yatta and involve them in capacity building activities, as well as providing job opportunities for them in the plant according to the qualifications and technical skills needed in the facility	The possibility of involving the staff of Yatta municipality in the technical assistance TA component of the sewage management project will be discussed with the financiers and the stakeholders	PWA will investigate the possibility of involving Yatta municipality in the TA component or other capacity building programs	М	L
Disposal of Slurry (the remnants of the stone cutter factories) and ensure that they do not enter the wastewater treatment plant	• Additional process at the beginning of the WWTP in case of violations. This process will be capable of removing of up to Of TSS (slurry making up most of it)	PWA will follow up awarding the Israeli permit for Khelit Wafy dumpsite closely with Hebron municipality and other	н	L

Concerns	Mitigation Measures	Reference	Concern Significance	Mitigated Concern
	<ul> <li>Filter press to remove water from slurry on the stone cutter's sites and transport to Khelit Wafy dumping site.</li> <li>If Khelit Wafy dumpsite approval was denied, PWA along with Hebron municipality will have to find an alternative dumping site and binding laws will obligate stone cutters to abide, regardless of the cost of transportation.</li> <li>PWA and Hebron Municipality will ensure law enforcement and compliance of the stone cutters through close observation.</li> <li>The technical team will work with the stone cutters to ensure proper execution.</li> </ul>	relevant ministries. Chapter 7- ESCHIA 2018 management and monitoring plan Chapter 8- ESCHIA 2018 – Risk Management Plan		
Distance to nearest houses	Distance measured from sources of impacts within the plant to the nearest residential area (Al Heila) is greater than the precautionary 200 m distance indicated an official correspondence from EQA to the municipality of Yatta (Refer to Annex 14)	Chapter 6- ESCHIA 2018 Impacts assessments Annex 14	L	L
Treated Effluent disposal/reuse	<ul> <li>Risk of decontamination of effluent is expected if water is returned to Wadi E Samen. Potential water discharge still needs to be investigated, Some mitigation measures include:</li> <li>storage facilities and reuse of treated wastewater</li> <li>artificial recharge scheme including well developments for pumping or constructing infiltration basins.</li> <li>As a result, the proposed HWWTP will play a</li> </ul>	Chapter 7- ESCHIA 2018 management and monitoring plan	М	L

Concerns	Mitigation Measures	Reference	Concern Significance	Mitigated Concern
	major positive impact for increasing the water availability in the Hebron Governorate which leads to economic, environmental and social impacts.			
Awareness about O&M of WWTP	The communities have been promised that TA will develop awareness program for them. Awareness campaigns will be conducted for the people of Hebron governorate, in coordination with governmental and non-governmental institutions to reach the largest number of people	PIU of the project in PWA and the TA consultant will prepare and conduct such programs	М	L

Table 53: Analysis of Community Request

Requests	Mitigation Measures	Concern Significance
Implementation of a 13.5km concrete channels (considering the necessary intakes) parallel to the stream of the current waste stream inside the borders of Yatta municipality in the future to transport wastewater, to start implementing this line before initiating the construction of the treatment plant	PWA completed the procurement process for the consultant that will prepare the design of the pipeline and the contract will be signed very soon. The design duration will be 5 months, and then the construction will start. So, the start of constructing Wadi As-Samen pipeline will start before the construction of the WWTP.	N
To start working on study, design and tender documents for Yatta sewage network project in conjunction with the construction of the WWTP and a commitment from PWA to secure the necessary funds according to specific	The design and tender documents for sewage management will be prepared within the comprehensive plan project, which is comprised of the components of the sewage management project and funded by the World Bank and the French Agency. Priority in the Master Plan, PWA will allocate funds for detailed design and implementation (PM verbally informed the community that they did) Will be addressed in the transboundary wastewater project (including reuse and wadi As-Samen	N

Requests	Mitigation Measures	Concern Significance
timetable.	pipeline)	
	It is advised to establish a committee and nominate a follow-up representative.	
Constructing and paving a road to connect the plant and El Heila community	The PWA shall coordinate with the concerned authorities and relevant stakeholders	Ν
Implementation of water network for the unserved areas in the municipality particularly El Heila, Wad Elma, Albaa, Khelit Tabsh	The possibility of financing water projects included in the Water Authority's work plan in the coming years is currently being studied.	N
Compensation from the Hebron Municipality for the damage caused by sewage flow over previous 50 years	<ul><li>This will be coordinated with relevant ministries (MoA and EQA) and NGOs</li><li>Consider land remediation to restore lands</li></ul>	N
Implementation of a sewage network to El Heila community in parallel to the execution of the carrier channel	This will be considered in the upcoming plans and programs of PWA	Ν
Secure job opportunities for people from Yatta and Al Heila Training members of El Heila residents to include them among the plant operating personnel	PWA will investigate the possibility of hiring labours from Yatta and Al El Helila through project component (this could be included in the DSI component) The possibility of involving the staff of Yatta municipality in the technical assistance TA component of the sewage management project will be discussed with the financiers and the stakeholders	N
Rehabilitation of the agricultural lands and adjacent areas of Wadi Al-Samen through coordination with the relevant authorities, including paving the street connecting El Heila and Wad Abu Al Fool (parallel to the	<ul> <li>Sewage discharge from downstream communities is likely to negatively impact the quality of agricultural land.</li> <li>At the WWTP additional storage tank (without giving any figures) to avoid mixing of treated effluent with raw sewage water in the wadi and hence amplifying the problem. PWA, the MoA in coordination with community should</li> </ul>	Ν

Requests	Mitigation Measures	Concern Significance
stream at a length of 9 km)	PWA promised during discussions that treated effluent can be studied in the near future. Paving the street connecting El Heila and Wad Abu Al Fol; The PWA shall coordinate with the concerned authorities and relevant stakeholders	
Supply of heavy equipment for (excavator, truck, sewage truck, insect spray machine, pick up car)	The possibility of supplying this will be discussed, through coordination with the EQA and the relevant ministries.	Ν
Increase Yatta share of drinking water	Last summer the supply increased	Ν
Develop the second phase of the water network including the internal distribution pipelines and household connections.	PWA will consider this in the upcoming programs, and investigate the possibility of securing fund for such projects in Yatta	N
Addendum to ESCHIA study in partnership with Yatta Municipality including evaluation and future monitoring	Consultant contracted, work ongoing. Monitoring plan has been put in place. ESCHIA report will be a binding document for the contractor and the implementer of the project, as well as all stakeholders	Ν
Water scarcity and lack of sanitation network, and NIMBY issues. NGO community requested engagement of the local communities in projects implementation, and the rehabilitation of agricultural land located on Wadi El-Samen	<ul> <li>On October 7, 2020, representatives of Al-Hileh community, who objected the Project, signed an agreement that they accept the location of the Project.</li> <li>Community representatives agreed to support the works in the Hebron WWTP in conjunction with the government fulfilling their development demands, including construction of the Wadi As-samen sewage line.</li> <li>To date, the government has fulfilled the following conditions of the agreement:</li> <li>1. Wadi As-samen sewage line - The procurement procedures for this tender have been completed, but due to unexpected litigation (objection from one of the bidders), the start of work has been delayed. The PWA will begin implementation in January 2021, either following the completion of court procedures and the signing of the contract, or through a change order for the WWTP contractor to start the implementation of a portion of the pipeline until the</li> </ul>	Ν

Requests	Mitigation Measures	Concern Significance
	<ul> <li>completion of court proceedings.</li> <li>A project steering committee has been established for stakeholders, which includes community representatives. The Steering Committee held its first meeting on October 28, 2020. Members agreed to work with the community through the Civic Engagement Program and requested funding partners to resume work at the wastewater treatment plant as soon as possible.</li> <li>Work Completion Contract for the Yatta drinking water supply network. PWA will provide information on the status to Yatta municipality,</li> <li>Schools; PWA will provide information on the status to Yatta municipality,</li> <li>Any other activities. WA will provide information on the status to Yatta municipality; if any.</li> <li>In spite of this, the risk remains that the community might push back in the future. Mitigation measures include:</li> <li>Improving conditions for communication with the local community, its representatives and relevant stakeholders.</li> <li>Raise public awareness of the importance and benefits of improving wastewater management and service delivery.</li> </ul>	
	<ul> <li>Improving the conductors and levels of community participation with relevant stakeholders and their integration at different levels.</li> <li>Building the capacity of PWA staff and stakeholders in the field of CE</li> <li>Promote local communities and stakeholders interest in the project</li> </ul>	
Consultations have also revealed demands from the community for support for using treated water in agriculture.	Regarding community requirements to support the reuse of treated effluent in agriculture, the ToR for a feasibility study for reuse was prepared with the support of funding partners (AFD). Request for proposals is expected in Q1 2021.	
	In addition, the World Bank's ongoing study of trans-boundary wastewater (expected to be concluded this FY) will also examine the availability of land that can be used for agriculture and irrigation through the reuse of treated wastewater and the creation of reservoirs for seasonal regulation.	Ν
	According to the PAD, the actual implementation of reuse is not part of the scope of this phase of the project.	

#### 10.8.4 Conclusion

- As shown in the previous tables:
  - The concerns of the community people about the project vary between:
    - Concerns related to the project's impacts will be addressed through the mitigation measures of the project.
    - Requirements and needs related to water, sanitation and road infrastructure.
  - The study provides mitigation measures for all concerns related to the potential impacts of the project in order to be addressed to reach a minimum.
  - The needs of the local community are taken into account by the PWA and the concerned authorities in order to improve the water, sanitation and roads services.
  - The PWA is interested in providing training programs and improving the efficiency of the community members. The PWA gives priority to Yatta municipality.
- The analysis of the correspondences of Yatta municipality which indicates the presence of number of concerns related to the potential impacts of the project; whether from the former and current mayor of the municipality –, showed that there is an agreement that takes into account all the raised concerns and sets out commitments to the project stakeholders (PWA Yatta Municipality, and Hebron Municipality).

This is confirmed by the letter of the former mayor of Yatta (Mr. Mousa Makhamra) to the World Bank, in which Yatta Municipality approves the project and withdraws the objection, as well as the MOU signed between the PWA, Hebron and Yatta Municipalities (Annex 8, 9).

- The consultant was keen to discuss the concerns and the requirements of the community people through conducting FGDs with the representatives of the community; since El Heila village is the closest community to the project VR. The discussions showed the following:
  - The positions of the representatives of El Heila village towards to the project changed. The results of the consultation activities that were conducted in ESCHIA 2014 indicate the following:
    - The community people approved the project.
    - The community people suffering from the flow of water along their lands, the consequent damage and the unpleasant odors,
    - The community people emphasized the importance of the project:

"As was commonly indicated, the project will alleviate damage caused to local communities, agriculture activity and livestock. This is an important and vital project. It will rid local residents of a significant, chronic problem that adversely reflects on all aspects of



their lives. Many interviewees, particularly those who lived in areas adjacent to the wastewater stream, considered the project as their number one priority."

- The results of the consultation activities conducted under the present study (ESHIA 2018) showed a change in the opinions of the representatives of the community between the project's objection, the conditional approval of a number of demands (presented in the previous tables), and the importance of the project as a national project for public benefit.
- Water and sanitation services are one of the basic needs of Yatta residents. In addition to, the employment opportunities that the project can provide.

The Agreement of Understanding that was signed between: a) Hebron Municipality, PWA, and Yatta Municipality; determines the responsibility of Hebron Municipality in participating in maintaining the sustainability of the project and preserving the surrounding environment through:

- Maintaining the stream, not allowing the accumulation of wastewater, regular cleaning operations,
- o The use of insecticides in the control of mosquitoes in the areas around the stream
- Protecting water sources by preventing leakage of sewage into the El Rehya well

### 10.9 Ongoing and future consultation activities, PWA Citizen Engagement

The Palestinian Water Authority PWA will work to involve stakeholders in an ongoing process during the various stages of the project life cycle. This process will use the World Bank Group's strategic framework to mainstream citizen engagement in the Group's supported policies, programs, projects, and advisory services and develop their capacity to contribute in building sustainable national systems for citizen engagement with the government.

In designing and implementing community engagement (CE), PWA are working in cooperation with the Ministry of Local Government and the YC to support the Local Authorities of Yatta, Hebron and adjacent communities to the project area. The activities aim to enhance citizens' awareness, understanding and participation in the project. In addition, some CE tools (such as those required for institutional reforms) are in the process of being designed for integration in project implementation and operation cycle (Annex 20, Hebron - CE Program). Some of PWA's activities and approach of CE to ensure efficient consultations with the citizens include:

### 1) Overall Citizen Engagement (CE) program.

The community integration program for the HRWWTP aims to enhance the environment for community participation in the project by filling the gaps in the project implementation process, and dealing with any new



challenges that may arise in the future. By creating an interactive environment between citizens, and the Palestinian Water Authority PWA and the relevant parties. which can be achieved by working on:

- Promote disclosure, transparency and openness policies and plans for the local community, using various
  mechanisms and tools, to ensure that information and decisions reach the local community,
- The participation, representation and integration of the local community in the various levels of community participation,
- Obtaining feedback from the local community about services, decisions, priorities, and their impact on improving planning processes, service quality, and response to decisions, and commitments.
- Enhancing local community ownership of the project and its contribution to its success, including local community institutions, local authorities, government institutions, and the private sector, within the framework of enhancing water and sanitation services and improving management and quality levels.
- Involving the local community and its various institutions and sectors, especially youth, in implementing community-based interventions (awareness campaigns and community initiatives).
- Developing the capacities of the relevant parties in the field of community participation and responding to the suggestions and complaints of the local community and citizens.

The program includes:

- (i) an initial stakeholders' analysis;
- (ii) a unified communication strategy; and
- (iii) an awareness campaign.

After the program preparation, PWA will implement the program's recommended actions with support from a specialized consultancy and World Bank<sup>17</sup>. The CE program will include the identifying of focal points within the PWA, municipalities, implementing agents and at the community levels who will be responsible for receiving processing, providing feedback and disseminating information between all stakeholders. The engagement instruments designed to channel information would be aligned with the GRM that has been created for this project. With the assistance of the WBG and the specialized consultant, the GRM would also be apprised to ensure that it continues to be fit for purpose and links between the communications strategy and awareness campaign will be identified and synergized (i.e. the channels of communications and the GRM will be aligned).

<sup>&</sup>lt;sup>17</sup> The CE program is supported by the World Bank under the TA and is not part of the HRWMP funding and therefore the CE process is expected to be carried out by the PWA even if the WB suspends or exits from the HRWMP-I project. PWA efforts to develop a sustainable national citizen engagement system in the Water Sector will ensure sustainability and continuous CE, as PWA invests efforts in institutionalizing citizen engagement and youth mainstreaming at all three levels (Policy/Operational, Service Delivery, and Monitoring & Evaluation) related to organizational policies and programs delivery to enhance the performance of the sector. This includes the development of guidelines and tools for embedding citizen engagement in the institution and in donor-financed water supply and sanitation projects. These efforts are also supported by various Development Partners operating in West Bank and Gaza. The CE at the HRWMP-I will be used as a case study to inform PWA's national policy on CE.



#### The program will be implemented by PWA as follows:

- Stakeholders' Analysis of both urban settlements and surrounding rural communities in Yatta and Hebron of which the objective would be to map communities, collect data on community opinions of PWA project, test media options against different generic community groups, identify best communications options for different generic community members, etc. (using tools appropriate to the stakeholders' context). In addition to community members, a quota of farmers and business people will be interviewed.
- Initiation of Communication Strategy of which the objective would be to draft a set of messages that target different generic categories of community and household members, including mediums with which to reach out to them. These messages will be tested amongst selected pilot subjects to understand how they receive them. Since the person who delivers the message is considered very critical, possible 'messengers' and 'champions' from both within and outside the community will be carefully selected. An engagement process will be made with all of the contracted agencies to discuss, tailor and harmonize their communications strategies. All ongoing and future communications will be constantly verified in order to ensure that there is no future contradictory messaging that might at best confuse and at worst antagonize communities.
- Preparation of an Awareness Campaign with Bank's guidance and assistance of specialized consultant of which the objective would be to establish the goal of the campaign in order to instantiate a CE program through an awareness campaign on the project. Information derived from the findings of the Stakeholder Assessment, will be used to design necessary promotional materials and disseminate the information through identified channels, for each generic category of recipients. With the assistance of the consultancy and the World Bank, PWA will determine the roll-out of the awareness campaign, which would include a schedule of events, programs and initiatives. Clear implementation and monitoring and evaluation (ME) plans including YC participation will be prepared. Since Track 1 is also being used as a pilot study, there will be a built-in learning component to determine whether it is scalable and replicable for future PWA projects.

### 2) Initiate and design CE program with the support of consultant and World bank

The objective would be to build on the design of the communications and awareness campaigns to create a sustainable CE enhancing relationships between the PWA, municipalities, other relevant stakeholders, and citizens. This will include PWA –community events and activities that will be designed to be interactive processes aimed at engaging citizens of all concerned and affected communities. This should improve the environment within which PWA works. YC are also to learn from participating.



#### 3) Hire a consultancy which will undertake a completion survey

The objective would be an analysis of lessons learnt in so far as they inform other future similar PWA initiatives in order to evaluate whether the CE packages and delivery modalities are replicable and scalable. A quantitative survey of a sample of households and businesses in Hebron, stratified by relevant criteria would be determined, and where applicable with substrata for generic types of household members and businesses, to ensure that any future CE strategy can be as accurate as possible in terms of targeting recipients. Qualitative survey tools would also be used, in form of group interviews or focus groups with participants of the various activities and events that were initiated to gauge which were successful, which can be modified for success and those that were unsuccessful or limited in terms of their objectives.

#### 4) PWA outputs to engage stakeholders in the current stage of the CE program

- The package of CE activities and events based on the analysis and assessments of the field, developed by the consultant (Global Communities)
- Train PWA to implement and evaluate critical CE activities and events. (التدريب وينتا)
- Train PWA to design future CE programs and events including communication strategies.
- In addition, citizens engagement activities were conducted by the Project's Contractor, including the preparation and distribution of printed materials informing the community about the project's activities, outcomes and the available grievances mechanisms.

## 10.10 Grievance Redress Mechanisms (GRM)

The potential affected community people have been informed during the stakeholder engagement activities and Public Scoping sessions of the process for expressing dissatisfaction and to seek redress. As part of this, the study team focused on discussing and clarifying the following topics:

### 10.10.1 Objectives

The objective of a grievance procedure is to ensure that all comments and complaints from any project stakeholder are considered and addressed in an appropriate and timely manner. The grievance procedure will be simple, accessible and should be administered at the local level. Grievance system is important to ensure that complaints are properly handled immediately and to ensure that information is shared transparently and that they are accountable to the hosting communities. A functioning Grievance Redress Mechanisms (GRM) is considered to be a good feedback mechanism from the project affected persons and one tool of the citizen engagement. Grievances activities to be applied under the project will be handled all types of grievances.



#### 10.10.2 Grievances channels

The consultant presented the following the main channels through which are the grievances will be received in written form, as the supposed channels of the project:

- 1. PWA website for those who choose to submit online,
- 2. Written grievance to be sent to the Palestinian Water Authority (PWA) or the Municipalities,
- 3. A telephone number, or hotline, should be assigned specifically to receive grievances. All grievances received via telephone must be written down and documented.

All grievances should be documented in writing and filed. subsequently, a reference number should be given to each complaint in order to facilitate follow up procedures. However, the hotline will be further useful tool that might inform about the results of grievances.

#### 10.10.3 Institutional Responsibility for Grievances

The main body responsible for handling grievances will mainly be the Project Implementation Unit (PIU) within the implementing agency (PWA), with cooperation with Hebron and Yatta municipalities, to assure that all grievances received addressed and documented by PWA. For instance, if Hebron or Yatta municipalities received a complaint they should register it and fill in the form then send it to the PIU at PWA.

The Social Development Officer (SDO) working within PWA in cooperation with the contractor will address all grievances raised by community members. The main tasks related to grievances of the SDO are:

- Raise awareness about channels and procedures of grievance redress mechanisms
- Collect the grievances received through different communication channels
- Document all received grievances
- Transfer the grievance to the responsible entity
- Follow up on how the problem was addressed and solved
- Document, report and disseminate the outcome of received grievances
- Ensure that each legitimate complaint and grievance is satisfactorily resolved by the responsible entity
- Monitoring grievance redress activities.

The consultant presented the following figure during the public consultation sessions to clarify the grievance cycle and how grievance are processed







## 10.10.4 Inquiries or concerns of community members about the Grievance Redress Mechanisms (GRM)

The community people and some of the stakeholders have expressed some inquiries and concerns during the various consultation activities related to the Grievance Mechanism, this is illustrated in the following:

- Who is responsible for receiving complaints during the operational phase?
- Who is responsible for handling complaints during the project life cycle?
- How community members ensure transparency in receiving and documenting all grievances
- Who is the supervisory authority responsible for monitoring the (GRM) during the construction and operation phases?

### 10.10.5 PWA responds to inquiries/ concerns of community members about the GRM

The PWA, in collaboration with Hebron Municipality and with support from the WB, has set up a GRM for the project since May 16, 2019. GRM manual was drafted with support from the WB team and was approved by PWA Minister.

In July 2019, an Environmental and Social Officer ESO was assigned to receive and process complaints and to register all complaints in the GRM log.



The GRM of the project is accessible to all people affected by the project. PWA and Hebron Municipality have disseminated the information about the GRM and the system is operational.

### The current GRM includes the following channels for receiving grievances/ suggestions/ comments

- A land line was dedicated for this task and the existence of the GRM was published on the PWA website,
- A mobile number (+970 595 35 36 37),
- An email address (grm.pwa@gmail.com) were also assigned and communicated in a leaflet that was made available at Hebron Municipality, Hebron Water and Waste Water department, Yatta Municipality and Hebron Governorate offices in August 2019.

A link for submitting complaints related to the project has also been created at Hebron municipality website. The project's Environmental and Social Officer ESO is tasked with tracking complaints received and ensuring that the GRM system is functioning properly.

## To inform relevant stakeholders of the GRM information, PWA:

- Prepared and distributed among the project stakeholders a leaflet containing information about the project and tools for filing grievances, mainly:
  - By email (grm.pwa@gmail.com);
  - o Through the project page displayed on Hebron Municipality website;
  - By calling the Safeguard officer at: 0595 35 36 37.
- Displaying GRM information on the project boards.
- Informing stakeholders about the GRM system during meetings with the adjacent community.

The project's GRM will be aligned with the Citizen Engagement CE activities for this project. The GRM will also be apprised to ensure that it continues to be fit for purpose and that links between the communications strategy and awareness campaign, which enhance the GRM, are clearly identified and synergized.

During the period from August 2019 to December 2020, fifteen project related complaints were handled by PWA. As most of the complaints were resolved and closed, complaints related to land issues and access to land adjacent to the WWTP are still in process. The community's complaint related to the location of the WWTP (submitted to the Bank) and issues raised by the community regarding environmental and health and safety issues (possible noise, dust and odor impacts on them) were addressed in the final version of the ESCHIA Addendum (Annex 19 HRWWTP - GRM Log).

### 10.10.6 Recommendations

 PWA should operate a comprehensive GRM procedure: Leaflets, posters and brochures will be prepared and distributed to the beneficiaries, NGOs, local governmental units, mosques. Thus, sufficient and appropriate information about the GRM will be shared with the communities prior to the construction phase.



- Identify specific community leaders, organizations and citizen groups required to enhance the dialogue and communication through a public liaison office to avoid or limit friction and respond effectively to general concerns of the community.
- All grievances activities should be disclosed on the PWA. A quarterly report should be prepared for the most frequent grievances faced and how they were solved. For the best practice, this report should be disclosed through PWA website and the local governmental unit (Hebron and Yatta municipalities).
- Response to grievance Preferably be through the following channels
  - The same channel the complaint was submitted.
  - Response to grievances should be handled in timely manner (according the duration indicated for each tier), thereby conveying a genuine interest in and understanding of the worries put forward by the community.
  - o PWA should keep a record of complaints and results.
- All grievance activities should be monitored in order to verify the process. The following indicators should guide the monitoring process:
  - Number of received grievances per month (Channel, gender, age, basic economic status of the complainants)
  - Type of grievance received (according to the topic of the complaint)
  - o Number of grievances solved
  - o Level of satisfaction with grievance resolutions
  - o Documentation efficiency
  - o Dissemination activities done
  - Efficiency of response to grievance provided (efficiency in time and action taken)
- The community people enhance the importance of activating community participation through the following:
  - Availability of information during the life cycle of the project through in-house offices on the project site and the municipalities, providing detailed and clear information about the project,
  - Follow-up community, where the community members tracks various activities and informs the authorities responsible for any violations of the rapid intervention



# 11 ANNEXES



# ANNEX 1- ATTENDANCE SHEETS SCOPING CONSULTATION ACTIVITIES



Annex 1: Attendance Sheets All Scoping Consultation Activities and Full list of the stakeholders

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Full list of the stakeholders all those interviewed (Government agencies and members of the community)

S.N	Name	Organization/ Community People	
1	Safaa Abuseneneh	Governorate Rep.	
2	Khaled Doden	Governer Deputy	
3	Eng. Raya Nour	PWA	
4	Dr. Talah Cahara	Antiquities Directorate - Hebron	
	Dr. Taleb Gobran	Governorate	
5	Dr. Vesser Fiere	Health Directorate - Hebron	
5	Dr. Yasser Eissa	Governorate	
6	Eng Ocomo Coror	Agriculture Directorate - Governorate	
0	Elig. Osalila Galai	Manager	
7	Eng Fadwa Abu Sharar	Agriculture Directorate - Guidance	
/	Elig. Padwa Abu Sharar	Manager	
8	Eng Khalil Abu Afifan	Agriculture Directorate - Technical	
0	Ling. Khalin Abu Affian	Logistics ManagerAgriculture Directorate - MediaEl Zahereya Governorate ManagerEl Zahereya Governorate - Planning	
9	Roba El Nazer	Agriculture Directorate - Media	
10	Rateb El Sabbar	El Zahereya Governorate Manager	
11	Leena Sobeih	El Zahereya Governorate - Planning	
11		Dept.	
12	Salman Abu Alan	El Zahereya Governorate- Public	
12	Sannan Abu Alan	Relations	
13	Vassin Fl Kaaky	Agriculture Directorate - MediaEl Zahereya Governorate ManagerEl Zahereya Governorate - PlanningDept.El Zahereya Governorate - PublicRelationsEl Zahereya Governorate - Water AndHealth Dept. ManagerEl Zahereya Governorate - Member ofthe Municipal CouncilIndustrial Zone -Sectoral CommitteeEnv. Directorate - Env. Quality BureauChamber of Commerce - Manager ofChamber of CommerceChamber of Commerce - Member and	
15			
14	Majid Abu Sharkh	El Zahereya Governorate - Member of	
17		the Municipal Council	
15	Hemidan Gaber	Industrial Zone -Sectoral Committee	
16	Bahgat Gabarin	Env. Directorate - Env. Quality Bureau	
17	Mohamed Herbawy Chamber of Commerce - M		
17	Wonanieu Herbaw y	Chamber of Commerce	
18	Abdo Edris	Chamber of Commerce - Member and	
18		financial secretary	
19	Mazen El Zogheir	El Zanereya Governorate - Member of the Municipal Council Industrial Zone -Sectoral Committee Env. Directorate - Env. Quality Bureau Chamber of Commerce - Manager of Chamber of Commerce - Member and financial secretary Chamber of Commerce - Member of	
17		PWAAntiquities Directorate - Hebron GovernorateHealth Directorate - Hebron GovernorateAgriculture Directorate - Governorate ManagerAgriculture Directorate - Guidance ManagerAgriculture Directorate - Guidance ManagerAgriculture Directorate - Technical Logistics ManagerAgriculture Directorate - Technical Logistics ManagerEl Zahereya Governorate ManagerEl Zahereya Governorate ManagerEl Zahereya Governorate - Planning Dept.El Zahereya Governorate - Public RelationsEl Zahereya Governorate - Water And Health Dept. ManagerEl Zahereya Governorate - Member of the Municipal CouncilIndustrial Zone -Sectoral CommitteeEnv. Directorate - Env. Quality BureauChamber of Commerce - Manager of Chamber of Commerce - Member and financial secretaryChamber of Commerce - Member of AdministrationChamber of Commerce - Member of AdministrationChamber of Commerce - Vice President Chamber of Commerce - Vice PresidentChamber of Commerce - Sectoral Committee for stone IndustryChamber of Commerce - EmployeeYatta Yatta - Governorate EmployeeYatta - Governorate Planning Dept. Responsible	
20	Taysir Abu Eisha	Chamber of Commerce - Vice President	
21	Librin Abu Dawood	Chamber of Commerce - Sectoral	
<i>Δ</i> 1	John Add Dawood	Committee for stone Industry	
22	Abdel Rahman	Chamber of Commerce - Employee	
23	Abo Fuaad Zahran	Yatta Governer	
24	Ibrahim Mostafa	Yatta	
25	Tamara El Hereiny	Yatta - Governorate Employee	
26	Emad	Yatta - Governorate Planning Dept.	
20	Lillau	Responsible	

S.N	Name	Organization/ Community People
27	Salah Mostafa	Yatta - Member of the Municipal
21	Salah Wostara	Council
28	Mohamed Gharib	Directorate of Social Affairs in Yatta
20	Lohna Anany	Directorate of Social Affairs in Yatta -
29		Governorate Manager
30	Atef Zahran	Directorate of Social Affairs in Yatta
31	Sobheya Tafesh	Directorate of Social Affairs in Yatta
32	Saddam Adees	Directorate of Social Affairs in Yatta
33	Sanaa El Anany	Directorate of Social Affairs in Yatta
24	Hotom Aby Soif	Directorate of Social Affairs in Yatta -
54	Hatelli Abu Seli	Professional guidance
35	Dr. Aly El Haroub	Manager of Yatta Health Directorate
26	Shahar Adaas	Yatta Health Directorate - Financial &
50	Shaher Adees	Admin
27	Dr. Fice Alen	Yatta Health Directorate - Health and
57	DI. Elsa Alali	epidemiology
28	Mohamad El Hayyamda	Yatta Health Directorate -
30	Wonamed El Hawamda	Environmental Health
39	El Mokhtar (Mayor) Ayed Abo Aly	Kharbet ElShiha
40	Wife of Mayor	Kharbet ElShiha
41	Hawaa Secondary School - Sp	
41	Hallaa Oowelliali	Teacher
42	Asmahan El Shawahin	Hawaa Secondary School -
43	Hmeida El Kawasmy	Hawaa Secondary School -
44	Vasser Saleh	Directorate of Education Yatta -
		Governorate Manager
45	Emad El Masry	Directorate of Education Yatta
46	Mahmoud Fesha	Directorate of Education Yatta
47	Osama Roumy	Directorate of Education Yatta
48	Adnan Abu Tabikh	Directorate of Education Yatta
49	Ismail Abo Halawa	Yatta Police
50	Fassy Mohamed Abo Sebeiha	Yatta Police
51	Khalil Ahmed Hendawy	Yatta Police
52	Mohamed Hassan Abu Zahra	Yatta Police - Office Manager
53	Mohamed Hamad Abu Hagga	Yatta Police
54	Ahmed Abdallah Hassan Salhoub	Dora Governorate Chef
55	Alea El Sowoity	Dora Governorate - Economic
	Alda El Sewelty	Development Dept.
56	Eng Ahmed El Pagoub	Dora Governorate - Member of the
	Elig. Allined El Ragodo	Municipal Council
57	Fawzy Abdel Kader Aby Helail	Dora Governorate - Governorate Chef
		Deputy
58	Maher Kazzaz	Dora Governorate
59	El Sayed Zeyad El Hamouz	Mokhayam El Fawar Chef Office

S.N	Name	Organization/ Community People
60	Yassin Asmirat	Yatta Charity Association
61	Fadl Mahmoud Nawagaa	Yatta Charity Association
62	Mourad Nawagaa	Yatta Charity Association
63	Metaab Khalil Mohamed	Yatta Charity Association
64	Mohamed Mousa Daagna	Popular Struggle Bloc
65	Majid Abu Zahra	Yatta Charity Association
66	Mohamed Hassan Abu Arram	General Federation of Palestinian Trade
		Unions
67	Ahmed Sokkar	Elmenya Landfill Deputy Manager
68	El Mokhtar (Mayor) Eisa Mohamed Adees	Adees Family
69	Ahmed Aly Mohamed Adees	Adees Family
70	Om Samy Adees	Adees Family
71	Mohamed Ahmed Mohamed Adees	Adees Family
72	Hesham Gebril Gebril Mohamed Shawahin	Adees Family
73	Khedr Abdallah Adees	Adees Family
74	Mohamed Hassan Abdallah El Shawahin	Okba Ibrahim - Yatta
75	Tayseer Ibrahim Shawahin	Okba Ibrahim - Yatta
76	Farag Mahmoud Hasan El Shawahin	Okba Ibrahim - Yatta
77	Zeidan Abdel Fattah Abo Tabikh	Okba Ibrahim - Yatta
78	Deif Fadl Mohamed El Shawahin	Okba Ibrahim - Yatta
79	Seif Mohamed Hassan El Shawahin	Okba Ibrahim - Yatta
80	Mahmoud Fadl Mohamed El Shawahin	Okba Ibrahim - Yatta
81	Mohanad Mohamed Hassan El Shawahin	Okba Ibrahim - Yatta
82	Aziz Abdallah Mohamed El Shawahin	Okba Ibrahim - Yatta
83	Mohamed Abdallah Mohamed El Shawahin	Okba Ibrahim - Yatta
84	Mousa Mekhamra	Heila - Yatta
85	Mohamed Hegazy Gebril Zein	Heila - Yatta
86	Zeyad Mohamed Awad	Heila - Yatta
87	Mohamed Salama Mekhamra	Heila - Yatta
88	Youssef Ismail Mekhamra	Heila - Yatta
89	Khalil Abu Arram	Eng Heila - Yatta
90	Tahrir Omar Mohamed Gabbour	Females - Heila
91	Meriam Mahmoud Khalil Mekhamra	Females - Heila
92	Rihan Mahmoud Khalil Mekhamra	Females - Heila
93	Abu Maher Mekhamra	Abu Maher Mekhamra Home

# ANNEX 2- MOM COMMUNITY PEOPLE FGD\_INTERVIEWS



## Annex 2: MoM individual interviews and FGDs with community people

Date	place	
19 <sup>th</sup> September 2018	Head of El Zaheria Municipality office	
Number of participants: 6 people		
Names of participants		
Rateb El Sabar – Head of El Zaheria		
Lina Sobeih – Planning unit		
Salman Abou Elan – Public relations		
• Yassin El Kaeky – Manger of water and health directorate		
Maged Abou Sharkh – member of municipality council		
Participating entities: Consultant, Hebron Environment Authority		

### FGD with El Zaheria Municipality

### Meeting Agenda

- Present project objectives
- Introduce Hebron waste water treatment plant project to the participants
- Discuss the expected positive and negative results of the wastewater treatment plant during design, construction and implementation phases.

### Methodology: Questions, presentation and discussion

### Meeting:

- The objective of the meeting was introduced, that is presenting the phases of the wastewater treatment project.
- The steps and preparations taken by the water Authority, to start the establishment of Hebron wastewater treatment plant.

### Points covered during the meeting

- The participants stressed that El Zaheria municipality is not benefiting from Hebron's plant. However, they ask for establishing a similar plant for El Zaheria to serve the residents of Yatta, El Zaheria and neighboring villages, also a sanitation network to be connected to the plant.
- The participants emphasized the damages cause by Wadi al-samen stream, affecting their lives and lands.
- The participants asked for compensation for the damages caused by Wadi al-samen stream or more than 40 years

- The participants emphasized the importance of wastewater treatment projects as it will improve the environment and protect ground water
- Establishing Hebron treatment plant will contribute in reducing treated and non treated wastewater flowing into wadi al-samen stream
- The water, environment and agriculture authorities should give more concern to reclamation of thousands of الدونمات contaminated by wadi al samen stream over years.

### FGD with El Dora Municipality

Date	Place	
9 <sup>th</sup> October 2018	Office of El Fawar Camp manager	
Names of participants:		
Ahmed Abdallah Hassa	n Salhob – Head of municipality ، ۹۸۰۸۰۸۰۰	
<ul> <li>Alaa El Soyty – Economic Development Unit • oly • • old</li> </ul>		
<ul> <li>Eng. Ahmed El Ragob – member of municipality council •o٩٩٣٧٦٤٢٣</li> </ul>		
• Fawzy Abdel Qader Abou Helel – Deputy of the municipality • • • • • • • • • • • • • • • • • • •		
• Maher Kazaz • • ٦٢ • • • ٤ ١٣		
Participating entities: The Consultant		

### Meeting Agenda

- Present meeting objective
- Introduce Hebron waste water treatment plant
- Observations from El Fawar Camp

Methodology : presentation and discussion

### Meeting

- The objective of the meeting was introduced that is to present the status of the consultation work carried by the consultant with the treatment plant relevant bodies.
- The Head of El Dora municipality confirmed that there is no sanitation network at El Dora and Hebron treatment plant will not serve El Dora.
- The participants emphasized the importance of wastewater treatment projects as it will improve the environment and protect ground water.
- Establishing a treatment plant will contribute in reducing treated and non treated wastewater flowing into wadi al-samen stream.
- The water, environment and agriculture authorities should give more concern to reclamation of thousands of الدونمات contaminated by wadi al samen stream over years.
- They do not object the establishment of the plant and covering wadi al samen stream

### Demands of El Dora Municipality

- Provide sanitation network for El Dora
- Establish treatment plant for El Dora and neighboring municipalities
- The location of the plant (6 دونمات) was visited
- Use treated water in agricultural purposes
- Cover the stream flowing in their lands

### **Consultation Meeting Yatta Residents**

Date	13.Oct.2018
Place	The house of a Yatta resident
Participants	Number of attendees: 13 persons
	The Mayer of the Municipality of Yatta Mr. Abou Fouad
	Participating Institutions: EcoConserv company (Ms. Nadia Saad and
	Dr.Anan Mohammad),

### Meeting Agenda:

- Review project objectives
- Defining the project: Wastewater Treatment Plant in Hebron
- Discuss what are the expected positive and negative results of the Wastewater Treatment Plant project during the design, construction and operation of the plant

Work Methodology: Asking questions, presenting and discussing

### Meeting Conduct:

- Recent updates related to Consultancy team were presented. The consultancy team stressed the need to complete the work and meet with groups of people in Yatta to familiarize them with the project and take their consent.
- Attendees stressed the need to speed up and immediately implement the Wadi Al-Samen project in order to stop the daily damage as the flood is affecting the health and safety of citizens.
- Attendees stressed the importance of Wastewater Treatment Plant project because it contributes to improving the environment and preserving groundwater from pollution such as Bir Khirbet Ibrahim, which is contaminated by the wastewater flood.
- The Hebron Wastewater Treatment Plant construction will contribute to reducing waste water and untreated wastewater that reaches the Wadi al-Samen mostly, thus contributing to the improvement of the life of the population, their plantations and their animals.
- They participants stressed that the importance of the municipality role; its supervision will ensure the safety of plant's operation and if they notice any problems caused by the plant, they will inform the competent authorities to decide how to proceed.
- The municipality will put pressure on the competent entities in the Water, Environment and Agriculture Authority to study how to reclaim thousands of donums that have been polluted from the waters of Wadi Al- Samen for decades.
- The attendees confirmed that they were in favor of the construction of the Hebron Wastewater Treatment Plant and the other projects accompanying it, which were included in

the agreement of understanding signed with the municipality of Yatta several months ago outlining water and sanitation infrastructure projects in Yatta.

- The residents stressed the need for the municipality to benefit from the treatment plant project in the field of employment of workers and technicians from Yatta, as well as benefit from water treated for irrigation and agriculture to the area of the Al- Hyla or to Masafer Yatta. They confirmed that their access to treated water will be either free or at nominal prices
- The mayor of Yatta stressed he will maintain the wellbeing of the residents of Al -Hyla and will not allow them to be harmed during the work implementation at the plant or after the operation of the Wastewater Treatment Plant
- The attendees expressed their cooperation with the Consultancy team in contacting other residents from different districts of Yatta to take their opinion about the project.

### FGD with Kherbit Beit Amra

Date	14 October
Place	Adeis Family
Participants	El Mokhtar Eissa Mohamad Adeis •০٩٩٤٦٩٣٧٤
	Ahmed Ali Mohamad Adeis
	Om Salma Adeis
	Mohamad Ahmed Mohamad Adeis • • ٦٩•٢ • • • •
	Hesham Gebreil Gebreil Mohamad Shawaheen • • ٩٧٦٣٢٦٧٦
	Khidr Abdallah Adeis •०٩٨٤٩٨٠٦٧

### Meeting Agenda

- Present project objectives
- Introduce Hebron waste water treatment plant and Wadi al-samen covering project to the participants
- Discuss the expected positive and negative results of the wastewater treatment plant and Wadi al-samen covering project for the residents

Methodology: Introduction, question and discussion

### Meeting:

- The objective of the meeting was introduced by the social and communication consultant of the ESIA for the Hebron wastewater treatment plant and covering Wadi al-Samen stream. This was done through presenting to the participants Hebron wastewater plant project and its implementation phases. The project will be implemented on the Khelet El Dar lands near to some houses in Kherbet El Helya in Yatta.
- The steps and preparations taken by the water Authority, to start the establishment of the wastewater treatment plant and covering wadi al-samen, were presented.
- The opinion of Khelet Beit Ammra about the project was taken and if they agree with the project or have any concerns.
- The participants did not have any idea about the project
- The participants stressed how they suffer from the flood of wadi al-samen stream loaded with wastewater of Hebron and some nearby settlements. They have been suffering for years.
- Wastewater flowing with the flood destroyed the agricultural lands dividing it into two parts and hindered community access to their lands. Moreover, it became difficult for the residents to cultivate their lands as it is saturated with contaminated wastewater.
- Mosquitoes, insects and rodents spread along the stream threatening residents health and causing different diseases.

- Residents are forced to use fans, coolers and mosquito repellants causing an increase in the monthly electricity bill. Also, they spend a lot due to the expensive pesticide which they use to get rid of mosquito and rodents.
- Children on their way to and from the school fall in the stream which cause injuries and deaths.
- Sometimes sheep and cattle fall in the stream which lead to sever losses among farmers.
- Our priority in Kherbet Beit Ammra is covering wadi al-samen stream for a distance not less than 14 km
- We have no objection for establishing Hebron treatment plant as it will not harm us, as it will receive Hebron wastewater instead of being disposed in the stream harming the residents.
- The participants stressed the need for the Municipality and the water Authority to operate the plant efficiently so it does not affects the neighboring residents.
- They expressed their willingness to use the treated water for fodder and high tress cultivation purposes for nominal prices.

### FGD with Oqba Ibrahim in Yatta

Date	14 <sup>th</sup> October
Place	Tayseer Ibrahim Shawaheen house
Participants	Mohamad Hassan Abdallah Shawahin •0999٤٨٤٢٥
	Tayseer Ibrahim Shawahin •099989155
	Farag Mohamoud Hassan Shawahin
	Zedan Abdel Fattah Abou Tabeekh
	Deif Fadl Mohamad El Shawahin
	Seif Mohamad Hassan El Shawahin
	Mahmoud Fadl Mohamad El Shawahin
	Mohanad Mohamad Hassan El Shawahin
	Aziz Abdallah Mohamad El Shawahin
	Mohamad Abdallah Mohamad El Shawahin

### Meeting Agenda

- Present project objectives
- Introduce Hebron waste water treatment plant and Wadi al-samen covering project to the participants
- Discuss the expected positive and negative results of the wastewater treatment plant and Wadi al-samen covering project for the residents

Methodology: Introduction, question and discussion

### Meeting:

- The objective of the meeting was introduced by the social and communication consultant of the ESIA for the Hebron wastewater treatment plant and covering Wadi al-Samen stream. This was done through presenting to the participants Hebron wastewater plant project and its implementation phases. The project will be implemented on the Khelet El Dar lands near to some houses in Kherbet El Helya in Yatta
- The steps and preparations taken by the water Authority, to start the establishment of the wastewater treatment plant and covering wadi al-samen, were presented.
- The opinion of Khelet Ibrahim about the project was taken and if they have any concerns.
- The participants did not have any idea about the project
- The participants stressed how they suffer from the flood of wadi al-samen stream loaded with wastewater of Hebron and some nearby settlements. They have been suffering for more than 40 years.
- Wastewater flowing with the flood destroyed the agricultural lands dividing it into two parts and hindered community access to their lands. Moreover, it became difficult for the residents to cultivate their lands as it is watered with contaminated wastewater.

- Mosquitoes, insects and rodents spread along the stream threatening residents health and causing different diseases.
- Residents are forced to use fans, coolers and mosquito repellants causing an increase in the monthly electricity bill. Also, they spend a lot due to the expensive pesticide which they use to get rid of mosquito and rodents.
- Pumping trucks from Dowara and El Samoaa dispose their waste in Wadi al-Samen stream.
- Residents from nearby villages dispose dead animals in the stream causing the spread of mal odors.
- Conflicts arise between the residents of Kherbet Ibrahim and the owners of the pumping trucks and community people disposing their waste in the stream, in their attempt to prevent disposing pollutants in the stream.
- Children drown in the stream especially in winter and olives picking times, and also on their way to and from the school fall in the stream which cause injuries and deaths.
- Materials disposed in the stream contain tanneries waste filled with carcinogens.
- Sometimes sheep and cattle fall in the stream which lead to sever losses among farmers.
- Our priority is covering wadi al-samen stream for a distance not less than 14 km
- We have no objection for establishing Hebron treatment plant as it will not harm us, as it will receive Hebron wastewater instead of being disposed in the stream harming the residents.
- The participants stressed the need for the Municipality and the water Authority to operate the plant efficiently so it does not affects the neighboring residents.
- They are willing to use the treated water for fodder and high tress cultivation purposes,

### Consultation session with the residents of Khelet Qalqas and Khelet El Dar

Date	Tuesday 18 <sup>th</sup> Sep. 2018	
Place	Head of chamber of commerce office	
Participants: 12 people		
Names of participants: (list attached)		
Participanting entities: Palestinian Water Authority, Consultant		

### Meeting Agenda

- Present the objectives of the ESIA for Hebron wastewater treatment plant
- Introduce Hebron waste water treatment plant to the participants
- Discuss participants knowledge about the treatment plant
- Present the project's relevant official authorities
- Discuss the potential social, cultural heritage and environmental positive and negative impacts of the project during implementation and operation phases
- The necessary measures to mitigate the potential social, environmental and cultural heritage impacts of the project

Methodology : ask questions, present, discuss and summarize main points covered by the workshop

## Meeting

- The participants were introduced and the objective of the workshop, by the social and communication consultant, in addition to a breif summary about Hebron treatment plant project and its implementation phases.
- The Water Authority engineer presented basic information about the treatment plant and the preparations carried by the water authority to initiate the establishment of Hebron plant.
- The participants from Khelet El Dar complained about the poor infrastructure as most of the houses are not connected to sanitation network. The main street needs to be paved, also the internal streets need paving and expansion.
- As for the children, there is no park or entertainment areas.
- With regard to Kherbet Qlqas, they suffer from water scarcity, and most of the houses are not connected to sanitation network.
- Kherbet El Dar and Qalqas sold 200 دون from their lands to the water authority in 2005, at the beginning they objected, yet they agreed for the public interest.

- Wadi al-samen stream passes through their lands loaded with the wastes of the stone cutting facilities which prevent them from cultivating their lands. In winter the stream floods and prevent people access and sometimes children drown in the stream.
- The water authority had their pressure on the residents to buy their lands for public interest. They bought 200 الدونم in 2005 for 5000 dinars only. Today the الدونم is sold for 50 thousand JD.
- Residents of Kherbet Qalqas suffer from closing the entrance connecting them with Hebron City (2 km) by the Israeli Authority. Now they enter Hebron through Khelet El Dar (8 km).
- In 2006 the USAID want to establish Hebron plant costing 50 million, whereas the value of the tender was 5, which hindered the implementation of the project and was given to the Israeli part.
- Now 13 thousand cups of wastewater is generated from Hebron sanitation network and flows into the stream.
- Water reaching the residents is insufficient as the administration switches off water at night. The water pipeline is broken and the Israeli patrols shoot the people when they try to open the water to reach their houses.

### Demands

- Paving Khelet El Dar main street for 3 km.
- Renew the water network for 800 families as the water reaching them is contaminated due to the very old network. This was confirmed by Hebron investigation.
- Establish entertainment project for the children because it is very difficult to reach Hebron as there are Israeli patrols at the entrance.
- Extend the sanitation network and connect it to a wastewater treatment plant.
- The designers of the treatment plant should take into consideration that malodors and insects do not spread.
- Compensating the residents for the damages of Wadi al-samen. The Authority should help the residents in the reclamation of lands damaged by wadi al-samen.
- Getting treated water for free or for low prices.
- Damaged lands reclamation in Kherbet El Dar for the people whom the plant will be established on their lands.
- During construction phase of the plant, the contractor should coordinate with Khelet El Dar committee to reopen the streets due to narrow streets. Organize traffic during construction phase as Khelet El Dar lost 8 children due to traffic accidents and lack of pavements.
- Employ workers and engineers from Kherbet El Dar in the project.

## Qalqas demands

- Open access roads to Hebron
- Extend sanitation network. Potable water is mixed with septic tanks water.
- Benefiting from treated water in agriculture

### Common demands for Kelet El Dar and Qalas

- Kherbet El Dar and Qalqas are confident about Hebron municipality as an operator for the municipality. However, there should be a supervisor to ensure safe operation.
- Provide a complains system to report any problem during construction and operation.
- The residents in both demanded that engineers and workers should work in the project.
- If the municipality established a sanitation network and connected it to the treatment plant, the residents are willing to pay connection fees and monthly fees for the service. However, the fees should be convenient and less than that of the pumping trucks (70 shekel)
- The Authority should compensate the residents through land reclamation projects and treatment of negative impacts accumulated over years. Part of the plant's revenue should be allocated for development in Qalqas and Kherbet El Dar.

# Consultation Session with Residents of Kherbit Qalqas and Khellit Al-Dar

Date:	Tuesday, 18.09.2018		
Venue:	Office of the President of the Chamber of Commerce		
No. Of Attendees	s: 12		
Participants:	Attached		
Participating Institutions:	Consultant and PWA		
Agenda:			
Review the objecti wastewater treatme	ves of the study of the environmental, social ,and heritage impact of the ent plant of Hebron, Palestine		
Introducing the wa	astewater treatment plant project of Hebron to the attendees		
Discussion on what	Discussion on what the participants know about the wastewater treatment plant		
Review of the office	Review of the official bodies related to the project		
Discussion on what the expected positive or negative results of the project are in terms of social, heritage, and environmental aspects during the project implementation period of and the operation			
measures to be taken to mitigate the expected impacts of the project in terms of social, environmental, and heritage aspects			
Methodology: A	Asking questions, presenting, discussing and summarizing the main points of the workshop		
Progress:			
The objective of the consulting workshop was introduced and presented by the expert of the consulting company, in addition to providing a brief about the Hebron WWTP project and the stages of works and implementation			
The PWA Engineer reviewed preliminary information about the treatment plant and the preparations made by the Water Authority to start the WTP project in Hebron municipality.			

Participants complained about the weakness of the infrastructure in terms of: water erosion, no wastewater network for the majority of houses, the main street needs to be re-paved, and the internal streets need to be expanded and paved.

Participants complained about the weakness of the infrastructure in terms of: water erosion, no wastewater network for the majority of houses, the main street needs to be re-paved, and the internal streets need to be expanded and paved.

Also for children there is no breathing space for them as there is no place for picnicking and entertainment.

Khellit Qalqas is also suffering from water scarcity and has no sewer network for most of houses.

The people of Khellit Al-Dar and Kherbit Qalqas sold 200 dunums of their land to the PWA in 2005, At first there was opposition but eventually we agreed for the common good.

Al-Samen valley starts from their lands and they are very close to the stone cutting factories that dispose the waste in the sewers and then flows with the valley and reach their lands and thus deprive them of planting them. Also in the winter the stream is overflowing and the residents are unable to communicate and travel, and sometimes the children drown in the stream.

The PWA pressed for the purchase of land for the public good. The price of one dunum was 5000 JD in 2005, today the dunum price is up to 50000 JD.

Residents of Khirbat Qalqas suffer from Israel's closure of the entry point linking them with the city of Hebron by 2 km. Currently they enter Hebron via Khellit Al-Dar through a distance of 8 km

In 2006, the USAID wanted the implement Hebron Plant at a cost of 50 million, while the value of the bid was 5, which hindered implementation of the project and was carried to the Israeli side where the project was implemented.

Currently 13 thousand cups of wastewater comes out of the sewers of Hebron and runs daily in the valley.

The amount of water reaching the population is insufficient because the Civil Administration closes the water valves at night. Water line burst occurs, Israeli troops arrive and shoot at the citizens as they try to open the valves.

### Demands of the population

Paving the main street of Khellit Al-Dar (3 km)

Rehabilitation of water network for 800 families because the water they receive is contaminated due to the worn out network as confirmed by the Hebron Municipality.

The establishment of a recreation project for children because it is difficult for children to go to Hebron because of the presence of Israeli patrols at the entrances of Khilla at the so-called Sadet Al-Fahs.

Extend the sewage network and connect it to the wwtp.

The designers of the wwtp should consider that the smells do not seep into the houses and that mosquitoes do not spread.

The issue of compensating the population for the damage of Al-Samen valley: The Authority should help the residents to treat the affected lands of Al-Samen valley and thus reclaim them

To have treated water for free or at low prices

To treat and reclaim the land of Kherbit Al-Dar for the benefit of the owners of the area on which the plant will be constructed.

During the construction of the plant, the contractor should: A) Coordinate with the Committee of Khellit Al-Dar to reopen and close the streets because of the narrow streets and also in order not to harass the population. 2) Pay attention to organize the traffic during the construction of the plant because Khellit Al-Dar lost 8 children during the past year due to traffic accidents because of the narrowness of street and the absence of sidewalks.

Employ some of the workers and engineers of Kherbit Al-Dar in the project

### Demands of Qalqas

Opening the road leading to Hebron

Extension of sewage network. Water sometimes mixes with water of septic tanks.

Utilization of treated water

### Common Demands for Khellit Al-Dar and Qalqas

Khirbet Qalqas and Khellit Al-Dar have confidence in the municipality of Hebron as a plant operator, but an observer must be available to ensure the operation safety.

The existence of a system of complaints in order to report any defect whether during construction or operation

Residents of the two villages demanded that part of their workers and engineers should be employed in the project.

If the municipality has implemented a sewage system and we are connected to the treatment plant, the population is ready to pay the network charges and the monthly service fees at reasonable prices that take into account the situation of the population because it certainly will be cheaper than the cost of drainage which costs us 70 shekels per transport vehicle.

The authority has to compensate the population through the establishment of land reclamation projects and address the negative effects accumulated over the years. Part of the revenues of the plant should be in favor of the development of the area of Qalqas and Kherbit Al-Dar.

# Meeting with Residents of Kherbit Al Shiha

Date:	14\10	
Venue:	House of Ayed Abu Ali	
Participants:	Al Mokhtar Ayed Abu Ali & His Wife	
Agenda:		
Review project objectiv	ves	
Introducing the wastev to the attendees	vater treatment plant project of Hebron and Al Samen valley roof installation	
Discussion on the expe and Wadi Al Sammen	ected positive and negative results of the wastewater treatment plant project roof installation on the residents.	
Methodology: Introd	luction, questions, and discussion	
Progress:		
the expert of the communication consultant introduced and presented the objective of the meeting and the social side about the water treatment plant in Hebron and the roof installation of Wadi Al Samen through informing Mokhtar Khellit Al Shiha about the wastewater treatment plant project of Hebron Municipality and the stages of implementation. The project will be implemented in the lands of Khellit AlDar adjacent to some houses of Haret Al Hilah in Yata.		
The steps and preparations made by the PWA for the start of the wastewater treatment plant project of Hebron and Wadi Al Samen roof installation project were reviewed.		
The participants had no idea about the project.		
The participants stressed on their suffering from Wadi Al Samen valley which is loaded with wastewater coming from the streams of Hebron and some settlements near the valley. This suffering has been going on for more than 40 years.		
The effluent in Wadi Al Samen valley destroyed the agricultural land, dividing it into two parts and preventing the residents from reaching their lands. It has also become impossible for people to cultivate their land because of their exposure to contaminated sewage.		
Insects, rodents, and snails are spread along the length of the stream which deprive the population of their lives, afflict their health, and cause them to suffer from various diseases		

Residents are forced to operate fans, air conditioners, and mosquito repellent devices. This increases the value of the monthly electricity bill as well as the prices of pesticides that citizens buy to eliminate mosquitoes and rodents.

Residents in nearby villages throw dead animals in the valley that leads to the spread of foul odors

Problems arise between the people close to the valley and the water tankers owners who discharge into the stream course or the citizens who discharge into the valley. If we try to prevent, verbal altercations occure between us and them.

Children drown in the stream especially in the winter and olive harvest times.

The evacuation tankers from Dora and El Somoa discharge their wastes into the stream.

Materials that discharged into the course and contain the remnants of tanneries contain carcinogens.

Children drop while they are walking back from school causing many accidents and deaths.

Sometimes sheep and livestock fall in the valley leading to a great loss on farmers.

For Mukhtar of Khellit Al Shihah, the priority is to complete the roof installation of Wadi Al Saman at a maximum speed of not less than 14 km.

We have no objection to construct a wastewater treatment plant in Hebron because it will not cause any harm to us as it will contain the wastewater in Hebron instead of flowing into the valley and causing great damage to the population.

The participants concentated on that the Municipality of Hebron and the PWA operate the plant efficiently so as not to affect the population adjacent to the plant.

Agree to use treated water for fodder and long-stemmed trees.

Khellit Al Shihah's opinion was taken and they agreed to the project without reservations. What concerns them is to end their suffering from the wastewater that flows through Wadi Al Samen.

# FGD with Hawa Secondary School

Date:	14.10.2018	
Venue:	Hawa Secondary School for Girls – 600 students	
Participants (Teachers):	Haifaa Jowaihn – Asmahan Al Shawaheen – Hamidah Al Qawasmi	
Agenda:		
Review project objectiv	ves	
Introducing the wastew to the attendees	vater treatment plant project of Hebron and Al Samen valley roof installation	
Discussion on the expo and Wadi Al Sammen	ected positive and negative results of the wastewater treatment plant project roof installation on the residents.	
Methodology: Introd	luction, questions, and discussion	
Progress:		
The purpose of the meeting was introduced and presented by the expert of the communication and social consultant.		
Review of the project based on the construction of the WWTP in Hebron and Al Samen valley roof installation by informing the participants about the wwtp of Hebron Municipality and the stages of implementation.		
The project will be implemented in the lands of Khellit Al Dar and adjacent to some houses of Khirbet Al Hilla in Yatta.		
The steps and preparations made by the PWA to start the work of the wwtp of Hebron Municipality and Wadi Al Samen roof installation were examined for the students in the seventh and tenth grades. Most of the girls showed that their houses are close to the sewage stream which affects their health and psychological health.		
The students and teachers had no idea about the project.		
The teachers confirmed how they suffer from Wadi Al Samen, which carries wastewater coming from the streams of Hebron and from some settlements near the valley.		

The effluent in Wadi Al Samen valley destroyed the agricultural land, dividing it into two parts and preventing the residents from reaching their lands. It has also become impossible for people to cultivate their land because of their exposure to contaminated sewage.

Insects, rodents and mosquitoes are spread along the length of the stream which disrupt the lives of the population, threaten their health, and afflict them with various diseases including Leishmania and diseases caused by the aedes albopticus.

Residents are forced to operate fans, air conditioners, and mosquito repellent devices. This increases the value of the monthly electricity bill as well as the prices of pesticides that citizens buy to eliminate mosquitoes and rodents.

Residents in nearby villages throw dead animals in the valley that leads to the spread of foul odors

Problems arise between us ,as the people close to the valley, and the water tankers owners who discharge into the stream course or the citizens who discharge into the valley. If we try to prevent, verbal altercations occure between us and them.

Children drown in the stream especially in the winter and olive harvest times.

The evacuation tankers from Dora and El Somoa discharge their wastes into the stream.

Materials that discharged into the course and contain the remnants of tanneries contain carcinogens.

Children drop while they are walking back from school causing many accidents and deaths.

Sometimes sheep and livestock fall in the valley leading to a great loss on farmers.

For Mukhtar of Khellit Al Shihah, the priority is to complete the roof installation of Wadi Al Saman at a maximum speed of not less than 14 km.

We have no objection to construct a wastewater treatment plant in Hebron because it will not cause any harm to us as it will contain the wastewater in Hebron instead of flowing into the valley and causing great damage to the population.

Agree to use treated water for fodder and long-stemmed trees.

The teachers stressed the importance of educating the population on this issue because it is new to them and they do not have information about the projects of WWTPs.

# Interview with Fawar Camp Manager

Date:		19.10.2018		
Venue:		Office of Fawar Camp Manager		
Participants:		Mr. Ziad Al Hamouz		
Participating Institutions		Consultant		
Agenda:				
Review the aim of the meeting				
Introducing the wastewater treatment plant project to the attendees				
Comments from Fawar Camp				
Methodology:	Presentation and questions			
Progress:				
The aim of the meeting was explained to the Fawar camp which is the consultation process that was conducted by the Consultant with the stakeholders of the WWTP.				
Fawar camp manager confirmed that the flows of Fawar camp are being discharged in an open course in Wadi Al Samen.				
The importance of the treatment plant project for Hebron and Yatta as it will contribute to improving the environmental conditions.				
The attendees stressed the importance of wastewater treatment projects because they contribute to improving the environment and preserving the groundwater.				
The construction of the Hebron WWTP will contribute to the reduction of the huge amount of the untreated effluent that reach the Wadi Al Samen, thus posing a threat to the lives of the population, their crops, and their animals. However, the collection of sewage from Fawar camp in Wadi Al Samen affects the continued flow of water contaminated in the valley.				
The PWA, Environment and Agriculture Authoriies should pay attention to studying how to reclaim thousands of dunums that have been polluted from Wadi Samen for decades.				
They have no objection to the construction of the wwtp or the installation of the course roof of Wadi Al Samen.				

# **ANNEX 3- MOM EL HEILA**



# Annex 3: MoM El Hiela

Date	September 15, 2018
Location	El Heilla Mosque meeting hall, Yatta
Participants (35)	Communication Expert
_ 、 /	Palestine Water Authority
	World bank
	Yatta Municipality
	Residents from Yatta

### Consultation session with El Hiela Area, Yatta

### <u>Agenda</u>

- Present the objective of the Wastewater Project in Hebron.
- Explain the project in detail to the participants.
- Explore what the participants know about the Hebron Wastewater Treatment Plant (WWTP).
- Identify project stakeholders.
- Discuss the expected positive and negative social, heritable and environmental results during the project implementation and operation.
- Identify the measures that shall be taken to mitigate the expected social, heritable and environmental impacts of the project.

### **Consultation Methodology**

Presentation of data and information, questions and answers, small groups discussions, and open discussions.

### **Consultation Process**

The Communication Expert facilitated the meeting as follows:

- Welcomed the participants;
- Explained that the aim of the workshop was to get the participants' opinions and feedback on the expected positive and negative impact of Hebron WWPT in the implementation and operation phases;
- Assisted the participants to brainstorm and suggest measures to be taken to mitigate the negative impact of WWTP on people and environment.

### Palestine Water Authority (PWA) Presentation

PWA Project Manager, Mr. Murad Al Fuqaha, presented the preparations made by PWA to start the implementation of WWTP in cooperation with Hebron Municipality. He stressed that PWA is currently in the bidding process for constructing 14km to cover Wadi El Samen (wastewater stream) across Yatta lands.

### People of Yatta comments

Some participants complained about the poor infrastructure in Yatta in terms of:

- 1. The Ministry of Health (MoH) wants to close the health clinic.
- 2. Scarcity of drinking water.
- 3. Lack of households' sewage network.
- 4. The extension of the electricity network and building of the school were executed at the expense of the population.

The participants criticized the project saying: "The project management and Hebron Municipality want to bring WW of Hebron population to be treated close to El Heilla homes."

Moreover, the participants criticized Yatta Municipality in terms of its failure to provide key services to residents addressing directly the Mayor, Mr. Ibrahim Abu Zahra.

### Comments raised by Yatta Municipality

Yatta Mayor confirmed that the municipality is in debt of NIS42 million, and explained that he had recently held this position.

The Mayor stressed that his discussions with PWA resulted signing a memorandum of understanding (MoU) to conduct the following projects:

- Construction coverage with 14 KM of Wadi El Samen
- Approval of establishing WWTP in case it does not have any environmental and social impact. In case of any negative effects during the operation, the Municipality has the right to close the plant. As for the WWTP sludge, it will be deported to Minya landfill.
- Extension of 65km conveyor line.
- Master Plan should assist Yatta and Al Thahriya to have WWTP and sewage network.
- Rehabilitation of 2km of Yatta's main street. A request was submitted to PWA and the Ministry of Public Work and Housing (MPWH) to pave other streets, including the streets of El Heilla.

Other projects were submitted to the Palestinian Authority (PA) institutions, including a central gas station; meat and poultry slaughterhouse, and constructing of a large lounge and a commercial center.

Mayor again stressed the need keep an open mind about to the construction of the WWTP and stated that there will be benefits resulting from the use of the treated wastewater.

### General comments

Triggered by their attitudes towards the project, the participants refused to work independently or in small groups and kept interrupt the discussions.

A group of participants confirmed that they have concerns about the project being located near their homes. In response, Eng. Mourad said that a series of demonstration field visits can be organized to show people of El Heilla similar treatment plant and learn more about WWTP.

A group of participants expressed their lack of confidence in Hebron Municipality its capacity to operate WWTP and perform maintenance when needed.

Some participants threatened to close the project if the treatment plant is constructed close to their homes due to the bad effect they are expecting from WWTP. They are already affected by the water stream (Wadi El Samen), as its water comes from Hebron and the nearby settlements. They also have problems with cesspits and water scarcity.

El Heilla people expressed their aspirations to have a water project, a sewerage system, a sewage line and a closure of the flood that destroys agricultural land and threatens the lives of children in winter.

The Mayor stressed, once again, that PWA is dealing with the municipality as a key partner and helping it to improve its basic services.

El Heilla participants stressed that it is necessary for Hebron Municipality to guarantee the sustainability of the plant's operation. To do this, they believe that they should be part of the operation process, and think that Hebron has no right to pour out its polluted waters into their land without any cost.

Some participants suggested that an environmental study had to be held in 2000 during the period of purchasing the land. PWA confirmed that this request was taken into consideration as an environment and social study had been carried out in 2002 and in 2012.

Displacement of the El Heilla population: Some of the participants said the population tide would stop because of the plant's construction. Practically, 200 dunums will be damaged by the construction of the plant and will become unusable for housing purposes.

## Participants' conclusion

The former Mayor of Yatta, Mr. Mousa Makhamreh, conclude on behalf of the participants; as follows:

- 1. El Heilla population approve of the project, with the condition that the waste stream shall be closed by installing a conveyor line of 14 km with the manholes before the implementation of WWTP.
- 2 Construct carrier line with manholes before starting the work of the WWTP.
- 3. Yatta residents should be compensated for the damage caused by Wadi El Samen for the past 40 years as 80% of the wastewater comes from the Hebron Municipality and 20% from the Israeli settlements.
- 4. If the current environmental and social impact study shows that there will be risks resulting from the treatment plant, the population will not allow the contractor and Hebron Municipality to carry out the work on the ground.

# Follow-Up

Yatta participants presented a list of people to follow up with the project stakeholders. The list includes Ziad Awad, Amima Zaid, Yousef Shehadeh, Mohamed Hijazi Zain, and Tahrer Jabbour.

A follow-up meeting took place at the house of one of the participants. Residents affected by the establishment of the station were invited including five came from Makhamreh family.

Mr. Mohammed Abu Hijazi, a resident of El Heilla, said that the reasons behind the strong opposition during the consultative session were due to the poor relationship between participants and the municipality as a result of the municipality negligence to respond to the people's demands. Two weeks ago, the Mayor was invited to attend a meeting in El Heilla but did not respond to any demands.

The representatives of El Heilla confirmed that what happened from the opposition in the workshop was deliberate against the mayor, but we are not against the public interest

People will approve the implementation of the project on the following terms:

- Covering the water stream
- The plant shall not cause any damage including odors, insects and nuisances during the implementation and operation, and shall make use of the available to technology to mitigate any negative impact.

### FGD – Al- Hyla Area, Yatta

Date	September 15, 2018
Location	Al- Hyla –House of Abu Maher Makhamreh
Participants	Palestine Water Authority: Eng. Mourad Foqaha and
_	Eng. Raya Noor
	World bank: Ms. Helen and Mr. Ghazi Kylani
	EcoConserv: Ms.Nadia Saad
	Residents from Al- Hyla: Mr. Ziad Awad, Mr. Yousef
	Shehadeh, Mr. Mohamed Hijazi Zain, Mr. Abu Maher
	Makhamreh and his two sons

### <u>Agenda</u>

Follow up discussions with a small group of people from Al-Hyla: opponents of the Wastewater Treatment Plant establishment

### **Consultation Methodology**

Questions and answers with small groups from Al- Hyla citizens

### **Discussions**

- A follow-up meeting took place at the house of one of the participants Mr. Mahmoud Makhamreh (Abu Maher). The meeting was held as a request from the key persons who do not agree on the establishment of WWTP, as they believe the establishment of the WWTP will affect their houses and properties negatively in terms of unpleasant odors, spread of insects and air pollution.
- Mr. Mohammed Abu Hijazi, a resident of Al- Hyla, said that the reasons behind the strong objection were due to the poor relationship between participants and the municipality. The municipality neglects people's demands and does not approach the residents. Two weeks ago, the Mayor was invited to attend a meeting in Al-Hyla but did not respond to the invitation.
- The representatives of Al- Hyla explained their point of view:" what happened from the opposition during the consultation workshop was deliberately done against the mayor, but we are not against the public interest."

In conclusion, the small group of people confirmed, that citizens of Al -Hyla will approve the implementation of the WWTP project on the following terms:

- Covering the water stream" Wadi Al- Samen"
- The WWTP shall not cause any damage including odors, insects and nuisances during the implementation and operation, and shall make use of the available technology to mitigate any negative impacts.
- Workers from Yatta should be engaged and should benefit from the project.
- Professionals from Yatta should be involved in the WWTP management.
- Water Authority convinced the participants to keep the door open for more discussions and promise that the project will not harm the people in Al- Hyla

### FGD with Women from El Heilla, Yatta

Date	September 15 2018	
Location	Abu Maher Makhamreh house	
Participants	Communication Expert PWA El Heilla Residents (Tahrer Omar Jabour; Mariam Mahmoud Khalil Makhamreh; Rihan Mahmoud Khalil Makhamreh)	

## <u>Note</u>

The women's workshop was cancelled by the men of El Heilla. Instead, a meeting with small group of women was conducted by the Communication Expert contracted by EcoConserv Company, with the participation of PWA.

## **Findings**

- The houses of the interviewees will be affected by the construction of the WWTP mainly from the odors, insects and mosquitoes.
- Women have no knowledge about WWTP and how it operates.
- It is important for the project management to ensure the safety of operation in order not to cause any environmental damage. According to the participants, Hebron Municipality may not adhere to the proper operating methods because it is interested in profit at the expense of people.
- It is crucial to cover the water stream of Wadi El Samen as it goes through their lands and causes damage to the sheep drowning in it.
- There is a risk that the construction of the station will reduce the price of their lands.

## Summary of meetings with El Heilla residents

- The poor relationship between the municipality and the people in El Heilla led to their opposition to the construction of WWTP.
- Wadi El Samen cuts off the land of the town and causes great damage. Therefore, the incentives projects provided by PWA to Yatta Municipality will contribute to mitigate this effect.
- The people raised the issue of compensation for the risks caused by Wadi El Samen to their lands. This point is important and shall be further investigated.
- The residents has little confidence in Hebron Municipality's capacity to operate and sustain the plant, especially after PWA and donor close out the project.
- More projects shall be implemented to develop the infrastructure in Yatta.
- Houses near the Hebron WWTP fear the environmental effects of odors, insects and mosquitoes.
- Residents do not have any knowledge about WWTP operation.

### **Recommendations:**

- Conduct additional meetings with El Heilla committee, to obtain the people's approval of the project and in return provide them with guarantees related to the environmental impact and safety of operation.
- Allow workers from El Heilla to work in the construction of WWTP.
- Arrange informative field visits for a group of women and men from El Heilla to similar plants inside and outside Palestine.

### Consultation session with El Helya representatives in Yatta

Date	Place			
10 <sup>th</sup> October	House of Lawyer Moussa Mkhamra			
Number of participants: 6 people				
Names of participants:				
• Moussa Mkhamra's				
Mohamad Hegazy Gebreil Zein				
Zeyad Mohamad Awad				
Mohamad Salama Mkhamra				
Youssif Ismail Mkhamra				
Participating Institutions:				
Palestine Water Authority: Eng. Raya Nour				
Consultant: Ecoconserve				
• Dr. Tarek Genena				
• Dr. Anan Mohamed				
Ms.: Nadia Saad				

### Meeting Agenda:

- Dr. Tarek presented examples of plants established near residential houses
- Plant operation monitoring systems
- El Helya residents concerns and how to address them

Methodology: questions, presentation and discussion

### Meeting:

- The consultant's team presented local and international experience for wastewater treatment plant, some of which are established near to community houses.
- The need to add high technology that mitigate noise impacts during operation of machinery, also the impacts of malodors and mosquito.
- Sludge disposal in accordance with local and international regulations. It will be transferred to El Menia landfill.
- Benefiting from treated water in agricultural purposes and other areas that need water for irrigation.
- El Helya residents focused on the negative impacts caused by Wadi al-samen

### Demands of participating groups

The participants confirmed that they are with the project, however, they have some demands:

• The project should be established according to the latest international standards in establishing wastewater treatment plants. The project should not have any negative
environmental impacts on the neighbors with regard to odors, spread of mosquito, plant's flood or any other environmental negative impacts.

- Sludge should not be disposed at the project's site under any condition.
- Develop a monitoring and control system where all affected bodies and communities are represented including Yatta municipality, El Helya residents. Enhance community monitoring to ensure efficient operation of the plant.
- Provide job opportunities for El Helya residents.
- Provide efficient measures in case of failure during operation.
- Construct and pave a 2 km road connecting the plant with El Helya residential area.
- Construct and pave a 14 meter long road parallel to the pipeline.
- pumping trucks working within Yatta municipality are permitted to dispose its load in the plant.
- Hebron Municipality is committed to perform all maintenance and development activities required for optimum operation of the plant, in order to protect it and prevent any negative environmental impact on neighboring communities.
- Provide training and employ human resources from El Helya and include them in capacity building activities. Also, provide them with job opportunities according to their technical skills and the plant's needs.
- Construct a 13.5 km pipeline with the necessary manholes parallel to the current stream in Yatta. This should start prior to the construction of the plant.
- Develop all the plans, studies and tables of quantities and work on obtaining all the necessary permissions for an integrated sewage system for Yatta City dividing it into phases.
- Develop a sewage network for El Helya to be implemented simultaneously with the pipeline.
- Rehabilitate the agricultural lands along wadi al-samen through coordination with the relevant bodies, including paving the street connecting El Helya and Abou El Foul (parallel to the stream for 9 km)

#### Meeting with the Representatives of El Heila Residents

Date	October 11 <sup>th</sup> 2018
Participants	Representative of the Governor
	<ul> <li>Representative of the Water Authority</li> </ul>
	<ul> <li>Representatives of El Heela residents</li> </ul>
	<ul> <li>Representatives of the Consulting team- EcoConServ</li> </ul>
Venue	Hebron Governorate

In context of preparing the study of the environmental and social impacts of establishing the Hebron Regional Wastewater Treatment Plant Project, in partnership with the Palestinian Water Authority together with Hebron Municipality, funded by the World Bank, the European Union and the *French Development Agency, a meeting was held with* representatives of El Heela residents in Hebron Governorate premises, in presence of the Deputy Governor of Hebron. The purpose of the meeting was to identify the concerns and requests of El Heela residents, since this area is located near to El Heela community in Yatta and is approximately at a distance of 330m to the nearest point of this community.

The meeting has led to the acceptance of the attending representatives of El Heela residents to execute the Project for the benefit of the public interest. However the representatives indicated some requests that are directly related to establishing the Wastewater Treatment Plant Project and other requests that are indirectly related to the Project. The indirect requests are associated with: the suffering of El Heela residents for 40 years and to-date from the damages of the wastewater stream and that they will not directly benefit from establishing the Project in addition to the probability that El Heela residents may be negatively affected by the Project and to prevent this and to achieve the community benefits and to avoid any negative impact on any party, considering that these demands will benefit El Heela residents and Yatta municipality.

The requests are summarized as follows:

- 1. <u>requests that are related to the treatment plant:</u>
- The Project is designed according to the latest international standards in establishing and implementing wastewater treatment plants. The Project does not have negative environmental impacts on the neighborhood, in terms of odors, spread of mosquitoes, the flood of the plant or any adverse environmental impact resulting from the existence of this facility.
- Under no circumstances, solid substances (sludge) shall be disposed of in the Project site.
- Operating a system for follow-up, monitoring and control to be represented by the affected parties and communities, comprising Yatta municipality and El Heela residents, to promote social control and accordingly guarantee efficient operation of the plant.
- Constructing and paving a road to connect the plant and El Heela community.
- Allowing all seepage tanks that are operating within the boundaries of Yatta municipality to discharge its load in the plant.
- After the receipt of the plant, Hebron municipality commits to operating it by their personnel with the same quality standards, operational efficiency, treatment level and stages to which the plant was designed. In addition to displacing the treatment products to dumps/landfills outside the Project area and its borders, preventing transformation of

the plant into a sanitary adversity and providing all spare parts and required maintenance to any component of the plant before the occurrence of any malfunction.

- Hebron Municipality is committed to performing all the maintenance and enhancement work required for the optimum operation of the plant in order to preserve the plant and prevent any negative environmental impact on the neighborhood.
- Training and utilizing human resources from El Heela and Yatta and involve them in capacity building activities, as well as providing job opportunities for them in the plant according to the qualifications and technical skills needed in the facility.
- 2. Requests that are not related to the treatment plant but benefit El Heela and Yatta residents:
  - Implementation of a 13.5km carrier line of concrete passages (considering the necessary intakes) parallel to the stream of the current waste stream inside the borders of Yatta municipality in the future to transport wastewater, to start implementing this line before initiating the construction of the treatment plant.
  - Preparation of all plans, studies and the tables of quantities, besides working on obtaining the required permits for a whole sewage system for Yatta municipality and dividing it into phases for execution.
  - Implementation of water network for the unserved areas in the municipality particularly El Heela, Wad Elma, Albaa, Khellet Tabsh.
  - Implementation of a sewage network to El Heela community in parallel to the execution of the carrier line.
  - Training members of El Heela residents to include them among the plant operating personnel.
  - Rehabilitation of the agricultural lands and adjacent areas of Wadi Al-Samn through coordination with the relevant authorities, including paving the street connecting El Heela and Wad Abu Al Fol (parallel to the stream at a length of 9 km)

#### Signature of Participants:

Name	Entity
Mr. Khaled Dodein, Deputy Governor of Hebron Ms. Safaa Abu Senina, Governor's Office Manager	The Governorate:
Eng. Raya Nour	The Palestinian Water Authority:
Mr. Musa Mekhamra	The Representatives of El Heila Residents:
Mr. Zeyyad Awad	
Mr. Mohamed Hegazin	
Mr. Youssef Mekhamra	
Mr. Khalil Abu Arram	
Dr. Tarek Genena	The Consultants' Team - EcoConServ
Dr. Anan Mohamed	]
Ms. Nadia Saad	

#### محضر اجتماع مع ممثلي أهالي منطقة الحيلة

التاريخ: ١١ أكتوبر ٢٠١٨

الحضور: ممثل المحافظ -ممثل سلطة المياه - ممثلي أهالي الحيلة - ممثلي المكتب الاستشاري اكوكنسيرف المكان: محافظة الخليل

في إطار الاعداد لدراسة التأثيرات البيئية والاجتماعية لمشروع انشاء محطة الخليل الاقليمية لمعالجة المياه العادمة بالشراكة سلطة المياه الفلسطينية مع بلدية الخليل بدعم من البنك الدولي والاتحاد الاوروبي ووكالة التتمية الفرنسية، تم عقد اجتماع مع ممثلي أهالي الحيلة بمبنى محافظة الخليل وبحضور ممثل المحافظ، وكان الغرض من الاجتماع معرفة مخاوف ومطالب أهالي الحيلة؛ حيث أن هذه المحطة تقع بالقرب من تجمع سكان الحيلة في يطا وتبعد حوالي ٣٣٠ م عن أقرب نقطة من هذا التجمع. وقد أسفر الاجتماع عن عدم اعتراض ممثلي أهالي الحيلة الحاضرين على إقامة المشروع لما فيه من فائدة على المصلحة العامة؛ ولكن أعربوا عن وجود عدد من المطالب ترتبط بمشروع انشاء المحطة، وأخرى لا تتعلق بالمشروع بشكل مباشر ولكنها ترتبط بكونهم عانوا منذ ٤٠ عام وحتى هذا التاريخ من أضرار سيل المياه العادمة وكونهم لن يستفيدو بشكل مباشر وصريح من المشروع ولوجود احتمال لتأثر سكان الحيلة المامياه العادمة وكونهم لن يستفيدو بشكل مباشر ولكنها على اعتبار ان هذه المطالب سيستفيد منها أهالي الحيلة ولمنع ذلك وتحقيق الاستفادة المجتمعية وصريح من

#### وتتلخص هذه المطالب فيما يلى:

#### مطالب تخص محطة المعالجة:

- أن يتم تصميم المشروع وفق أحدث المعايير العالمية في انشاء وتنفيذ محطات معالجة المياه العادمة وبأن لا يكون للمشروع آثار بيئية سلبية على المجاورين من حيث الروائح وانتشار البعوض أو فيضان المحطة أو أي أثر بيئي سلبي ناجم عن وجود هذه المنشأة.
  - · لا يتم التخلص من المواد الصلبة (الحمأة) في موقع المشروع مهما كانت الظروف والدواعي.
- عمل نظام للمتابعة والرصد والرقابة على أن يمثل فيه الجهات والمجتمعات التي قد تتضرر بما في ذلك بلدية يطا وسكان
   الحيلة على أن يعزز الرقابة المجتمعية لضمان كفاءة تشغيل المحطة.
  - شق وتعبيد طريق رابط بين المحطة وتجمع الحيلة السكاني.
  - يسمح لكافة صهاريج النضح العاملة داخل حدود مدينة يطا بتفريغ حمولتها داخل المحطة.
- تلتزم بلدية الخليل وبعد استلامها للمحطة وتشغيلها من قبل طواقمها بذات معايير الجودة وكفاءة التشغيل ودرجة ومراحل
   المعالجة التي صممت عليها المحطة وترحيل نواتج المعالجة الى مكبات خارج نطاق المشروع وحدوده ومنع تحول
   المحطة الى مكرهة صحية وتوفير كافة قطع الغيار والصيانة اللازمة لأي من أجزاء المحطة وذلك قبل وقوع أي عطل
- تلتزم بلدية الخليل بالقيام بكافة أعمال الصيانة والتطوير التي يتطلبها التشغيل الأمثل للمحطة في سبيل الحفاظ على
   المحطة ومنع أي أثر بيئي سلبي على المجاورين.
- تدريب والاستعانة بالموارد البشرية من الحيلة ويطا وتضمينهم في أنشطة بناء القدرات وتوفير فرص عمل لهم في المحطة وفقاً للمؤهلات والمهارة الفنية طبقاً لاحتياج المحطة.

مطالب أخرى لا تتعلق بالمحطة ويستفيد منها أهالى الحيلة ويطا:

- تتفيذ خط ناقل من عبارات خرسانية بطول ١٣,٥ كم (مع ما يلزم من مناهل) محاذٍ لمجرى سيل المجاري الحالي داخل
   حدود مدينة يطا مستقبلاً لنقل مياه الصرف الصحي، على أن يتم البدء بتنفيذ هذا الخط قبل الشروع بإنشاء محطة
   المعالجة.
- اعداد كافة المخططات والدراسات وجداول الكميات والعمل على الحصول على التراخيص اللازمة لنظام صرف صحي
   لكامل مدينة يطا وتقسيمه إلى مراحل للتنفيذ.
  - تنفيذ شبكة مياه للمناطق غير المخدومة بالمياه من المدينة خصوصاً (الحيلة، واد الما، الباع، خلة طبش).
    - تتفيذ شبكة صرف صحى لتجمع الحيلة بحيث تتفذ بالتزامن مع الخط الناقل.
      - تدريب أفراد من سكان الحيلة لاستيعابهم ضمن طواقم تشغيل المحطة.
- تأهيل الاراضي الزراعية والمناطق المحاذية لوادي السمن من خلال التنسيق مع الجهات ذات العلاقة، بما في ذلك تعبيد الشارع الرابط الحيلة واد ابو الفول (موازي للسيل بطول ٩ كم).

#### توقيع الحضور

#### المحافظة:

- خالد دودین نائب محافظ الخلیل
   صفاء أبو سنینة مدیرة مكتب المحافظ
   سلطة المیاه الفلسطینیة:
   رایة نور

  - ممثلي سكان الحيلة:
  - موسى مخامرة
    - زياد عوض
  - محمد حجازين
  - يوسف مخامرة
  - خليل أبو عرام

الفريق الاستشاري- اكوكنسيرف:

- د. طارق جنينة
- د. عنان محمد
  - نادية سعد

#### Consultation session with El Helya representatives in Yatta

Date	Place	
13 <sup>th</sup> October	Carmel Park- Yatta	
Number of participants: 6 peo	ople	
Names of participants:		
• Lawyer Moussa Mkha	mra's	
• Mr. Mohamad Hegazy	V Gebreil Zein	
• Mr. Zeyad Mohamad	Awad	
• Mr. Mohamad Salama	Mkhamra	
• Mr. Youssif Ismail Mł	Mr. Youssif Ismail Mkhamra	
• Eng. Khalil Abou Arram		
Participating Institutions:		
Palestine Water Authority: Eng. Raya Nour		
Consultant: Ecoconserve		
Dr. Tarek Genena		
• Dr. Anan Mohamad		
• Ms.: Nadia Saad		
• Eng. Ali Abdou		

#### Meeting Agenda:

- Reading the minutes of 11<sup>th</sup> October meeting held at the premisis of Hebron Municipality
- Approve and sign the

#### minutes Methodology: reading

#### the minutes Meeting:

- The team leader read the minutes sent to Mr. Moussa Mkhamra via email before the meeting
- Minutes approval

#### Demands of the participants:

#### Demands for the treatment plant

 The project should be established according to the latest international standards in establishing wastewater treatment plants. The project should not have any negative

environmental impacts on the neighbors with regard to odors, spread of mosquito, plant's flood or any other environmental negative impacts.

- Sludge should not be disposed at the project's site under any condition.
- Develop a monitoring and control system where all affected bodies and communities are represented including Yatta municipality and El Helya residents.

Enhance community monitoring to ensure efficient operation of the plant.

- Construct and pave the road connecting the plant with El Helya residential area.
- pumping trucks working within Yatta municipality are permitted to dispose its load in the plant.
- After operating and handing the plant, Hebron Municipality is committed to the same standards, operation efficiency and the designed treatment stages. The resulting sludge should be transferred to landfills outside the project's site. Also, the Municipality should provide all the necessary spare parts and maintenance activities before any faults takeplace.
- Hebron Municipality is committed to perform all maintenance and development activities required for optimum operation of the plant, in order to protect it and prevent any negative environmental impact on neighboring communities.
- Provide training and employ human resources from El Helya and Yatta and include them in capacity building activities. Also, provide them with job opportunities according to their technical skills and the plant's needs.

#### Other demands that will benefit the El Helya and Yatta community

- Construct a 13.5 km pipeline with the necessary manholes parallel to the current streamin Yatta. This should start prior to the construction of the plant.
- Develop all the plans, studies and tables of quantities and work on obtaining all the necessary permissions for an integrated sewage system for Yatta City dividing it into phases.
- Establish water network for non served areas in the city especially (El Helya, Wadi Alma, El Baa, Khelet Tabash)
- Develop a sewage network for El Helya to be implemented simultaneously with the pipeline.
- Provide training and employ human resources from El Helya and include them within operation staff.
- Rehabilitate the agricultural lands along wadi al-samen through coordination with the relevant bodies, including paving the street connecting El Helya and Abou El Foul (parallel to the stream for 9 km).

#### Conclusion

- The minutes was read in details, however the participants refused to sign it as the ask for signing an agreement obliging all parties.
- The water Authority refused changing the minutes to an official agreement

because the participating engineer is not authorized to sign agreements.

- It is not within the competence of the consultant to prepare a working agreement with El Helya residents, their role is to provide consultation, documentation and to pass their opinion either with or against the project.
- Approval of El Helya representatives provided that their demands, mentioned above, are met.

# ANNEX 4- GOVERNMENT AGENCIES INTERVIEWS\_FGDS

## Annex 4: MoM Government agencies interviews & FGDs

Date:	16.09.2018
Venue:	Office of the President of the Chamber of Commerce
Participants:	Mohamed Harbawi (President of the Chamber of Commerce) – Abdu Edrees (Financial Secretary & Member) – Mazen Al Zagher (Member of the Board of Directors) – Taiseer Abu Esha (Deputy President) Jebreen Abu Dawoud (Sectoral committee for stone industry) – Humaidan Jaber (Sectoral committee) – Abdul Rahman (Employee).
Participating Institutions:	Consultant
Agenda:	
Review project objectives	
Introducing the wastewater treatment plant project of Hebron and Al Samen valley roof installation to the attendees	
Discussion on the expected positive and negative results of the wastewater treatment plant project and Wadi Al Samen roof installation on the residents.	
Methodology:	Introduction, questions, and discussion
Progress:	
The purpose of the meeting was introduced and presented.	
Review of the project based on the construction of the WWTP in Hebron and Al Samen valley roof installation by informing the participants about the wwtp of Hebron Municipality and the stages of implementation.	
The president of the Chamber of Commerce stressed that the problem of the slurry is a big problem and affects the sewage network which leads to its closure.	

## FGD with the Chamber of Commerce and Industry in Hebron

The leaking slurry from the Hebron stones cutting factories flows for about 40 km passing the agricultural land until it reaches the Israeli Shoka plant which receives wastewater, treats and benefits from it and deduct from the authority the fees of refining and treatment with the benefit of using the effluent for growing cotton.

Israel deducts about NIS 28 million per month in treatment allowances for the Hebron sewers

As a Chamber of Commerce with the Municipality of Hebron in 2016, we conducted an inspection of a slurry landfill in Khellit Wafi area away from the population. We visited 15 sites before we applied for a license for this site.

The place was rented and the municipality helped us communicate with the owners to rent the land from them.

We participated in the discussion sessions with the Civil Administration and they gave us the green light to rent the place.

Currently we have a completed file for the site and there is no argument for the Israelis not to agree. We provided everything asked. At each meeting they ask for certain papers. We ask if the World Bank can communicate with them and press for approval or to know what conditions they have for approval. Almost monthly meetings are held to follow up the approval file for Khellit Wafi.

Also to reduce the problem: stone cutting factories need a treatment unit to extract water from the slurry and thus water refining and use in factories. Thus, the amount of slurry and solid waste becoms small and are transported by evacuation vehicles, in a closed way, to the landfill.

Sometimes the Civil Administration informs us through merchants at the crossings that they will not allow the stone to be exported to Israei if they continue to discharge the slurry in the sewers.

The use of stone quarries was proposed as slurry landfill but it is temporary and ineffective.

The closure of the crossings causes losses of millions of shekels on stone cutting factories.

The Chamber of Commerce participates in a meeting with the Hebron Municipality and the relevant ministries in order to put pressure on the Civil Administration to approve the slurry landfill in Khellit Al Wafi. Every time they ask for some papers. We have prepared all the documents for them but so far they have not given us licenses.

The cost of transporting slurry to Khellit Wafi is 100-150 NIS.

The World Bank's financing of the WTP is important. We as a chamber of Commerce and owners of stone cutting factories will not stop or cause sabotage of the national project. We are keen to find a temporary alternative until we obtain the license of the Khellit Wafi landfill.

We, on behalf of the private sector, are committed to finding alternative locations until obtaining a landfill license.

#### Demands of the Chamber of Commerce:

Assistance from the World Bank to put pressure on the Civil Administration to grant a license to the Khellit Wafi landfill.

Assisting the private sector with partial financial coverage for the procurement and installation of treatment units at a cost of not less than EUR 40,000 per unit.

## Interview with the EQA - the Environment Directorate - Hebron

Date:		19.09.2018	
Venue:		Environment Quality Office - Hebron	
Participants:		1 – Bahgat Jabbarin	
Participating Institutions:		Consultant & PWA	
Agenda:			
Review meeting goals			
Presentation on the la	Presentation on the latest developments of the project		
Discussion on the issues that the study of environmental and social impact should consider that lead to the acceptance of the wwtp project in Hebron.			
Methodology:	Askin	g questions, reviewing, and discussion	
Progress:	Progress:		
The aim of the meeting was to introduced to the participants about the wastewater treatment plant project in Hebron and the stages of implementation.			
The steps and preparations made by the PWA to start the wastewater treatment plant project of Hebron Municipality were reviewed.			
Points raised in the Meeting by the Environment Quality:			
Eng. Jabbarin stressed on the high number of complaints that reach the Directorate of Environment Quality in Hebron by all residents of the towns through which Wadi Samen water contaminated with sewage and also slurry of stone cutting factories.			
The study team should examine all the environmental issues that must be taken into account before submitting the study report, specifically: it is important to meet with the technical officer at Minya landfill office staff to take their consent to the transfer of sludge from the wastewater treatment plant in Hebron to the Minya landfill. Do you have a legal license to do so?			
The environmental and social impact study should indicate the amount of sludge that is expected to be transferred to the Minya landfill.			

The Environmental Authority's office received a lot of complaints from the residents of Yatta and Yatta Municipality in protest against the location of the wastewater treatment plant in Hebron Municipality. The engineer has read to us one of the letters in the files of the Directorate which describes the threat and intimidation that the residents and the municipality of Yatta are talking about if the Hebron plant project is implemented and the expected impacts on their health and homes. Mr. Jabbarin said: "We visited the site of the Hebron plant and the residents told us: "implement this project for us but if you are a man come and implement the project".

Mr. Jabbarin raised an important point: the responsibility of the municipality of Yatta to grant building construction permits at the Hilah site as the decision to construct the Hebron plant by the Water Authority, the Environment Authority and the Municipality of Hebron since 2000 in the Khellit Al Dar area near Hilah site, however, the Municipality continued to grant building construction permits near the Hilah area. The municipality is therefore responsible for this breach of law.

Q: Is it possible to change the site from Kerbit Al Dar to another place? The issue is not easy because permits are not easy to obtain from the Israeli side. As well as the failure of the financing agencies to extend the waiting period of the fund until the licenses are obtained which may last for one year.

The municipality in Yatta must control the granting of building construction permits near the Hebron plant.

Jabbarin stressed that the study should also consider the issues raised by the residents of Yatta and other neighboring towns regarding the compensation to farmers affected by treated wastewater. We would like that the study refers to proposals for remedying the affected lands of Wadi Al Samen. Give the population some incentives such as agricultural or field projects to complete the environmental cover and become more secure than it is now. This situation is similar to when we closed the landfill. We compensated those affected peoples by implementing the landfill projects or income-generating projects.

A recommendation should be made to the Ministry of Agriculture to consider the issue of land reclamation near the Hebron plant or on both sides of Wadi Al Samen. It may be necessary to check all the soil to determine whether it is suitable for agriculture or determine the treatment plan for land reclamation.

#### **Recommendations:**

The Environmental Quality Officer recommended that the study team meet with an ECOPEACE organization to learn how to reclaim land and plan to work with farmers and residents.

He recommended that the study team should visit Dura, Yatta, Al Samoua and Reef Dura Services and put their opinion in the environmental and social impact study.

He recommended that the Hebron plant designer develop high techniques to absorb odors, flies and insects.

## Interview with the Industrial zone - Stone Cutting Factories

Date:	17.09.2018	
Venue:	The industrial zone of Stones Cutting Factories saws - a random visit to five factories - Interview with Loaloaa factory for Marbles and Stones.	
Participants:	Humeidan Jaber	
Participating Institutions:	Consultant	
Agenda:		
Review project object	ives	
Introducing the waste	water treatment plant project of Hebron to the attendees	
Discussion on the expected negative impacts of the slurry on the Hebron plant during the design, construction and operation of the plant		
measures to be taken to prevent discharging the liquied slurry into the sewer network		
Random visit to 5 stone cutting factories.		
Visit the slurry of Heb	pron municipality.	
Methodology:	Direct observation, field visit, questions and discussion	
Progress:		
The purpose of the field observe without prior that discharged from t	eld visit was to introduce and present the purpose of the project which is to planning the stone cutting factories and to see how to dispose of the slurry he factories.	
Historically, as Mr. Jaber said, the problem began in 2000 when Israel closed the industrial zone and limited the Palestinians movement to bypass roads, thus preventing the discharge of the slurry from outside the industrial zone. As a result, the owners of the factories began to discharge of the slurry into the sewer network because it is the only way to dispose of the slurry. This led to the blockage of the sewers.		

The slurry flows along with the natural course of the valleys at a distance of not less than 40 km, reaching the Mediterranean Sea, thus being treated by the Israeli side and fining the Palestinian Authority with 28 million shekels per month.

In 2011, a project funded by the United States Agency for Development (USAID) began but Israel requested that no slurry to be discharged into the sewers as it reached their lands.

The project helped for one year the owners of the factories in the disposal of slurry from the industrial zone through random landfills in Area C and the project paid the transportation costs of 200-250 shekels per transfer. Each plant needs an average of 13 tankers per month for slurry disposal. The monthly cost is approximately NIS 3,200, which is covered by 120 factories in the industrial zone and 20 small factories. The evacuation vehicle carries between 10-15 cups of slurry.

140 factories discharge 500 cups a day of slurry (liquid and dry/0

450 cups  $\times$  25 working days  $\times$  12 months = 135,000 cups annually

If there are treatment units, 80% of the annual slurry quantity is 135000 cups treated in the region (ie 108000 cups), and the slurry that is discharged does not exceed 20% (27000 cups annually).

The USAID has maintained all of the old buildings to improve its quality and has installed 13 new treatment units.

The distance between the industrial zone and the Khellit Wafi landfill reaches 4 km (the landfill under license with the Israeli Civil Administration). So the cost of transport reaches up to 80 shekels, while the cost of transport to the remote landfills for up to 13 km reaches 250 shekels as it is now.

The industrial zone employs 500 workers supporting 5000 families.

The treatment units are still functioning and efficient. We made a random visit to five treatment units and they work effectively.

Some factories still discharge slurry into the sewers

A large number of people want to dispose of slurry but face the problem of the lack of landfill for slurry disposal.

Stone quarries were proposed as landfills, but they are temporary and costly solutions because the distances of slurry transport are about 13 km.

The closure of Israeli commercial crossings in front of stone-cutting factories for reasons related to the flow of slurry into the land inside the Green Line, losses of millions of shekels to the factories owners.

The Association of Stone Cutting Factories (Mr. Jaber, one of its members) participates in a meeting with the Municipality of Hebron and the relevant ministries in order to put pressure on the Civil Administration to approve the landfill in Khellit Wafi. Every time Israel asks for some papers. The Municipality, the Chamber of Commerce and the Environment Authority have prepared all documents for them but so far the site has not been given permission.

The financing of the World Bank for a wtp is important. "We will not stop and we will not sabotage a national project and we are keen to find a temporary alternative to obtain a permit for the Khellit Wafi landfill."

Venue:

Ziv-Al-Bireen, Khellit Wafi

The landfill will be constructed on an area of 117 dunums owned by families of Hebron according to the contract signed between the Municipality of Hebron and the majority of owners who own 58.2% of the value of the lands of Khellit Wafi. Thus, the contract was legally signed by the majority of the owners, who are from the Ghaith and Joiles families.

The land was leased on 5<sup>th</sup> of August 2017 for a period of 15 years with an annual fee of JD 7700 for a period of 10 years then the annual fee then becomes JD 9000.

If the slurries are disposed of in Khellit Wafi, each evacuation vehicle will pay 20 shekels  $\times$  30 cars per day to go to the landfill  $\times$  25 days  $\times$  12 months = 180000 dinars annually. 30% of the profits of the landfill will be transferred to the Association of Stone Cutting Factories and 70% of the municipality as management and control allowance.

The Demands of the Stone and Marble Union:

An assistance from the World Bank to put pressure on the Civil Administration to grant a license to the Khellit Wafi landfill.

Assist the private sector with partial financial coverage for the procurement and installation of 80 treatment units at a cost of not less than EUR 40,000 per unit.

#### Interview with the Health Directorate

Date	Sunday 7 <sup>th</sup> October 2018
Place	Hebron Directorate
Participants	Dr. Yasser Eissa • 0772• 1722.

#### Meeting Agenda

- Present project objectives
- Introduce Hebron waste water treatment plant to the participants
- Discuss the expected positive and negative results of the wastewater treatment plant during design, construction and operation phases.

#### Methodology: Questions, presentation and discussion

#### Meeting:

- The objective of the meeting was introduced by the social and communication consultant of the ESIA for the Hebron wastewater treatment plant. This was done through presenting the phases of the wastewater treatment project to the participants.
- The steps and preparations taken by the water Authority, to start the establishment of Hebron wastewater treatment plant.
- Take the opinion of the Health Directorate with regarde to impacts related to the presence of wastewater treatment plant in Hebron.

#### Points covered during the meeting

- The directorate receives lots of complains regarding wastewater flowing into the streams causing spread of diseases, mosquito and rodents.
- The Health Directorate performs awareness campaigns to raise the citizens awareness about the dangers of wastewater and sometimes provide them with pesticides to get rid of spreading parasites such as rodents. Sometimes, the directorate distribute tablets to sterilize water wells.
- We do not have environmental health studies or clear statistics about the number of people infected with water related diseases. However, the asian tiger insect spread in the area and people are severely affected with it. We conducted campaigns to reduce the impacts of this insect on people's health.
- The agricultural lands damaged by wastewater should be treated. Some residents cultivate their crops which affect the products and human health.
- As for Yatta Health Directorate, they spray the areas along wadi al-samen stream to reduce spread of mosquito.

- To ensure the safety of water, samples from wells are taken and checked to make sure it is free from microbes. Regular check ups are conducted on water resources in schools and universities.
- Control on agricultural products through examining the pesticides used in agriculture.
- Fight insects and rodents through cooperation with the municipality by visiting farms and abandoned areas.
- Fight the Nile Western virus spreading along swamps and still water.
- Monitor safety at factories and aluminum plants to make sure that chemical substances do not affect workers. This is done through checking the chemical substances used.
- Continuous coordination with health inspectors at schools to monitor bathrooms and canteens.
- The Directorate has 8 persons for field monitoring which is not enough.
- Monitor medical waste projects in cooperation with the services council, municipality and environment. The role of the health directorate is to ensure that medical waste is separated, covered and transferred to the transfer station.
- Microwave property is used to get rid of medical waste, it is transferred using special trucks for medical wastes. This applies to dentistry clinics, hospitals and public and private clinics. The ashes are disposed at El Minya landfill for medical wastes.
- The directorate receives lots of complains about septic tanks leaks
- Raise people's awareness about the impacts of the plant before implementation
- The Directorate is in favor of establishing the plant for all the expected positive impacts on environment and humans
- The plant should be established using high technology to prevent spread of insects and noise.

#### Interview with the Directorate of Antiquities

Date	Monday, 8 <sup>th</sup> October 2018
Place	Hebron municiplaity
Participants	Dr. Taleb Gobran Mob. • • 97 • ٣١٨٧ •

#### Meeting Agenda

- Present project objectives
- Introduce Hebron waste water treatment plant to the participants
- Discuss the expected positive and negative results of the wastewater treatment plant on archeological areas

#### Methodology: Questions, presantation and discussion

#### Meeting:

- The objective of the meeting was introduced by the social and communication consultant of the ESIA for the Hebron wastewater treatment plant. This was done through presenting the phases of the wastewater treatment project to the Antiquities Directorate.
- The steps and preparations taken by the water Authority, to start the establishment of Hebron wastewater treatment plant.
- • Take the opinion of the Directorate of Antiquities with regarde to the archaeological areas that might be close to the treatment plant and the actions that should be taken in this regard.

#### Points covered during the meeting

- The Tourism and Antiquities Directorate did not have any idea about the project.
- Basically, Khelat EL Dar is not an archeological area, however, to approve the study, the competent authority which is the water Authority should send all project documents, description and location. Based on this a team will visit the location to make sure that there are no antiques.
- During construction, in case antiques are found, the contractor should report to take the necessary procedures.
- Reviewing procedures at the Directorate are fast and will not delay work in Hebron plant.

1	
Date	Sunday 7 <sup>th</sup> October 2018
Place	Hebron
Participants	Eng. Ossama Garrar – Head of Directorate
	Eng. Fadwa Abou Sharar – Guidance Directorate
	Eng. Khalil Abou Afif – Head of technical supplies
	Roba El Nazer - Communication

#### FGD with Hebron Agriculture Directorate

#### Meeting Agenda

- Present project objectives
- Introduce Hebron waste water treatment plant to the participants
- Discuss the expected positive and negative results of the wastewater treatment plant during design, construction and operation phases.
- What are the measures to be taken to prevent الربو disposal in the sewage network.

Methodology: Questions, presentation and discussion

#### Meeting:

- The objective of the meeting was introduced by the social and communication consultant of the ESIA for the Hebron wastewater treatment plant. This was done through presenting the phases of the wastewater treatment project to the participants.
- The steps and preparations taken by the water Authority, to start the establishment of Hebron wastewater treatment plant.
- Take the opinion of the Agricultural Directorate about using treated water in land reclamation especially in Yatta, Dora and El Zaheria where wastewater flows.

#### Points covered during the meeting

- The Agriculture Directorate team have no idea about the Hebron treatment plant.
- The team welcomed the idea as they know how farmers suffer from the wastewater flowing from Hebron and nearby settlements.
- The team mentioned that the law of using wastewater in irrigation purposes is not approved yet with regard to irrigating some crops.
- The team expect that the people in Hebron will not accept reusing treated wastewater for religious reasons because they think it filthy water.
- The team stressed the importance of reclaiming the lands where wastewater flows through checking the soil, treating it then cultivation.

- The Agriculture Directorate has experience in raising farmers awareness, in case they are asked to do this.
- For more information about reusing wastewater, the ESIA team can meet the general manager of the agriculture water department Mr. Essam Nofal.

# FGD with the Directorate of Education, Yatta

Date:	15.10.2018	
Venue:	Directorate of Education, Yatta	
Participants:	Yasser Saleh (Director of the Directorate) – Emad AL Masry – Mahmoud Fesha – Osama Rumi – Adnan Abu Tbeakh	
Agenda:		
Review project objectives		
Introducing the wastewater the attendees	treatment plant project of Hebron and Al Samen valley roof installation to	
Discussion on the expected Wadi Al Samen roof install	positive and negative results of the wastewater treatment plant project and ation on the residents.	
Methodology:	troduction, questions, and discussion	
Progress:		
Review of the project based installation by informing th implementation.	d on the construction of the WWTP in Hebron and and Al Samen valley roof e participants about the wwtp of Hebron Municipality and the stages of	
The project will be implemented in the lands of Khellit Al Dar and adjacent to some houses of Khirbet Al Hilla in Yatta.		
The steps and preparations made by the PWA to start the work of the wwtp of Hebron Municipality and Wadi Al Samen roof installation were examined.		
The participants had no idea about the project.		
The participants confirmed how they suffer from Wadi Al Samen, which carries wastewater coming from the streams of Hebron and from some settlements near the valley as the insects, rodents and mosquitoes are spread along the length of the stream which disrupt the lives of the population, threaten their health, and afflict them with various diseases including Leishmania and hepatitis and diseases caused by the aedes albopticus.		
Today we received a report from the director of Hawwa secondary school about the leakage of the septic tank to well in the school.		

The Environmental Health Unit, in collaboration with the municipality and schools, will develop solutions for polluted wells by cleaning the well and well-ceiling, as well as disinfection by chlorine.

Diseases of viral hepatitis and leishmaniosis spread among school students.

Residents in nearby villages throw dead animals in the valley that leads to the spread of foul odors and we close the windows of the car when we drive next to it.

The effluent in Wadi Al Samen valley destroyed the agricultural land, dividing it into two parts and preventing the residents from reaching their lands. It has also become impossible for people to cultivate their land because of their exposure to contaminated sewage.

Children drown in the stream especially in the winter and olive harvest times.

Materials that discharged into the course and contain the remnants of tanneries contain carcinogens.

The roof installation of the Wadi al-Samen stream is a priority and must be installed as quickly as possible

We have no objection to construct a wastewater treatment plant in Hebron because it will not cause any harm to us as it will contain the wastewater in Hebron instead of flowing into the valley and causing great damage to the population.

We have no objection to construct a wastewater treatment plant in Hebron because it will not cause any harm to us as it will contain the wastewater in Hebron instead of flowing into the valley and causing great damage to the population.

The participant confirmed their agreement to the project without reservations. What concerns them is to end their suffering from the wastewater that flows through Wadi Al Samen.

#### FGD with the Directorate of Health

Date:	15.10.2018	
Venue:	Directorate of Health, Yatta	
Participants:	Dr. Ali Al Harrob (Directorate Manager) – Shaher Adees (Financial & Administrative) – Dr. Essa Allan (Epidemiological Diseases) – Mohamed Al Hawamda (Environment Health).	
Agenda:		
Review project objectives		
Introducing the wastewater treatment plant project of Hebron and Al Samen valley roof installation to the attendees		
Discussion on the expected positive and negative results of the wastewater treatment plant project and Wadi Al Samen roof installation on the residents.		
Methodology:	oduction, questions, and discussion	
Progress:		
The purpose of the meeting was introduced and presented by the expert of the communication and social consultant.		
Review of the project based on the construction of the WWTP in Hebron and and Al Samen valley roof installation by informing the participants about the wwtp of Hebron Municipality and the stages of implementation.		
The project will be implemented in the lands of Khellit Al Dar and adjacent to some houses of Khirbet		
Al Hilla in Yatta.		
The steps and preparations made by the PWA to start the work of the wwtp of Hebron Municipality and Wadi Al Samen roof installation were examined.		
The participants had no idea about the project.		

The participants confirmed how they suffer from Wadi Al Samen, which carries wastewater coming from the streams of Hebron and from some settlements near the valley as the insects, rodents and mosquitoes are spread along the length of the stream which disrupt the lives of the population, threaten their health, and afflict them with various diseases including Leishmania and hepatitis and diseases caused by the aedes albopticus.

The number of people suffering from these diseases, caused by contaminated water that has been going on for decades, is rising.

The Environmental Health Unit, in collaboration with the Municipality, sprays the weeds surrounding the stream and spray abandoned places to prevent the breeding of rodents and harmful insects. In general, the stream is an environmental disaster in every sense of the word.

Diseases of viral hepatitis and leishmaniosis spread among school students.

Residents in nearby villages throw dead animals in the valley that leads to the spread of foul odors and we close the windows of the car when we drive next to it.

The effluent in Wadi Al Samen valley destroyed the agricultural land, dividing it into two parts and preventing the residents from reaching their lands. It has also become impossible for people to cultivate their land because of their exposure to contaminated sewage.

Children drown in the stream especially in the winter and olive harvest times.

Materials that discharged into the course and contain the remnants of tanneries contain carcinogens.

The priority is to complete the roof installation of Wadi Al Saman at a maximum speed of not less than 14 km.

We have no objection to construct a wastewater treatment plant in Hebron because it will not cause any harm to us as it will contain the wastewater in Hebron instead of flowing into the valley and causing great damage to the population.

The participants concentrated on that the Municipality of Hebron and the PWA operate the plant efficiently so as not to affect the population adjacent to the plant.

The participant confirmed their agreement to the project without reservations. What concerns them is to end their suffering from the wastewater that flows through Wadi Al Samen.

## FGD with the Directorate of Interior, Yatta

Date:	15.10.2018	
Venue:	Directorate of Interior, Yatta	
Participants:	Esmail Abul Halawa – Fassi Mohamed – Khalil Hendawi – Mohamed Hassan Abu Zahra (The Office Manager) – Mohamed Hamad Abu Hejeh	
Agenda:		
Review project objectives		
Introducing the wastewater treatment plant project of Hebron and Al Samen valley roof installation to the attendees		
Discussion on the expected positive and negative results of the wastewater treatment plant project and Wadi Al Samen roof installation on the residents.		
Methodology:	oduction, questions, and discussion	
Progress:		
The purpose of the meeting social consultant.	g was introduced and presented by the expert of the communication and	
Review of the project based on the construction of the WWTP in Hebron and Al Samen valley roof installation by informing the participants about the wwtp of Hebron Municipality and the stages of implementation.		
The project will be implemented in the lands of Khellit Al Dar and adjacent to some houses of Khirbet		
Al Hilla in Yatta.		
The steps and preparations and Wadi Al Samen roof in	made by the PWA to start the work of the wwtp of Hebron Municipality stallation were examined.	
The participants had no idea about the project.		
The participants confirmed how they suffer from Wadi Al Samen, which carries wastewater coming from the streams of Hebron and from some settlements near the valley.		

The effluent in Wadi Al Samen valley destroyed the agricultural land, dividing it into two parts and preventing the residents from reaching their lands. It has also become impossible for people to cultivate their land because of their exposure to contaminated sewage.

Insects, rodents and mosquitoes spread along the length of the stream, which disrupts the population, affects their health, and causes them to suffer from various diseases

Residents are forced to operate fans, air conditioners, and mosquito repellent devices. This increases the value of the monthly electricity bill as well as the prices of pesticides that citizens buy to eliminate mosquitoes and rodents.

Residents in nearby villages throw dead animals in the valley that leads to the spread of foul odors and we close the windows of the car when we drive next to it.

Problems arise between us ,as the people close to the valley, and the water tankers owners who discharge into the stream course or the citizens who discharge into the valley. If we try to prevent, verbal altercations occure between us and them.

Children drown in the stream especially in the winter and olive harvest times.

The evacuation tankers from Dora and El Somoa discharge their wastes into the stream.

Materials that discharged into the course and contain the remnants of tanneries contain carcinogens.

Children drop while they are walking back from school causing many accidents and deaths.

Sometimes sheep and livestock fall in the valley leading to a great loss on farmers.

The priority is to complete the roof installation of Wadi Al Saman at a maximum speed of not less than 14 km.

We have no objection to construct a wastewater treatment plant in Hebron because it will not cause any harm to us as it will contain the wastewater in Hebron instead of flowing into the valley and causing great damage to the population.

The participants concentated on that the Municipality of Hebron and the PWA operate the plant efficiently so as not to affect the population adjacent to the plant.

Agree to use treated water for fodder and long-stemmed trees.

The participant confirmed their agreement to the project without reservations. What concerns them is to end their suffering from the wastewater that flows through Wadi Al Samen.

### FGD with the Directorate of Social Affairs

Date:	15.10.2018			
Venue:	Directorate of Social Affairs, Yatta			
Participants:	Mohamed Ghareeb – Lubna Anani (Directorate Manager) – Atef Zahran – Sobheya Tafesh – Saddam Adees – Sanaa Al Anani – Hatem Abu Saif (Professional Instructor)			
Agenda:				
Review project objectives				
Introducing the wastewate to the attendees	r treatment plant project of Hebron and Al Samen valley roof installation			
Discussion on the expected positive and negative results of the wastewater treatment plant project and Wadi Al Samen roof installation on the residents.				
Methodology:	duction, questions, and discussion			
Progress:				
The purpose of the meetin social consultant.	g was introduced and presented by the expert of the communication and			
Review of the project base roof installation by inform stages of implementation.	d on the construction of the WWTP in Hebron and and Al Samen valley ing the participants about the wwtp of Hebron Municipality and the			
The project will be implem Khirbet	nented in the lands of Khellit Al Dar and adjacent to some houses of			
Al Hilla in Yatta.				
The steps and preparations and Wadi Al Samen roof in	s made by the PWA to start the work of the wwtp of Hebron Municipality nstallation were examined.			
The participants had no id	ea about the project.			

One of the participants stated that he lives in the village of Al-Reihiya and is very affected by the stream. The rest of the directorate staff confirmed the suffering of the families living next to Wadi Al-Samen which is loaded with the effluent coming from the streams of the city of Hebron and some settlements near the valley and its impact on their health Insects, rodents and mosquitoes are spread along the length of the stream which disrupt the lives of the population, threaten their health, and afflict them with various diseases including Leishmania viral hepatitis and diseases caused by the aedes albopticus.

They stressed the double suffering of poor families who do not have the ability to buy pesticides for mosquitoes repellent. Their homes and financial means also do not allow them to operate fans or air conditioners for long hours to eliminate mosquitoes and rodents.

The number of people suffering from these diseases, caused by contaminated water that has been going on for decades, is rising.

Residents in nearby villages throw dead animals in the valley that leads to the spread of foul odors and we close the windows of the car when we drive next to it.

The effluent in Wadi Al Samen valley destroyed the agricultural land, dividing it into two parts and preventing the residents from reaching their lands. It has also become impossible for people to cultivate their land because of their exposure to contaminated sewage.

Children drown in the stream especially in the winter and olive harvest times.

The priority is to complete the roof installation of Wadi Al Saman at a maximum speed of not less than 14 km.

Although they do not know the technical technology in which the station operates, they trust the engineers working in the project. However, they have no objection to construct a wastewater treatment plant in Hebron because it will not cause any harm to us as it will contain the wastewater in Hebron instead of flowing into the valley and causing great damage to the population.

The participants concentated on that the Municipality of Hebron and the PWA operate the plant efficiently so as not to affect the population adjacent to the plant.

The participant confirmed their agreement to the project without reservations. What concerns them is to end their suffering from the wastewater that flows through Wadi Al Samen.

# **ANNEX 5- MOM FGD NGOS**



Date:	15.10.2018			
Venue:	Yatta Charity Association			
Participants:	Yaseen Asmirat (Yatta Charity Association) – Fadl Mahmoud Nawaajah (Yatta Charity Association) – Murad Nawaajah (Yatta Zakat Committee) – Mete'b Khalil Mohamed (Yatta Charity Association) – Mohamed Musa Daajnah (Popular Struggle Front) – Maged Aub Zahra (Yatta Charity Association) – Mohamed Hassan Abu Arram (General Federation of Palestinia Trade Unions).			
Agenda:				
Review project objectives				
Introducing the wastewater treatment plant project of Hebron and Al Samen valley roof installation to the attendees				
Discussion on the expected and Wadi Al Samen roof in	positive and negative results of the wastewater treatment plant project stallation on the residents.			
Methodology:	roduction, questions, and discussion			
Progress:				
The purpose of the meeting social consultant.	g was introduced and presented by the expert of the communication and			
Review of the project based roof installation by informin stages of implementation.	l on the construction of the WWTP in Hebron and and Al Samen valley ng the participants about the wwtp of Hebron Municipality and the			
The project will be impleme Khirbet	ented in the lands of Khellit Al Dar and adjacent to some houses of			
Al Hilla in Yatta.				
The steps and preparations and Wadi Al Samen roof in	made by the PWA to start the work of the wwtp of Hebron Municipality stallation were examined.			
The participants had no ide	a about the project.			

# Annex 5: Focus Group Discussion FGD with The Civil Society Organizations

The participants confirmed how they suffer from Wadi Al Samen, which carries wastewater coming from the streams of Hebron and from some settlements near the valley as the insects, rodents and mosquitoes are spread along the length of the stream which disrupt the lives of the population, threaten their health, and afflict them with various diseases including Leishmania and hepatitis and diseases caused by the aedes albopticus.

The number of people suffering from these diseases, caused by contaminated water that has been going on for decades, is rising.

Diseases of viral hepatitis and leishmaniosis spread among school students.

The underground wells near Wadi Al Samen are affected by sewage, posing a real danger to the health of the population.

The effluent in Wadi Al Samen valley destroyed the agricultural land, dividing it into two parts and preventing the residents from reaching their lands. It has also become impossible for people to cultivate their land because of their exposure to contaminated sewage.

Children drown in the stream especially in the winter and olive harvest times.

The slurry of the stone factories is discharged to the stream affect the lands.

Materials that discharged into the course and contain the remnants of tanneries contain carcinogens.

The priority is to complete the roof installation of Wadi Al Saman at a maximum.

We have no objection to construct a wastewater treatment plant in Hebron because it will not cause any harm to us as it will contain the wastewater in Hebron instead of flowing into the valley and causing great damage to the population.

The participants concentrated on that the Municipality of Hebron and the PWA operate the plant efficiently so as not to affect the population adjacent to the plant.

The attendees confirmed their agreement to construct the Hebron plant, provided that it does not affect the residents of Yatta who live close to the plant.

What is important to the representatives of civil society as a top priority is the installation of the roof of Wadi Al Samen, connecting the land to each other, and implantation of land reclamation project.

They stressed the right of the residents of Yatta to receive the treated wastewater at a nominal fee or even for free to reclaim their lands.

# ANNEX 6- PUBLIC CONSULTATION SESSION 14-10-2018

# Annex 6: Attendance Sheet, First Public Consultation Session, Sunday 14/10/2018

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# Eco Con Serv

جلسة عرض نتلتج براسة تقيم الأثر البيني والاجتماعي والتراثي لمشروع إنشاء محطة معلجة مياه الصرف الصحي في الخليل فاعة محافظة الخليل استمارة تسجيل حضور الأحد 14 نشرين أول 2018



# Eco Con Serv

جلسة عرض نتائج دراسة تقييم الأثر البيلي والاجتماعي والتراثي لمشروع إنشاء محطة معالجة مياه الصرف الصحي في الخليل قاعة محافظة الخليل استمارة تسجيل حضور الأحد 14 تشرين أول 2018



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جلسة عرض نتائج دراسة تقيم الأثر البيلي والإجتماعي والتراثي لمشروع إنشاء محطة معالجة مياه الصرف الصحي في الخليل قاعة محافظة الخليل استمارة تسجيل حضور الأحد 14 تشرين أول 2018



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## Attendance Sheet First Public Consultation Session Sunday 14/10/2018

S.N	Name	Organization	E-mail
1	Mohamed Tawfik Obaid Allah	Water Authority	hcd.obidallah@gmail.com
2	Mohamed Ebeid Mesaada	Env. Quality Authority	moh852890@gmail.com
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4	Reyad Hassan	Quarantine Consultant	-
5	Gebriel Abou Dawood	Quarantine Consultant	-
6	Hemidan Gaber	Quarantine Consultant	_
7	Hatem El Natsha	Hebron Directorate	hatem_vip@hotmail.com
8	Khalil Abo Aqafan	Technical Manager - Agriculture Directorate	-
9	Mohamed Ismail Abo Karaky	Accountant / Chef of Khella El Dar Committee	_
10	Rebhy Ismail Abo Asneyna	Khella El Dar Committee - NGO	_
11	Adham Mahmoud Abo Mady	Khella El Dar Committee - NGO	_
12	Dr. Yasser Younes Eissa	Head of Environmental Health	<u>yasserissa@gmail.com</u>
13	Mohamed Ghazy Abo Asneyna	National Committee of the Southern Suburb	_
14	Fathy Badr Gheith	National Committee of the Southern Suburb	_
15	Abdel Fattah Saleh	National Committee of the Southern Suburb	_
16	Prof. Dr. Atef Amr	Dora Directorate	_
17	Fadwa Mahmoud Abo Sharar	Hebron Agriculture	_
18	Ola El Qawasimy	Hebron Directorate	-

19	Saja Marwan Zannoum	Public relations / Hebron	-
20	Mais Mesbah Tahboub	Strategic Planning / Hebron	-
21	Sara Ahmed Samy El Geaidy	International Relations / Hebron	-
22	Seaashan Abo Sen	El Qods University	-
23	Tarek Abou Tork	Hebron Municipality	-
24	Gabr Ahmed Gabr Rahoub	The Ministry of Tourism and Antiquities	-
25	Dr. Taleb Gobran	The Ministry of Tourism and Antiquities	-
26	Raya Nour	Palestinian Water Authority	
27	Rashid Awad	M.O.L.G	<u>rashid_awad2006@yahoo.co</u> <u>m</u>
28	Feras Matar	WEE Pros Gmbh	fmatar@weepros.de
29	Laurent Phan	SEVRECA-VEOLIA	laurentphan@seureca.com
30	Inas Fareed Horebat	SWS	inas.horebat@seureca.com
31	Sonia Darabee	EQA	sun-sun19992@hotmail.com
32	Mohamed Al-Battat	EQA	<u>albattat-a@yahoo.com</u>
33	Samah Abo Haikal	J.D South Hebron - Agriculture Directorate	<u>skabuhaikal@gmail.com</u>
34	Marwan Akhdar	Hebron Municipality	divemarwan59@yahoo.com
35	Abdel Fattah Sabusneneh	Hebron Municipality	-
36	Abu Gazee	National Committee of the Southern Suburb	<u>abu-gazee@hotmail.com</u>
37	Abid Alfatsah	National Committee of the Southern Suburb	-
38	Eng. Hadeel Omran	Hebron Municipality	hadeel_tamimi@hotmail.com
39	Abdo Edris	Chamber of Commerce	-

40	Dr. Tarek Genena	EcoConServ	-
41	Dr. Anan Mohamed	EcoConServ	-

# ANNEX 7- PUBLIC CONSULTATION SESSION 16-10-2018

# Annex 7: Attendance Sheet, Second Public Consultation Session, Tuesday 16/10/2018

جلسة عرض تنتجدر اسة تقيم الأثر البينيو الاجتماعي والثرائي لمشروع إنشاء محطة معالجة مياه الصرف الصحي في الخليل قاعة معاقظة الخليل

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#### جلسة عرض لتالجدراسة تقييم الآثر البينيوالاجتماعي والتراثي المشروع إنشاء محطة معلجة مياد الصرف الصحي في الخليل فاعة محافظة الخليل استمارة تسجيل حضور الثلاثاء 16 تشرين أول 2018



مراحلة اليراه الفلسطينية PALESTINIAN WATER AUTHORITY

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S.N	Name	Organization	E-mail
1	Mohamed Ismail El Hawamda	Head of Environmental dept.	jasemmoh777@gmail.com
2	Nadia Saad	Communication Expert / Consultant	<u>nadia-saad@hotmail.com</u>
3	Mohamed Abdallah	Expert / Water Authority	HCD.Obidallah@gmail.com
4	Feras Matar	WEE Pros	fmatar@weepros.de
5	Inas Horibat	Technical Support Project	inas,horibat.ext@seurcajv.com
6	Taleb Hammad Abo Zeid	Yatta Mokhtar	-
7	Ayed Ibrahim Abdel Kader		-
8	Soliman Ahmed Salem Harb	Mokhtar(Mayor) Horaizat Family (Local Community)	-
9	Amal Harb	Palestinian News Agency (wona)	wafahebron@yahoo.com
10	Tarek Genena	Consultancy Co. EcoConServ	genena@ecoconserv.com
11	Anan Mohamed Aly	Consultancy Co. EcoConServ	anan.mohamed@ecoconserv.com
12	Eng. Kamar Mohamed Mahmoud El Hawamda	Yatta Agriculture & Veterinary	mgsnl62@gmail.com
13	Eng. Mahmoud El Zeer	El Khalil Agriculture	Imalalzeer76@yahoo.com
14	Lina Abdel Baset El Tamimy	Volunteer / Env. Quality Authority	lina-tamimi@live.com
15	Eng. Akram Nawara	Env. Quality Authority	<u>akram 19992001@yahoo.com</u>
16	Eng. Bahjat Hassanein	Env. Authority Manager / El Khalil	<u>bahjat76@yahoo.com</u>
17	Mr. Ibrahim Abo Zahra	Yatta Chef	<u>abufuad1949@gmail.com</u>
18	Eng. Tamara Gebriel El Hediny	Eng. Yatta	talhorainy@hotmail.com
19	Ms. Aysha Ahmed Harb	Member of Municipal Council Yatta	-
20	Asmahan Mohamed Shawahin	Manager of Banat Hawaa School	nasem 2712@yahoo.com

21	Nesreen Mahmoud Hosh El Nawagaa	Teacher / Banat Hawaa School	-
22	El Sheikh Galal El Hediny	Mokhtar (Mayor) El Hediny Family (Local Community)	-
23	Haj Hassan Abo Zahra	Mokhtar (Mayor) Abo Zahra Family	-
24	Majed Abo Sharkh	Director of the Chamber of Commerce ElKhalil south	-
25	Eng. Bashar El Tarwa	Safety & Env. Eng. Blumond	bst980487@hotmail.com
26	ElMokhtar (Mayor) Yasser Shoreim	Factory Owner	
27	Eng. Ibrahim El Shamty	Internal Control Manager / Yatta	<u>shamisti2020@yahoo.com</u>
28	Tayseer Ibrahim Shawahin	Taxi Driver	-
29	Mohamed Hussein Atteya Abo Zahra	Police Chef Yatta	<u>mn-abuzama@yahoo.com</u>
30	Ahed Mohamed Aly ElHaroosh	Yatta	-
31	Mohamed Hassan El Shawahin	Sheikh El Shawahin	-
32	Salah Soliman Abo Abbas	Yatta	
33	Eng. Leena Sobeih	El Zahereya	<u>leena 2299@hotmail.com</u>
34	Khaled Doden	Governer Deputy	khaliddoden@yahoo.com
35	Ibrahim Bheis	Programmer , Sysytem Analyst (IT)	ibrahimbheis@gmail.com
36	Ammar Shoeikh	Strategic Planning Manager	ammars0202@gmail.com
37	Eissa Mohamed Amer Ldeabes	Merchant / Beit Amra	-
38	Eng. Mohamed Thowaib	Civil Eng.	malthwaib@gmail.com
39	Ibrahim Teneina	Students Union / University	-
40	Eyad Kharmana	Yatta Agriculture	<u>eyad-vet@yahoo.com</u>
41	Eng. Samah Abo Haikal	Agriculture Directorate - South of Hebron	<u>skabuhaikal@gmail.com</u>

42	Eng. Nader El Karaky	Agriculture Directorate - South of Hebron	<u>alkarakin@hotmail.com</u>
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# **ANNEX 8- CORRESPONDENCES**



التاريخ: 2015/2/3

سعادة رئيس و أعضاء مجلس بلدية يطا المحترمين

#### الموضوع: اعتراض على موقع محطة معالجة مياه محافظة الخليل.

#### تحية طيبة و بعد ،،،،

بالإشارة للموضوع أعلاه، نتقدم نحن سكان مناطق الحيلة، واد السادة، بيت عمرة، واد ابو الفول، جب هوبر بالاعتراض على مشروع محطة المعالجة المنوي اقامتها قرب الحيلة و ذلك لما تمكله من كارثة بيئية على حياتنا و بيئتا، فنحن و كما تعلمون نعاني منذ ما يقارب الاربعين عامامن أضرار سيل المياه العادمة القادم من مدينة الخليل و الذي دمر أرضنا الزراعية التي كانت أخصب أراضي الجنوب و لوث مياهنا الجوفية ناهيك عن الروانح الكريهة و البعوض و الحشرات ، ما مبيته من أمراض لنا و لأطفالنا اضافة الى عديد حالات سقوط المركبات و أطفال المدارس في هذا المجرى ، لذلك فاننا نط البكم بصفتكم الرسمية بالعمل فورا على وقف هذا المشروع بما يشكله من ظلم و كارثة بيئية لنا و العمل على نقل المحطة الى نهاية مسار السيل على الحدود الجنوبية الزيب

سعادة رئيس و اعضاء المجلس ان بيئتنا تعني حياتنا و ان أي تعدي على هذه البيئة هو تعدي على السلم الأهلي و اننا نود التاكيد هنا على أننا سنتخذ كافة السبل القانونية و الاجراءات المشروعة لوقف هذا المشروع و مقاضاة كل الجهات ذات الصلة به من ممول و متبني للمشروع.

و تفضلوا بقبول فائق الاحترام

المستدعى:

1-سكان الحيلة. 2- سكان واد السادة. 3- سكان بيت عمرة. 4- واد ابو الفول 5- سكان جب هوبر.

ملاحظة : مرفق قائمة توقيع ممثلين عن التجمعات، جدول (1-1).

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Palestinian National Authority	بسروانش ولرحمق والرحيح	السلطة الوطنية الفلسطينية
Ministry Of Local Government		وزارة الحكم المحلي
YATTA MUNICIPALITY	1005 3 3	بلديدة يحطك
Tel. 02-2279502		تلفون: 02-2279502
Tel. 02-2279394	TAX SAN	تلفون: 02-2279394
Fax. 02-2279606	MUNICIP	هاکسی: 02-2279606

71543 / AL-M الرقم

Attention Mr. Steen Lau Jorgensen Country Director World Bank - West Bank and Gaza

التاريخ قدادم / 6/

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#### Subject: Hebron Governorate Wastewater Treatment Plant (HWWTP).

#### Dear Mr. Jorgensen,

We are greatly appreciate your prompt response to our letter dated 4 May, 2015 concerning the objection to the implementation of the Plant (HWWTP) in the current location.

Yatta Municipality is highly appreciated the efforts and the generous support from our partners to this important project which will solve important problem in the area. And also we highly appreciated the interest of the relevant entity and our partners either by their meetings and there field visits, with their understanding to our fair demands.

We would like to assure you to withdraw our previous objection, and disregards our previous letter dated on the

4th of May 2015, since all our fears and requests has been addressed through the relevant entity (Palestinian

Water Authority , Ministry of Local Government) and no longer exist.

Thanking you very much in advance, for the intensive efforts that you are undertaking trying to assist and help our Communities.

With Best Regards

1 py to:

- Ministry of Local Government (MoLG). - Palestinian Water Authority (PWA)

Sincerely yours,

E-Mail: info@yatta-munc.org

www.Yatta-munc.org

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State Of Palestine Environment Quality Authority EQA Chairman Office

> اختكم م. عدالة الأتيرة بنيس سلطة جودة البينة

الرقم:-----التاريخ-----

دولة فلسطين

سلطة جودة البينة

مكتب رئيس سلطة جودة البينة

سعادة الاخ زهران أبو قبيطة

رئيس بلدية يطا ،،، المحترم

الموضوع: الاعتراض على موقع محطة الخليل لم الجة المياه العادمة

#### تحية طيبة ويعد؛

تهديكم سلطة جودة البيئة أطيب تحياتها وتتمنى لكم موفور الصحة , العافية, وبالاشارة الى الى كتابكم الوارد لذا برقم ج.ط/2/7/60 وبتاريخ 2015/9/10 بخصوص الاعتراض المتعلق بموقع محطة الخليل لمعالجة المياه العادمة, اذ بدورنا نقدر لكم اهتمامكم وحرصكم على حماية الانسان والبيئة الفلسطينية وما يتركه انسياب المياه العادمة دون معالجة من أضرار على الصحة والبيئة.

إذ نأمل أن تتم انهاء هذه المشكلة الناجمة في كل أرجاء الوطن، رتوفير وتجنيد كل الدعم المالي والفني لذلك، وما يترتب على ذلك من التكاليف الباهظة واللازمة لمثل هذه المشاريع والتي يتم تنفيذ جزء منها من خلال الدول المانحة.

لذا فاننا كسلطة جودة البيئة نتتطلع لنجاح سلطة المياه وبلدية الخليل في توفير الدعم اللازم لانشاء محطة التنقية لمدينة الخليل والمناطق المحيطة بها, ونستغرب طلبكم ايقاف مثل هذه المشاريع المهامة والاستيراتيجية للحفاظ على البيئة الفلسطينية.

لذا فاننا نعلمكم وانه بعد مراجعة دراسة تقييم الاثر البيئي للمشروع فإن بلدية يطا ستستفيد من هذا المشروع وكذلك مخيم الفوار وحلحول وبني نعيم في المستقبل.

وعليه فاننا نأمل منكم التعاون لما فيه مصلحة للوطن.

نشكر لكم اهتمامكم واقبلوا فائق الاحترام والتقدير ،..

<u>نسخة:</u> - العلف الاداوة العلمة لحماية البينة

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من المحطة تخدم مدينة يطا أو أي من المدن الواردة قرل كتابك حين أن مذا	<ul> <li>النا لتحدى بشكل الالطح الادعاء بان</li> </ul>	
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قم عن المحطة الواقعة إلى الشمال منه أي الحاجة لطبع السجاري لسباقة 14 كم	و للنارق متسوب +1)8م الأمر الذي لا	
م من قبلكم خلال كتابكم بتاريخ 2015/9/21 وبل نطالب بادارة المال العاد ما	اننا لا لطالب بايقاف المشروع كما فهم	
للكود على أن هذا المشروع للأسف بشكل علامة للبعض لمحلى حساب الاضرار	الساس الملعمة القصباري و العادلية مع ال	
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**State Of Palestine Environment Quality Authority** 

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دولة فلسطين سلطة جودة البيئة

سعادة الاخ موسى مخامرة ,,, المحترم رئيس بلدية يطا

الموضوع: محطة بلدية الخليل لمعالجة المياه العادمة

تحية طيبة وبعد،

تهديكم سلطة جودة البيئة اطيب تحياتها وتتمنى لكم موفور الصحة والعافية ، وبالاشارة الى الموضوع اعلاه والمتعلق باعتراضكم على محطة المعالجة وردا على كتابكم الموجه الينا بخصوص اعتراضكم على الموضوع اعلاه ، اذ بدورنا نود ان نقدر لكم اهتمامكم وحرصكم على حماية الانسان والبيئة الفلسطينية وما يتركه انسياب المياه العادمة دون معالجة من اضرار على الصحة والبيئة ، بهذا الخصوص ونظر الحجم المشاكل التي تواجهنا كفلسطينيين من اجل توفير التمويل اللازم لمثل هذه المشاريع الضخمة وباهظة التكاليف والتي يتم تنفيذ جزء منها من خلال الدول المائحة ، لذا فاننا كفلسطينيين يجب علينا ان لا نقف كعقبة امام تنفيذ اي مشروع بيئة على النقاط الهامة التالية :

- تم دراسة جميع الاثار البيئية والاجتماعية المحتملة وتم اخذها بعين الاعتبار اثناء تصميم المحطة والتقنيات المستخدمة واعداد وثائق العطاء لضمان الحد من تأثيرها لتكون ضمن المواصفات والمعايير الدولية عالية الجودة.
- 2. اننا في سلطة جودة البيئة نتفهم حقكم في التخلص من آثار انسياب المياه العادمة عبر الوادي وكذلك خدمة معالجة المياه العادمة وإذ نبدي استعدادنا وتعاوننا معكم من اجل التواصل مع بلدية الخليل وسلطة المياه ووزارة الحكم المحلي وجميع الشركاء لبحث الية

لتغطية مجرى الواد.



Al Bireh – Al Sharafa –P.O.Box 3841 Tel: 2403495 or 2403498 Fax: 2403494 Email: <u>info@environment.pna.ps</u> بريد الكتروني: 8/24034

دولة فلسطين سلطة جودة البيئة

التاريخ-----

الرقم:-

No :-----

**State Of Palestine** 

**Environment Quality Authority** 

3. يترتب على البلدية ان تعمل على اعداد التصماميم اللازمة ووثائق عطاء لانشاء شبكة مجاري داخلية لمدينة يطا والتي ستساهم بشكل فعال في الحصول على التمويل اللازم لتغطية وانشاء شبكة مجاري.

4. على البلدية الاخذ بعين الاعتبار الموقع المقترح لمحطة تنقية مدينة الخليل المراد انشاؤه وحظر البناء في المنطقة المحيطة للمنطقة المقترحة بنصف قطر لا يقل عن 200م وذلك بعدم اعطاء تراخيص للبناء.

5. وبناء على ماتم وبحسب التواصل مع سلطة المياه نعلمكم ان موضوع توفير تمويل لإنشاء محطة معالجة تخدم يطا ودورا والسموع والظاهرية هو على سلم الاولويات الاستراتيجية لديهم وهذا ليس بالامر السهل ويحتاج لوقت من اجل الحصول على تمويل خاصة ان مثل هذه المشاريع تحتاج لتمويل ضخم.

وتفضلوا بقبول فائق الاحترام والتقدير ،،،

نسخة . محافظ محافظة الخليل . مديرية الحكم المحلي– الخليل . بلدية الخليل

م. بهجت الجبارين

المدير الاقليمي لسلطة جودة البيئة /الخليل

Al Bireh - Al Sharafa - P.O.Box 3841

Tel: 2403495 or 2403498 Fax: 2403494

فلسطين – البيرة - حي الشرفة –ص.ب 3841 تلفون : 2403495/8 فاكس 2403494

بريد الكتروني:<u>info@environment.pna.ps</u>

# ANNEX 9- MOU-PWA.HM.YM



### <u>Memorandum of Understanding</u> (Regarding the Wastewater Treatment Plant (WWTP))

- ✓ First Party: Water Authority, represented by Eng. Mazen Ghoneim Head of the Palestinian Water Authority
- Second Party: Hebron Municipality, represented by Mr. Tayseer Abu Sneineh Mayor of Hebron
- ✓ Third Party: Yatta Municipality, represented by Mr. Ibrahim Abu Zahra Mayor of Yatta

## Preamble

The Waste Water and Treatment Project in Hebron is a national project that aims at enhancing the environmental status in the Governorate of Hebron. In order to ensure the project implementation, a meeting was held to discuss this project and to discuss the reservation of Yatta Municipality thereto, as they have some concerns regarding the possible environmental and social impacts. Moreover, this Memorandum aims at addressing such concerns. Therefore, a meeting took place among the above-mentioned three parties in their legal capacities on this Wednesday corresponding to 28/03/2018 at the office of the Head of the Palestine Water Authority.

## The parties have agreed upon and understood the following:

## First Article

The preamble shall constitute an integral part of this agreement.

### Second Article

- Moving the sludge (solid wastes after drying the same) to a specific landfill that is 30 kilometers far from the plant, the thing that the Water Authority confirmed being stipulated in the tender documents.
- The standards taken in the design imitate those adopted in the developed countries, ensuring the least ratios of odors and noise. Furthermore, this is stipulated in the tender documents of designing, establishing and operating the plant for five years, through which the technical and operational support shall be performed to ensure the optimum management and the staff performance efficiency.
- The Water Authority supports and is keen on the service of all Palestinian communities within the available capabilities. Moreover, the Authority supports the requests of providing support and grants to the vital projects related to water and environment from all local and international support institutions.
- The Water Authority shall be committed to provide all facilities and technical cooperation through its technical teams to obtain the optimum utilization from the budget (30 million Shekels) determined by the government for vital projects that serve water and the environment in Yatta. Moreover, the Water Authority is committed through providing a priority list for projects in Yatta. The Mayor, Manager and Engineer of the Municipality assured that the Municipality and the local community consider the project of Wadi Al Samin flood downstream after the plant in the length of 9 kilometers the first priority. This is because it will end the problems of spreading

mosquitos and odors, in addition to enabling the communication between both banks of Wadi Al Samin. Accordingly, this shall lead to lands reclamation within the downstream.

- The Water Authority undertakes to provide the finance required to design a wastewater network for Yatta city and developing a comprehensive structural plan for wastewater in the Hebron Governorate including Yatta as a high priority.
- The necessity to involve the Yatta Municipality and the local community institutions in building the comprehensive structural plan intended to be implemented by a consultant. In addition, all design and structural files and documents related to the project shall be provided and sent to Yatta Municipality for effective review and participation.

## Third Article

## **Obligations of the Hebron Municipality**

- The Hebron Municipality shall be committed to maintain the flood downstream and preserve the same naturally without allowing the aggregates of wastewater therein, provided periodical cleaning operations shall be performed before the water accumulation until finishing the implementation of the transferring line within the downstream of Wadi Al Samin, which goes alongside of Yatta City.
- The Hebron Municipality shall be committed to contribute in combating mosquitos and using the necessary insecticides in the areas, where slack water exists in areas adjacent to and alongside of the flood downstream within the borders of Yatta City.
- The Hebron Municipality shall take all procedures required to protect the adjacent water resources to prevent the leakage of wastewater to Ar-Rihiya well.

## Fourth Article

## **Obligations of Yatta Municipality**

Yatta Municipality shall be committed not to objecting the establishment of the Wastewater Management Plant Project in Hebron before any local or international entities. Moreover, Yatta Municipality shall work with the Palestine Water Authority and the Hebron Municipality in a positive and constructive manner to achieve this national project.

### Fifth Article

This agreement shall be effective promptly after signing the same and shall be issued in three originals, each party shall have a copy thereof to work accordingly and the copy shall be deemed an original.

### Best Regards,

Representative of the	Representative of the	Representative of the
First Party	Second Party	Second Party
Eng. Mazen Ghoneim -	Mr. Tayseer Abu Sneineh –	Mr. Ibrahim Abu Zahra –
Head of the Palestinian	Mayor of Hebron Municipality	Mayor of Yatta Municipality
Water Authority		
[Signature]	[Signature]	[Signature]
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Water Authority//]		Government, Yatta
		Municipality//]

2018 آثار ، 2018

# مذكرة الفاق ( حول مشروع الصرف الصحى في الخليل.)

> الطرف الأول: - مناطة العياء ويمثلها / م. مازن غنيم - رئيس سلطة العياء > الطرف الثاني: - بلدية الخليل ويمثلها أ. تيسير أبو سنينة - رئيس البلدية > الطرف الثالث: - بلدية يحا ويمثلها أ. إبراهيم أبوزهرة - رئيس البلدية

### مقدمة

مشروع العسرف العسحي ومعطبة المعالجية في الخليل هـ و مشروع وطلبي يهدف لتعسين الوضيع البيئي في محافظية الخليل ومن أجبل طبيمان تتفيذ المشروع تيم عقد اجتماع لمناقشية هذا المشروع ومناقشية تعفيظ بلدينة بطبا علينه، حيث أن لنديهم بعنض التغوفيات من الاثنار البيئية والاجتماعية المحتملية، وتهمدف هذه المستكرة لمعالجية هيذه التغوفيات ولهذا الغسرض تيم عقيد لقياء بسين معالمي الأطبراف الثلاثية المستكورين أعبلاه بعسفتهم التفيذينية القانونينية فسي هيذا اليسوم الأربعياء 2018/03/28، فسي مكتب رئيس سيلطة المياد.

فقد اتفق وتفاهم الأطراف على ما يني:-

#### المادة الأولمي

تعتبر مقمة الإلفاق جزءاً لا يتجزأ من هذا الإلفاق.

#### المادة الثانية

#### التزامات سلطة المياه

خنقبل الحمداة (التفايدات الصدلية بعد تجفيفهما) السي مكنب خداص ببعدد 30 كدم عمن المحطة وهدذا مدا اكدنت عليمه مسلطة الميداد بكوتمه متصدوص عليمه فني وثدائق العظام.

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28 آذار، 2018

- أن المعاوير المتضادة فن التصنيميم تصاكى تلك المتبعة فن السنول المتقدمة بعنا يضمن أقبل المعادلات من السروائح والضوضاء، وهنذا ايضاً متصنوص عليه فني وشائق عطاء تصنيميم وانشاء وتشغيل المعطية لمندة خمس سنتين والبذي من خلافه سيتم الدعم القلى والتشغيلي لضمان الادارة المثلى وكفاءة الاداء للعاملين.
- القسف سلطة العيداه داعمية وحريصية علي خدمية كافية التجمعيات السكانية القسطينية ضعمن الامكانيات وشدعم أيضاً طلبيات تسوفير المدعم والمستح لعمدالح المقساريع الحيويية المتطقية بالعيداء والبيئية معن كافية موسسيات السدعم المطيبي والدولي.
- لتسرّم سلطة المياه بوضيح كافية التسهيلات والتعاون الفني من خال طواقمها الفلية لاستفادة مثلي من الميزانية المقررة (30 مليون شيكل) من الحكومية لمسالح مشاريع حيويية تغييم الميزانية المقررة (30 مليون شيكل) من الحكومية لمسالح لمشاريع حيويية تغييم المياه والبيئية فني يطاء ومن خال وضيع قائمية بالأولويية لمشاريع فني يطاء حيث أكب رئيس البلديية ومندير البلديية ومهنيدس البلديية أن المشاريع فني يطاء حيث أكب رئيس البلدية ومن خال وضيع قائمية بالأولويية المتساريع حيويية تغييم الميزانية المقاررة (30 مليون شيكل) من الحكومية لمسالح المشاريع حيويية تغييم الميزانية المقاررة والبيئية فني يطاء ومن خال وضيع قائمية بالأولويية المتساريع فني يطاء حيث أكب رئيس البلديية ومندير البلدينة ومهنيدس البلديية أن المتساريع في على من المحلية المتروع منتيك من البلدينة والمجتمع المحلي تعتبر مشاروع منقد منيل واد المنعن بعد المحطية بطول البلدينة والمجتمع المحلي تعتبر مشاروع منقد منيل واد المنعن بعد المحطية بطول البلدينة والمجتمع المحلي تعتبر مشاروع منقد مني واد المنعن بعد المحطية بطول البلدينة والمجتمع المحلي تعتبر مشاروع منقد منيل واد المنعن بعد المحطية بطول البلدينة والمجتمع المحلي تعتبر مشاروع سنق منيل واد المنانية ومن البلدينة المحلي تعتبر مشاروع منة منيل واد المعن بعد المحطية بطول البلدينة والمجتمع المحلي تعتبر مشاروع سنق مالية وعاروع المحلي البلديان الملية واليانية المحلية المحلي المحلية والمحلية التولية والمحلية والمحلية والمحلية والمحلية والة المتسالة المتسالة المحلية والمحلية والمة والمحلية والمحلية والمحلية والمحلية والمحلية والمحلية والمحلية والمحلية والمة والمحلية والمحلية والمحلية والمحلية والمحلية والمحلية والمحلة والمة والمة والمحلية والمحلية والمحلية والم
- تتعهمد مسلطة الميساد بالعصل علمي تموفير التمويسل المطلبوب لتصميم منظومسة مسترف مستحي لمدينسة يطما وعممل الخطبة هيكايسة شممولية للمسترف المستحي لمحافظية الخليل ومن ضمتهم مدينة يطا كأولوية قصوى.
- خسرورة إشسراك بلديسة بطب ومؤسسات المجتمع المحلسي فسي بنساء الخطبة الهيكليسة الشسولية التزميع العياشيرة بتنقيبذها من قبسل استشباري وكستلك سبيتم تسوفير وارسبال كاقسة الملفسات والوئسانق التصبيعية والتعاقديسة ذات المسبطة بالمشبروع تبلديسة يطببا لإطلاعهم ومشاركتهم الفعالة.

#### المادة الثالثة

#### التزامات بلدية الخليل

التسزم بلديسة الخليسل بالحفساط علمى مجسرى المسنيل والإبقساء عليمه بشمكل طبيعمى دون المسماح بتسراكم ميساء المسمرف المسممي فيسه علمي أن يستم القيسام بعمليسات التنظيمف

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28 آثار + 2018

بشمكل دوري وقيمل شمراكم الديماء، إلسي حمين الالتهماء ممن تتفيمذ إنشماء الخمط الناقمل ضمن مجرى وادي السمن المحاذي لمدينة يطا.

- تأتسزم بلديسة الخليسل بالمساهمة فسى مكافحسة البعسوجن واستخدام المبيسدات الخشسرية اللازمسة وذلك فسى المنساطق التسي تتواجد فيهما الميماء الراكسدة فسى المنساطق المحيطسة والمحاذية لمجرى السول في حدود مدينة يطا.
- ♦ تقدوم بلديسة الخابسل بعمال السلارم لحمايسة مصادر الميساد المحيطسة حتسى تملسع تساريب مواد الصارف الصنعي إلى بثر الرينعية.

المادة الرابعة

الترامات بلدية يطا

تشترم بذيبة يطب بعسدم الاعتسراض علمى إنشباء مشمروع معطمة معالجمة العيماء والصحرف الصحى فمي الخليمان لدى أي جهمات معليمة أو دوليمة وتعممل ممع كمل ممن مسلطة العيماء الفلمسطينية وبلذيمة الخليمل بشمكل إيجمابي ويلماه لإنجماز همذا المشمروع الوطني.

المادة الغامسة

تمسيري هيذه الاتفاقيسة بعبد التوقيسع عليهما مباشمرة، ويستم تحريرهما علمي شمائك نمسخ أهمملية . بحيث بحثقظ كل طرف بنسخة واحدة منها وتُعتبر أصلية.

والله وشي التوفيق،

🥏 أ. تيمبير أبو سنينة

ممثل الطرف الثانى

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ممثل الطرف الأول





# ANNEX 10- PUBLIC CONSULTATION SESSION 13-6-2019

# Annex 10: Attendance Sheet, Final Public Consultation Session, Thursday 13/6/2019

List of Attendees

ملطـــة العرـــاء القلمطـــينية Patestinion Water Authority

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ة العرب القلسط بيانيا Polestinian Water Aut	harity	لعامة لدراسة تقييم الأثر البيلي والاجتماعي والترائي 6 معالجة مياد الصرف الصحي في الخليل قاعة محافظة الخليل يشارة تسجيل الحضور يس ١٢ حزيران ٢٠١٩	جلسة عرض النتائج والمناقشة ال لمشروع إنشاء محط الخم	Eco Con Serv	
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#### STATE OF PALESTINE WATER AUTHORITY



**دو:\_\_\_ة فنسطي\_\_** سلطة المياه

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#### <u>الجلسة التشاورية الختامية للدراسة البينية والإجتماعية لمشروع إدارة الصرف الصحي – الخليل</u> الخميس الموافق 2019/6/13 من الساعة 3:30 صباحا وحتى 3:30 ظهرا قاعة محافظة الخليل

البريد الإلكتروني (Email)	هاتف خلوي (Cellular No)	هاتف الأرضي (Telephone No)	المسمى الوظيفي (Job Title)	إسم المؤسسية ( Institution)	الإسم (Name)	الرقم
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4	Yousef Ismaiel Fakhamra	Local Community Committee	
5	Dr.Eyad Farag Allah	Director of Agriculture	ayad-vet@yahoo.com
6	Marwan Abdelrahman El Akhdar	Head of the treatment plant	alivemarwan59@yahoo.com
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8	Mahmoud Mohamed Elzer	Hebron Agriculture Directorate	imalzeer76@yahoo.com
9	Maged Abo Zahra	Yata Charity Association	
10	Reyad Mohamed Eisa	The Stone Committee	
11	Nader Ibrahim Elkarty	Directorate of Agriculture south of Hebron	alkarakin@hotmail.com
12	Eng.Samah Abuhaikal	General director / Directorate of Agriculture south of Hebron	<u>skabuhaikal@gmail.com</u>
13	Abdelftah Raeed	Community Council Representative	
14	Mohamed Eid Mahmoud Mohamed	Environmental Quality Authority	moh852890@gmail.com
15	Lina Eltamemy	Environmental Quality Authority	lina tamimi@live.com
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19	Eng.Hussien Abo Sohba		hus eng1@yahoo.com
20	Ashraf Shraiteh	Supervisor	<u>ashraf.shraiteh@gmail.com</u>
21	Abdelshafy Syam	Supervisor	
22	Ibrahim Ali Abo Zahra	Mayor of Yatta	_
23	Aisha Ahmed Saliem	Member of Yatta Municipality	
24	Abdelshafy Younis Syam	Educational Supervisor	-
25	Mohamed Gehad Abotohfa	Eng.School Health	
26	Eng.Ismaiel Baa	Mayor	_
27	Gabr Ahmed Rahoub	The Ministry of Tourism and Antiquities	
28	Hader Omran	Hebron Municipality / projects engineer	-
29	Dr.Taleb Gabran	The Ministry of Tourism and Antiquities	
30	Mohamed Abo Zriee	The Ministry of Education / Health Department	mhdelth@yahoo.com
31	Ibarhim Ahmed	Municipality of Yatta	ibrahimbheisa@gmail.com

No	Name	Job	E-mail
32	Tayseer Ibrahim Mahmoud	citizen	<u>tayseershawaheen</u>
33	Aziz Abo Ali	Member of Yatta Municipality	
34	Mohamed Zien	Local compound	mohzain84@yahoo.com
35	Eng.Ibrahim Elshamisti	Director of Internal Control	shamisti2020@yahoo.com
36	Eng.Akram	Control and inspection/ Environmental Quality Authority	<u>akram 19992001@yahoo.com</u>
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38	Eng. Haytham Elzoher	Coordinator of the Agricultural Relief Project	haitham.alzagheir@pal-auc.org
39	Hamidan Abo Gaber	Sectoral Committee	
40	Rafik	chamber of Commerce	vuited-steel@hotmail.com
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42	Ahmed Qbesa	Municipality of Al Dhahiriya	<u>ahqmuns@gmail.com</u>
43	Eng. Yasmin Elkaky	Municipality of Al Dhahiriya	<u>yas2006an@yahoo.com</u>
44	Dr.Yaser Eisa	Head of Environmental Health/ Hebron Health Directorate	<u>yaserissa@gmail.com</u>
45	Eng. Suad Hamdaat	Inspector of Development Society / Hebron Association Directorate	suadhamdat@yahoo.com
46	Eng. Yousef Elhalees	Agriculture of Yatta	yousef.halees@gmail.com
47	Amin	Municipality of Yatta	ay-2020200@gmail.com
48	Salah Abo Ali	Member of the Municipal Council	_
49	Boshra Rashad	Water Engineer	bushrghrene@hotmail.com
50	Asmaa Saaed Mahmoud Amr	Agricultural enginee	asmaraed.411@gmail.com
51	Abeer Elmasy	El Nile eldouly	_
52	Mohamed Hassanabo Zahra	Director of Interior Yatta	mh-abuzohre@yahoo.com
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56	Layla Mahmoud Elhashry	public relation / PWA	<u>layla.m1366@yahoo.com</u>
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61	Nidal	Ministry of Social Development	nidalmt75@hotmail.com
62	Khaled Tamiza	Director of Social Development	<u>kh tamazi@hotmail.com</u>
63	Rashed Elatwna	Office of Development	-
64	Hadil Elawiwi	Hebron Governorate	-
65	Abdelkreem	Coordinator of the Hebron Project	abdelkareem@ecopeacme.org

# **ANNEX 11- MEASUREMENTS**



جامعية النجساح الوطنية وحدة التحاليل والمعايرة



An-Najah National University Analysis and CalibrationUnit (ACU)

> التاريخ: 2018/11/05 الرقم: / م د م ب /2018

السادة شركة Eco conserve المحترمين

تحية طيبة وبعد،،

الموضوع: فحص تدفق المياه العادمة في مدينة الخليل

تهديكم وحدة التحاليل والمعايرة في جامعة النجاح الوطنية أطيب التحيات وتتمنى لكم التوفيق في خدمة بلدنا ومجتمعنا الفلسطيني.

بناءا على طلبكم بخصوص تحديد كمية المياه العادمة المصروفة خلال شبكة المياه العادمة لمدينة الخليل فقد قام المهندس بلال الشايب بزيارة الموقع المستهدف لإجراء الفحص يوم الاربعاء 2018/10/31 وذلك لتحديد فتحات التفتيش الافضل لإستعمالها في اجراء الفحص وقد تم تحديد فتحتين في منطقة واد الدور بحيث كانت المسافة الفاصلة بينهما 200 متر وقد تم التأكد من عدم وجود ترسبات داخل غرف التفتيش لكلتا الفتحتين وعندها تم البدء بالفحص كالتالي:

- 1- لقياس ارتفاع المياه العادمة داخل الخط تم اعتماد طريقة القياس المباشر من خلال عصا مدرجة يبلغ طولها 1.5 متر وهو نفس قطر خط التصريف
- 2- لقياس سرعة الجريان في الخط تم استعمال تقنية الكرة الغاطسة جزئيا وذلك لتحديد السرعة الحقيقية للجريان
- 3- تم تحديد مناسيب كلا الفتحتين وذلك للتأكد من صحة النتائج التي تم التوصل اليها حيث ميل خط التصريف هو 0.035
- 4- بدأت عملية تحديد ارتفاعات المياه العادمة مع الزمن وسرعة تلك المياه يوم الاربعاء 2018/10/31 الساعة 14:30 وتم الانتهاء من الفحص يوم الخميس 11/1/2018 الساعة 14:30

مدير الوحدة مشرف مختبر كيمياء المياه An-Najah National University د. عبد الغتاح الملاح وحدة التحاليل والمعايرة م.بلال الشايب Analysis & Calibration Unit (ACU) CI UN Nablus - Palestine

4495،4497 داخلي 2345982 داخلي 2345،497 ميني المراكز العلمية. الحرم القديم. نابلس – ص.ب 707 تلفون: 2017/15/6/ (9) (972)+، ناكس 2345982 داخلي 2023، Scientific Research Centers Building. P.O. Box 707, Nablus, Palestine,. Tel+(972)(9)2345115/6/7 Fax 2345982 An-Najah National University Analysis and CalibrationUnit (ACU)



جامعية النجاح الوطنية وحدة التحاليل والمعايرة

Time	Water Height(m)	Velocity (m/s)	
14.30 on 31/10/2018	0.4	1.81	
14:50 01 51/10/2020	0.5	2.00	
10:15	0.3	1.74	
18:50	0.2	1.67	
20:50 0:15 on 1/11/2018	0.2	1.67	
5.00	0.1	1.08	
6.30	0.15	1.60	
8·10	0.25	1.70	
0.30	0.3	1.75	
10.30	0.35	1.77	
13.30	0.4	1.82	
14:30	0.4	1.80	

والجدول التالي يوضح النتائج التي تم تسجيلها خلال تلك الفترة :

النتائج :

Measurement	Time	Unit	Result
Maximum Wastewater Flow	@16:00-17:00	m <sup>3</sup> /hr	3712
Minimum Wastewater Flow	<i>(a)</i> 4:00-5:00	m <sup>3</sup> /hr	196
Daily wastewater Discharge	@24 hr	m <sup>3</sup>	37700

والفتالج الملاح

An-Najah National University وحدة التحاليل والعايرة وحدة المنحولين والمعايرة Analysis & Calibration Unit (ACU) Nablus - Palestine

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4495،4497 ماخلى 2345982 ماخلى 2345،497 ماكر (972) ماكر 2345115/6/7 ماكر 2345،4497 ماكر 2345982 ماخلى 500 ماجلى 2345982 Scientific Research Centers Building. P.O. Box 707, Nablus, Palestine,. Tel+(972)(9)2345115/6/7 Fax 2345982 National University Analysis, Poison Control L Calibration center. Analysis L Calibration Unit



النجاح الوطنية مركز التحاليل والسموم والمعايرة وحدة التحاليل والمعايرة

## **Report of Sample Analysis**

-	NVto			and the second second	Repo	ort No.		2018110733	
Sample type	waste	Wastewater			Source No.				
Sample owner	ECO Conserve			Builderio			WESI/ACU		
Producer					Rece	eiving place		4/11/2018	
Tuede mentr					Rece	eiving date		4/11/2018	
Irade mark					Receiving hour			8:00	
Code/Reg. No.	de/Reg. No			A polyging data			4/11/2018		
Lot/Batch No.	Lot/Batch No.			and the second second	Analyzing date			11/11/2018	
Man date		-			Test completion date		date	11/11/2018	
Tan. uate		<u></u>			Rep	orting date		11/11/2018	
Exp. date		Oty.	6	Sample Temp.		2-8°C	Storing Temp.	2-8°C	

**Results:** 

Test	Units	Results	Limits	Ref
Potential of Hydrogen (pH)	_	6.68		SMWW
Bio Chemical Oxygen Demand(BOD)	mg/l	1470		SMWW
Chemical Oxygen Demand (COD)	mg/l	2845		SMWW
Total Dissolved Solids (TDS)	mg/l	1808		SMWW
Total suspended solids(TSS)	mg/l	691		SMWW
Fotal Nitrogen (N)	mg/l	343		SMWW
Nitrate Nitrogen (NO <sub>3</sub> -N)	mg/l	1.3		SMWW
mmonia Nitrogen(NH <sub>3</sub> -N)	mg/l	310	1	SMWW
otal Phosphorus(TP)	mg/l	41.6		SMWW
horide(CI)	mg/l	185		SMWW
hromium (Cr)	mg/l	0.035		ICPMS-SMWW
olatile Matter (TOM)	mg/l	886		SMWW

SMWW: Standard Method of Water & Waste water ICPMS: Tested by Perkin Elmer Elan9000

#### Notes:

- 1- The Center is responsible for the results of the tested sample.
- 2- Reproduction for this report is prohibited without the prior written permission from the APCC Center.



مبق المراكز العلمية. الحرم الجديد. نابلس – ص.ب 707 تلفون: 7/2345115/6/ و/972)+، فاكس 2345982 داخلي 4264،4263 Scientific Research Centers Building. P.O. Box 707, Nablus, Palestine,. Tel+(972)(9)2345115/6/7 Fax 2345982

تقرير

An -Najah National University Analysis, Poison Control L Calibration center. Analysis L Calibration Unit



جامع ـــــة النجاح الوطنية مركز التحاليل والسموم والمعايرة وحدة التحاليل والمعايرة

# **Report of Sample Analysis Part 1**

Sample	e type	Wastewa	ater			Report No.			2018100613M	
Sample	owner	ECO Conserve			Serves No.			Exectment -1		
Produce	er			Source No.		See a marine	I reatment plant			
Trade	nark					Rec	eiving place		APCC Center	
C. L (D	N						eiving date		7/10/2018	
Code/R	eg. No.					Receiving hour			11:00	
Lot/Bat	tch No.				Constant Constant	Analyzing data			7/10/2018	
Man. da	Ian. date			Test same litter litter			16/10/2010			
Exp. date			rest completion date		date	16/10/2018				
				2.703		Rep	orting date		18/102018	
Init	1.5liter	and the	Qty.	3	Sample Temp.		RT	Storing	2-8°C	
ample o	description	1.5 Liter	· plastic I	bottles con	ntain turbid water. C	Compo	site Sample (1	1 emp.	200	

#### **Results:**

Test	Units	Results	Limits	Ref
Potential of Hydrogen (pH)		676		Kei
Bio Chemical Oxygen Demand(BOD)		0.70		SMWW
Cluster in Stygen Demand(BOD)	mg/I	1270		SMWW
Chemical Oxygen Demand (COD)	mg/l	3060		SMWW
Total Dissolved Solids (TDS)	mg/l	1834		SMWW
Total Nitrogen (N)	mg/l	360.0		SIVIWW
Niderada Nida (NO NO	mg, i	300.0		SMWW
Nitrate Nitrogen (NO <sub>3</sub> -N)	mg/l	1.2		SMWW
Ammonia Nitrogen(NH3-N)	mg/l	304.8		SMWW
Total Phosphorus(TP)	7			SIVI VV VV
	mg/l	90.1		SMWW
Choride(Cl <sup>-</sup> )	mg/l	575.0		SMWW
Chromium (Cr)				SIVI VV VV
	mg/l	0.522		<b>ICPMS-SMWW</b>
Volatile Matter (TOM)	mg/l	1680		SMWW



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All -Jugun National University Analysis, Poison Control L Calibration center. Analysis & Calibration Unit



النجاح الوطنية مركز التحاليل والسموم والمعايرة وحدة التحاليل والمعايرة

# **Report of Sample Analysis Part 2**

			CMUM
A archic Plate Count (APC)	Cfu/ml	47*10°	SIVI VV VV
Activity interest (ITCC)	Cfu/100ml	20*10 <sup>5</sup>	SMWW
Total Collform Could (ICC)		12*104	SMWW
Total Fecal Coliform Count(TFCC)	Cfu/100ml	12*10	

SMWW: Standard Method of Water & Waste water ICPMS: Tested by Perkin Elmer Elan9000

#### Notes:

- The Center is responsible for the results of the tested sample. 1-
- Reproduction for this report is prohibited without the prior written permission from the APCC 2-Center.
- 3- This Report is issued as alternative of report 2018100613

Lab. Superintendent	An-Najah National University a liticality of the liticality of the liticality Analysis & Calibration Unit (ACU Analysis & Calibration Unit (ACU Cablus - Palestine	Lab. Manager Jose Dr. AbdelFattah Mallah
---------------------	--	--

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إصدار رقم 6/ نموذج رقم 20


السجاح الوطنية مركز التحاليل والسموم والمعايرة وحدة التحاليل والمعايرة

## Report of Sample Analysis Part 1

						Repo	rt No.		2018100612M	
Sample type		Wastewa	iter		and the second	Sour	e No		Hebrone+Fawar	
Sample	owner	<b>ECOC</b> o	nserve		<u></u>	500100 110.			APCC Center	
Producer						Recei	ving place		7/10/2010	
						Receiving date			7/10/2018	
Irade m	de mark Beceiving hour			and the second	11:00					
Code/R	eg. No.					Analyzing date			7/10/2018	
Lot/Bat	ch No.		and the second	and the state					16/10/2018	
Man da	ate					Test	completion d	ate	10/10/2018	
Frank date						Repo	rting date		18/102018	
Exp. uate			ht.	3	Sample Temp.	RT Storing Tem		ſemp.	2-8°C	
Unit 1.5liter Sample description		1		5	sample remp:	Composi	te sample(11:	00 -12:0	00)	
		1.5 Liter plastic bottles contain turbid water-					to sumple(12)		,	

#### **Results:**

Test	Units	Results	Limits	Ref
Potential of Hydrogen (pH)	_	7.71		SMWW
Bio Chemical Oxygen Demand(BOD)	mg/l	675		SMWW
Chemical Oxygen Demand (COD)	mg/l	1410		SMWW
Total Dissolved Solids (TDS)	mg/l	1250		SMWW
Total Nitrogen (N)	mg/l	265.0		SMWW
Nitrate Nitrogen (NO3-N)	mg/l	1.4		SMWW
Ammonia Nitrogen(NH <sub>3</sub> -N)	mg/l	223.2		SMWW
Total Phosphorus(TP)	mg/l	77.4		SMWW
Choride(Cl <sup>+</sup> )	mg/l	225		SMWW
Chromium (Cr)	mg/l	0.185		ICPMS-SMWW
Volatile Matter (TOM)	mg/l	1350		SMWW

An-Najah National University وحدة التحاليل والمه Analysis & Calibration Unit (ACU) ايرة Nablus - Palestine

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## **Report of Sample Analysis Part 2**

			SMWW	
Const (APC)	Cfu/ml	63*10 <sup>7</sup>	SIMIWW	
Aerobic Plate Count (ArC)			SMWW	
to the count (TCC)	Cfu/100ml	12*10*	Shart	
Total Colliorm Count (ICC)			SMWW	
Total Caliform Count(TFCC)	Cfu/100ml	35*102	Shart	
Total Fecal Comorni Cound II CC				

SMWW: Standard Methods for Examination of Water &Waste water ICPMS: Tested by Perkin Elmer Elan9000

#### Notes:

- 1. The Center is responsible for the results of the tested sample.
- 2. Reproduction for this report is prohibited without the prior written permission from the APCC Center
- 3. This Report is issued as alternative of report 2018100612

Lab. Superintendent	1	Lab. Manager
N Samah Abdel Haq	An-Najah National University	Dr. AbdelFattah Mallah
	Analysis & Calibration Unit (ACU) Nablus - Palestine	

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تقرير مفده 2018100612M 2 من2



ح\_امـعــــة النجاح الوطنية مركز التحاليل والسموم والمعايرة وحدة التحاليل والمعايرة

#### **Report of Sample Analysis**

Sample type Water						Re	port N	lo.	20	18100624
Sample I	ype	FCOC	ncorvo			Source No.		Fav	var Spring	
Sample o	wner					Beceiving place			APCC Center	
Trode m	ork						Receiving date			3/10/2018
Code/Re	rate mark Receiving hour					ghour		13:00		
Lot/Bate	h No.					Analyzing date		ng date	1	8/10/2018
Man. dat	te	Test completion d		Test comple		pletion date	9/10/2018			
Exp. date			-			Re	eportin	ng date	1	8/102018
Jnit	1.5liter	er Qty. 4 Sample Temp. RT Storing Te		Storing Tem	p.	2-8°C				
Sample description 1.5 Lit			r plasti	c bottles co	ontain clear water		1			

**Results:** 

Test	Units	Results	Limits	Ref
Nitrate Nitrogen (NO3-N) as NO3	mg/l	122.7		SMWW
Aerobic Plate Count (APC)	Cfu/ml	35		SMWW
Total Coliform Count (TCC)	Cfu/100ml	186		SMWW
Total Fecal Coliform Count(TFCC)	Cfu/100ml	4		SMWW

SMWW: Standard Methods for Examination of Water & Waste water

#### Notes:

- 1. The Center is responsible for the results of the tested sample.
- 2. Reproduction for this report is prohibited without the prior written permission from the APCC Center

Lab. Superintendent	An-Najah National University	Lab. Manager 5555' Dr. AbdelFattah Mallah
10 C'VI	Analysis & Calibration Unit (1907) Nablus - Palestine	

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تقرير صفح2018100624 امن ا



ح\_امـعــــة النجاح الوطنية مركز التحاليل والسموم والمعايرة وحدة التحاليل والمعايرة

#### **Report of Sample Analysis**

Sample type Water						Re	port N	lo.	20	18100624
Sample I	ype	FCOC	ncorvo			Source No.		Fav	var Spring	
Sample o	wner					Beceiving place			APCC Center	
Trode m	ork						Receiving date			3/10/2018
Code/Re	rate mark Receiving hour					ghour		13:00		
Lot/Bate	h No.					Analyzing date		ng date	1	8/10/2018
Man. dat	te	Test completion d		Test comple		pletion date	9/10/2018			
Exp. date			-			Re	eportin	ng date	1	8/102018
Jnit	1.5liter	er Qty. 4 Sample Temp. RT Storing Te		Storing Tem	p.	2-8°C				
Sample description 1.5 Lit			r plasti	c bottles co	ontain clear water		1			

**Results:** 

Test	Units	Results	Limits	Ref
Nitrate Nitrogen (NO3-N) as NO3	mg/l	122.7		SMWW
Aerobic Plate Count (APC)	Cfu/ml	35		SMWW
Total Coliform Count (TCC)	Cfu/100ml	186		SMWW
Total Fecal Coliform Count(TFCC)	Cfu/100ml	4		SMWW

SMWW: Standard Methods for Examination of Water & Waste water

#### Notes:

- 1. The Center is responsible for the results of the tested sample.
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Lab. Superintendent	An-Najah National University	Lab. Manager 5555' Dr. AbdelFattah Mallah
10 C'VI	Analysis & Calibration Unit (1907) Nablus - Palestine	

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تقرير صفح2018100624 امن ا



السجاح الوطنية مركز التحاليل والسموم والمعايرة وحدة التحاليل والمعايرة

## Report of Sample Analysis Part 1

						Repo	rt No.		2018100612M	
Sample type		Wastewa	iter		and the second	Sour	e No		Hebrone+Fawar	
Sample	owner	<b>ECOC</b> o	nserve		<u></u>	500100 110.			APCC Center	
Producer						Recei	ving place		7/10/2010	
						Receiving date			7/10/2018	
Irade m	de mark Beceiving hour			agentific the second	11:00					
Code/R	eg. No.					Analyzing date			7/10/2018	
Lot/Bat	ch No.		and the second	and the state					16/10/2018	
Man da	ate					Test	completion d	ate	10/10/2018	
Frank date						Repo	rting date		18/102018	
Exp. uate			ht.	3	Sample Temp.	RT Storing Tem		ſemp.	2-8°C	
Unit 1.5liter Sample description		1		5	sample remp:	Composi	te sample(11:	00 -12:0	00)	
		1.5 Liter plastic bottles contain turbid water-					to sumple(12)		,	

#### **Results:**

Test	Units	Results	Limits	Ref
Potential of Hydrogen (pH)	_	7.71		SMWW
Bio Chemical Oxygen Demand(BOD)	mg/l	675		SMWW
Chemical Oxygen Demand (COD)	mg/l	1410		SMWW
Total Dissolved Solids (TDS)	mg/l	1250		SMWW
Total Nitrogen (N)	mg/l	265.0		SMWW
Nitrate Nitrogen (NO3-N)	mg/l	1.4		SMWW
Ammonia Nitrogen(NH <sub>3</sub> -N)	mg/l	223.2		SMWW
Total Phosphorus(TP)	mg/l	77.4		SMWW
Choride(Cl <sup>+</sup> )	mg/l	225		SMWW
Chromium (Cr)	mg/l	0.185		ICPMS-SMWW
Volatile Matter (TOM)	mg/l	1350		SMWW

An-Najah National University وحدة التحاليل والمه Analysis & Calibration Unit (ACU) ايرة Nablus - Palestine

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## **Report of Sample Analysis Part 2**

			SMWW
Const (APC)	Cfu/ml	63*10 <sup>7</sup>	SIMIWW
Aerobic Plate Count (ArC)			SMWW
Count (TCC)	Cfu/100ml	12*10*	Shart
Total Colliorm Count (ICC)			SMWW
Total Caliform Count(TFCC)	Cfu/100ml	35*102	Shart
Total Fecal Comorni Cound II CC			

SMWW: Standard Methods for Examination of Water &Waste water ICPMS: Tested by Perkin Elmer Elan9000

#### Notes:

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Lab. Superintendent	1	Lab. Manager
N Samah Abdel Haq	An-Najah National University	Dr. AbdelFattah Mallah
	Analysis & Calibration Unit (ACU) Nablus - Palestine	

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تقرير مفده 2018100612M 2 من2



جامع ـــــة النجاح الـوطنيــة مركز التحاليل والسموم والمعايرة وحدة التحاليل والمعايرة

## **Report of Sample Analysis Part 1**

Sample	e type	Wastewater			Report No.			2018100613M		
Sample	owner	ECO Co	onserve							
Produce	er					Source No.		See a second	reatment plant	
Trade	nark				and the second secon	Receiving place			APCC Center	
C. L (D	N	Receiving			eiving date		7/10/2018			
Code/R	eg. No.				Receiving hour			11:00		
Lot/Bat	tch No.				Analyzing date			7/10/2018		
Man. da	ate					Test some letter let			16/10/2010	
Exp. da	te					lest completion date			16/10/2018	
			2		Rep	oorting date		18/102018		
Jnit	1.5liter		Qty.	3	Sample Temp.		RT	Storing	2-8°C	
ample o	description	1.5 Liter	plastic l	bottles con	ntain turbid water. C	Compo	site Sample (1	1 emp.	200	

#### **Results:**

Test	Units	Results	Limits	Ref
Potential of Hydrogen (pH)		676		
Bio Chemical Oxygen Demand(BOD)		0.70		SMWW
Cluster in Stygen Demand(BOD)	mg/I	1270		SMWW
Chemical Oxygen Demand (COD)	mg/l	3060		SMWW
Total Dissolved Solids (TDS)	mg/l	1834		SMWW
Total Nitrogen (N)	mg/l	360.0		SIVIWW
Niderada Nida (NO NO	mg, i	300.0		SMWW
Nitrate Nitrogen (NO <sub>3</sub> -N)	mg/l	1.2		SMWW
Ammonia Nitrogen(NH3-N)	mg/l	304.8		SMWW
Total Phosphorus(TP)	7			SIVI VV VV
	mg/l	90.1		SMWW
Choride(Cl <sup>-</sup> )	mg/l	575.0		SMWW
Chromium (Cr)				SIVI VV VV
	mg/l	0.522		<b>ICPMS-SMWW</b>
Volatile Matter (TOM)	mg/l	1680		SMWW



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النجاح الوطنية مركز التحاليل والسموم والمعايرة وحدة التحاليل والمعايرة

## **Report of Sample Analysis Part 2**

			CMUM
A archic Plate Count (APC)	Cfu/ml	47*10°	SIVI VV VV
Activity in the count (TCC)	Cfu/100ml	20*10 <sup>5</sup>	SMWW
Total Collform Could (ICC)		12*104	SMWW
Total Fecal Coliform Count(TFCC)	Cfu/100ml	12*10	

SMWW: Standard Method of Water & Waste water ICPMS: Tested by Perkin Elmer Elan9000

#### Notes:

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- 3- This Report is issued as alternative of report 2018100613

Lab. Superintendent	An-Najah National University a liticality of the liticality of the liticality Analysis & Calibration Unit (ACU Analysis & Calibration Unit (ACU Cablus - Palestine	Lab. Manager Dr. AbdelFattah Mallah
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إصدار رقم 6/ نموذج رقم 20

# **ANNEX 12 - AL MINYA NO OBJECTION**



State of Palestine Ministry of Local Government Joint Service Council For Solid Waste Management

Hebron – Bethlehem



السجلس السشترك لإدارة النفايات الصلبة Joint Service Council For Solid Waste Managment دولة فلسطين وزارة الحكم المحلي المجلس المشترك لإدارة النقايات الصلبة في محافظتي الخليل وبيت لحم

014/1/0 الرقم التاريخ : ٢٠١٥/١٠/٨

حضرة السيد ماهر العويوى المحترم مدير عام بلدية الخليل المحترم

الموضوع : محطة معالجة المياه العادمة لمدينة الخليل ترحيل الحمأة (Sludge) إلى مكب المنيا.

تحية طيبة وبعد : -

بالإشارة للموضوع أعلاه والى كتاب حضرتكم رقم ٣٤١٦/٩٠١٤ بتاريخ ٢٠١٥/٩/٢٩ ن نود إعلامكم بأنه لا مانع لدى المجلس من استقبال الحمأة في مكب نفايات المنيا ضمن الكميات والمواصفات المذكورة في كتابكم. علما بان الترتيبات لعملية النقل ستكون من طرفكم أو أية جهة من طرفكم ضمن المواصفات والشروط اللازمة لمثل هذه الأعمال.

وتفضلوا بقبول الاحترام

ياسر الدويك التنفيذي< Butblennem Governorates ا المجلسيين المعسيلات 3 فارد العصبة ليسساف العملية. Joint Service Council For Solid Weste Managment

## ANNEX 13- SLUDGE DISPOSAL AND TIPPING FEE AGREEMENT



#### SLUDGE DISPOSAL AND TIPPING FEE AGREEMENT

This Sludge Disposal and Tipping Fee Agreement (the "Agreement") is entered into on this the (......Date.....), by and between the Hebron Municipality and The Joint Service Council For Solid Waste Management For Hebron and Bethlehem Governorates (JSC-H&B), which are collectively referred to herein as the "Parties."

#### **Recitals**

- A. Hebron municipality generates sludge at the HRWWTP plant. Hebron municipality must dispose of the sludge in a manner that is consistent with best industry practices and the HRWWTP Operator's Sludge management and monitoring plan.
- B. The Joint Service Council For Solid Waste Management For Hebron and Bethlehem Governorates (JSC-H&B) operates Al Minya Sanitary Landfill located south east of Bethlehem governorate, between Al Minya and Kissan villages, a few kilometers south of Toqua town (the "Landfill").
- C. The Hebron municipality will be utilizing a contractor to haul its sludge or alternatively its own employees and equipment to haul its sludge to and dispose of the sludge at the Landfill and the Hebron Municipality desires to enter into a formal agreement with the JSC-H&B that allows the Hebron Municipality to dispose of its sludge at the Landfill.
- D. The JSC-H&B desires to allow Hebron Municipality to dispose of its sludge at the Landfill, provided that the Hebron Municipality pays a reasonable fee for the right to dispose of the sludge.

WHEREFORE, in consideration of the above recitals, the Parties agree as follows:

#### Agreement

1. Disposal of Sludge. JSC-H&B hereby grants to Hebron Municipality a right to dispose of its sludge at the Landfill pursuant to the terms of the Agreement. JSC-H&B shall be responsible for complying with the HRWWTP Operator's Sludge management and monitoring plan, which requires that sludge be processed and mixed with soil at the Landfill and that soil samples be taken as specified. If, during the term of this Agreement, the Landfill closes or JSC-H&B can no longer accept the Hebron Municipality's sludge at the Landfill, then JSC-H&B may designate an alternate location where Hebron Municipality may dispose of its sludge for the remainder of the term of the Agreement and in accordance with the terms set forth herein, or it may terminate this Agreement. If JSC-H&B elects to terminate this Agreement, then JSC-H&B shall provide written notice of such change or termination to Hebron Municipality at least ninety (90) days before the change is required or the date of termination, unless shorter notice is required for the immediate protection of public health, safety, or welfare, or required by order or direction of a regulatory authority having jurisdiction over the activities specified in this Agreement.

#### 2. Payment For Disposal.

a. Hebron Municipality shall pay JSC-H&B an amount of ...... USD per-ton of sludge that it disposes during the term of this Agreement, or any extension or renewal thereof (the "Tipping Fee"). In order to calculate the weight of the sludge: (i) the Hebron Municipality's truck will be weighed upon entry to the Landfill before the sludge is off-loaded from the truck; (ii) the truck will be weighed a second time before it exits the Landfill after the sludge has been removed from the truck; and (iii) the difference between the two weights will be considered the weight of the Hebron municipality's sludge, which will be used to calculate the Tipping Fee.

- b. Within 10 business days after the last day of each month, JSC-H&B shall provide Hebron Municipality with a detailed invoice that includes the following information: (i) the weight of each load of sludge that Hebron Municipality disposed of under the terms of this Agreement during the preceding month; (ii) the Tipping Fee for each load of sludge; and (iii) the total amount of the Tipping Fees for the Hebron Municipality's sludge disposal during the preceding month (the "Invoice Amount"). Within 10 business days after receiving each monthly invoice, Hebron Municipality shall pay JSC-H&B the Invoice Amount, unless Hebron Municipality disputes that amount pursuant to Section 2.c., hereof.
- c. If Hebron Municipality believes that the Invoice Amount is incorrect, then, within 10 business days after receiving the invoice, Hebron Municipality shall notify JSC-H&B that it is disputing the Invoice Amount. After Hebron Municipality notifies JSC-H&B that it is disputing the Invoice Amount, JSC-H&B shall review the disputed invoice and, if JSC-H&B believes that the Invoice Amount is correct, JSC-H&B shall provide Hebron Municipality all records on which it relied to calculate the Invoice Amount. If the Invoice Amount is supported by the Hebron Municipality's records, then Hebron Municipality shall pay the Invoice Amount within 10 business days after receiving copies of those records. If the Hebron Municipality's records do not support the Invoice Amount and if the Parties can not agree on a correct Invoice Amount for any invoice that Hebron Municipality disputes, then the Hebron Municipality shall pay JSC-H&B for the 12-month running average of its monthly Invoice Amounts, or the Invoice Amount of the disputed invoice, whichever is less.
- 3. Term of Agreement. The term of this Agreement shall be from (Date) until (Date).
- 4. Schedule of Disposal. Hebron Municipality shall dispose of the sludge at the Landfill at times that are convenient for Hebron Municipality during the Landfill's or other site's normal operating hours.
- 5. Compatibility of Hebron Municipality's sludge and JSC-H&B requirements. JSC-H&B shall not refuse to accept the Hebron municipality's sludge at the Landfill provided that the sludge threshold concentrations for disposal in JSC-H&B Environmental Management and monitoring plan, are not exceeded, and that Hebron Municipality has complied with the testing and disposal procedures that are set forth in JSC-H&B Management and monitoring plan.

6. Integration. This Agreement constitutes the sole, final, complete, exclusive and integrated expression and statement of the terms of agreement between the Parties concerning the subject matter addressed herein, and supersedes all prior negotiations, representations or agreements, either oral or written, that may be related to the subject matter of this Agreement.

**7. Construction and Interpretation.** The Parties agree and acknowledge that this Agreement has been arrived at through negotiation, and that each party has had a full and fair opportunity to revise the terms of this Agreement. Consequently, the normal rule of construction that any ambiguities are to be resolved against the drafting party shall not apply in construing or interpreting this Agreement.

**8. Waiver.** The waiver at any time by any party of its rights with respect to a default or other matter arising in connection with this Agreement shall not be deemed a waiver with respect to any subsequent default or matter.

**9. Remedies Not Exclusive.** The remedies provided in this Agreement are cumulative and not exclusive, and are in addition to any other remedies that may be provided by law or equity. The exercise by either party of any remedy under this Agreement shall be without prejudice to the enforcement of any other remedy.

**10. Severability.** If any part of this Agreement is held to be void, invalid, illegal or unenforceable, then the remaining parts will continue in full force and effect and will be fully binding, provided that each party still receives the benefits of this Agreement.

**11. Successors and Assigns.** This Agreement shall bind and inure to the benefit of the respective assigns and successors of the Parties. The Parties agree that neither party shall assign this Agreement or any interest therein without first obtaining written consent to such assignment from the other party. Hebron Municipality hereby consents to any assignment of this Agreement by the JSC-H&B to a joint powers authority or agency formed by JSC-H&B.

**12. Relationship of Parties.** Nothing in this Agreement shall be construed to create an association, joint venture, trust or partnership, or to impose a trust or partnership covenant, obligation, or liability on or with regard to anyone or more of the Parties.

**13. No Third Party Beneficiaries.** This Agreement shall not be construed to create any third party beneficiaries. This Agreement is for the sole benefit of the Parties and no other person or entity shall be entitled to rely upon or receive any benefit from this Agreement or any of its terms.

**14. Amendment.** This Agreement may be modified or amended only by a subsequent written agreement approved and executed by the Parties.

**15. Governing Law.** Except as otherwise required by law, this Agreement shall be interpreted, governed by, and construed under the law of Palestine.

WHEREFORE, this Agreement was entered by the Parties on the date first written above .

**Signatures** 

For Hebron Municipality

For JSC-H&B

# **ANNEX 14- EQA BUFFER**





تحبة طيبة وبعد، تهديكم سلطة جودة البيئة اطيب تحياتها وتتمنى لكم موفور الصحة والعافية ، وبالاشسارة السي الموضوع اعلاه والمتعلق باعتراضكم على محطة المعالجة وردا على كتسابكم الموجسه اليبسا بخصوص اعتراضكم على الموضوع اعلاه ، اذ بدورنا نود ان نقدر لكم اهتمامكم وحرصكم على حماية الانسان والبينة الفلسطينية وما يتركم انسياب المياء العادمة دون معالجة من اضرار على الصبحة والبيئة ، بهذا الخصوص ونظرا لحجم المشاكل التي تواجهنا كفلسطينيين من اجل توفير التمويل اللازم لمثل هذه المشاريع الضخمة وباهظة التكاليف والتي يتم تنفيذ جزء منهما من خلال الدول المائحة ،لذا فاننا كفلسطينيين يجب علينا ان لا نقف كعقبة امام تنفيذ اي مشروع يخدم المواطن الفلسطيني في اي نقطة من الارض الفلسطينية، و نود التأكيد لكم كسلطة جـودة بيئة على النقاط الهامة التالية :

- تم دراسة جميع الاثار البيئية والاجتماعية المحتملة وتم اخذها بعين الاعتبار اثناء تصميم المحطة والتفنيات المستخدمة واعداد وثائق العطاء لضمان الحد من تأثيرها لتكون ضمن المواصفات والمعايير الدولية عالية الجودة.
- 2. انذا في سلطة جودة البيئة نتفهم حقكم في التخلص من أثار انسياب المياء العادمة عبر الوادي وكذلك خدمة معالجة المياء العادمة وإذ نبدي استعدادنا وتعاوننا معكم من اجل التواصل مع بلدية الخليل وسلطة المياء ووزارة الحكم المحلي وجميع الشركاء لبحث الية لتغطية مجرى الواد.



فلسطين - البيرة - حي الشرقة -ص.ب 3841 تلفون : 2403495 فاكس 2403494

Al Birch - Al Sharafa - P.O.Box 3841 Tel: 2403495 or 2403498 Fax: 2403494 بريد الكتررني:info@environment.pna.ps Email:

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State Of Palestine Environment Quality Authority

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- 3. يترتب على البلدية ان تعمل على اعداد التصماميم اللازمة ووثائق عطاء لانشاء شبكة مجاري داخلية لمدينة يطا والتي ستساهم بشكل فعال في الحصول على التمويل اللازم لتغطية وانشاء شبكة مجاري.
- 4. على البلدية الاخذ بعين الاعتبار الموقع المقترح لمحطة تنقية مدينة الخليل المراد انشاؤه وحظر البناء في المنطقة المحبطة للمنطقة المقترحة بنصف قطر لا يقل عن 200م وذلك بعدم اعطاء تراخيص للبناء.
- حالى ماتم وبحسب التواصل مع سلطة المياه نعامكم ان موضوع توفير تمويل لإنشاء على ماتم وبحسب التواصل مع سلطة المياه نعامكم ان موضوع توفير تمويل لإنشاء محطة معالجة تخدم يطا ودورا والسموع والظاهرية هو على سلم الاولويات الاستراتيجية لديهم وهذا ليس بالامر السهل ويحتاج لوقت من اجل الحصول على تمويل خاصة ان مثل هذه المشاريع تحتاج لتمويل ضخم.

وتفضلوا بقبول فائق الاحترام والتقدير ، ، ،

نسخة . معافظ معافظة الطيل . مديرية الحكم المحلى- الغليل . بلدية الخليل

م. بهجت الجبارين

المدير الاقليمي لسلطة جودة البيئة /الخليل



ملسطين – البيرة - حي الشرفة مص ب 3841 3841 ملسطين – البيرة - حي الشرفة مص ب 2403495 Tel: 2403495 or 2403498 Fax: 2403494 فاكس 2403494 2403495 هاكس 2403495 منافع المحمد المحم المحمد المحم المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحم

#### State of Palestine Environment Quality Authority Hebron Office

No.: 160/2019 Date: 30/9/2019

#### To/ Eng. Mourad Al-Fuqaha, Manager of the Wastewater Management Project – Hebron

## Subject: Clarification Regarding the Prohibition of Building in the Area of the Hebron Wastewater <u>Treatment Plant</u>

### Greetings,

With reference to the above-mentioned subject and further to your e-mail dated 25/9/2019 regarding the above-mentioned subject, we would like to inform you of the following:

After reviewing the study of the environmental and social impact and the cultural heritage submitted to the Environment Quality Authority, in addition to the bilateral and several meetings held with the experts (who prepared the study), stakeholders, beneficiaries and the owners of adjacent lands, taking into account the requirements of the Water Authority concerning the engineering designs of the Plant and its facilities, besides taking into consideration the study of results and recommendations issued in this regard to consider the procedures of the environmental mitigation and the reduction of all environmental and social impacts influenced by establishing the project; such as odors, spread of insects and rodents, as well as environmental nuisance and the resulting sludge...etc.

Furthermore, we discovered that the study has been amended to meet all the environmental requirements and procedures, in addition to adhering to **the obligatory technical specifications and instructions**, **as well as the reference conditions to prepare the initial study and designs of the Wastewater Treatment Plant project**. In addition, it was discovered that the study took into account the different concerns of all parties. Accordingly, the Environmental Quality Authority considers the letter sent on 2/2/2016 under No. 16/2016, specifically the issue of the building prohibition area in the vicinity of the Plant as referred in the previously sent letter. In the said letter, the study stated the necessity to prohibit giving building permits within 200 meters as a preventive precaution procedure not as an obligatory one to prevent the danger and damages that may occur due to building the Treatment Plant in the suggested site. Moreover, this shall be taken into account from the planning perspective on expanding the boundaries of the structural planning to include the area in the future. Furthermore, the adjacent area shall be categorized as areas of crafts or agriculture, especially the Eastern part of the Plant site.

Accordingly, after ensuring that all the environmental and social procedures have been taken into account to prevent and mitigate the expected environmental impacts; we do not object to continuing the establishment and operation procedures of the Plant, knowing that there are no instructions, laws or regulations that determine spaces and dimensions of building outside the boundaries of the Plant site until the final approval is obtained from the Environmental Quality Authority.

#### Best Regards,

[Signed] Eng. Bahjat Al-Jabareen Manager of the Environmental Quality Authority – Hebron Governorate

[Seal that reads://State of Palestine, Hebron Office, the Environmental Quality Authority//]

Palestine – Hebron – Beir Sabei St. P.O. Box 3841 Tel: 2229269 / 2225328 Fax: 2229279 E-mail: <u>info@environment.pna.ps</u> State of Palestine Environment Quality Authority Hebron office

> No: 160/2019 Date: 3019/2019



دولة فلسطين سلطة جودة البيئة مكتب الخليل

الرقم: /. التاريخ: / /2019 اللاج م. مراح الفقما ... المحترم

مدير مشروع إدارة المياء العادمة –الخليل

## الموضوع: توضيح حول حظر البناء في منطقة محطة تنقية الخليل

تحية طيبة وبعد،

بالإشارة الى الموضوع أعلاه، وعطفا على الإيميل الوارد منكم بتاريخ 2019/9/25 والخاص بالموضوع أعلاه نورد لكم مايلي: بعد الإطلاع على دراسة الأثر البيئي، الاجتماعي والارث الثقافي المقدمة الى سلطة جودة البيئة والاجتماعات الثنائية والمتعددة سواء مع الخبراء (معدي الدراسة) وأصحاب العلاقة والمستفدين وأصحاب الاراضي المجاورة والأخذ بالاعتبار متطلبات سلطة المياه الخاصة بالتصاميم الهندسية للمحطة ومرفقاتها، ومراعاة الدراسة للنتائج والتوصيات الصادرة بالاعتبار متطلبات سلطة الإعتبار الاجراءات البيئية التخفيفية والحد من جميع الآثار البيئية والإجتماعية المتأثرة من اقامة المشروع وعلى سبيل المثال الروائح، انتشارالحشرت والقوارض، الإزعاج البيئي والحمأة الناتجة ... الخ.

حيث تبين لدينا أن الدراسة قد تم تعديلها وموائمتها لكافة المتطلبات والاجراءات البيئية والالتزام بالمواصفات والتعليمات الفنية الالزامية والشروط المرجعية لاعداد الدراسة والتصاميم المبدئية الخاصة بمشروع محطة معالجة المياه العادمة، كما تراعي التخوفات المختلفة لجميع الاطراف، وبناءً على ذلك تَعتبِر سلطة جودة البيئة أن الكتاب المرسل بتاريخ 2016/2/2 رقم 2016/16 وتحديدا النقطة الخاصة بمنطقة حظر البناء في محيط المحطة كما تم الاشارة اليه في الكتاب المرسل سابقا، والتي تذكر فيه الى ضرورة منع إعطاء تراخيص للبناء في حدود 200 متر وذلك كإجراء وقائي احترازي وليس إلزامي لدرء الخطر و الأضرار التي من المكن ان تحدث نتيجة اقامة محطة المعالجة في الموقع المقترح والأخذ بعين الاعتبار ذلك تخطيطيا عند توسيع حدود المخطط الهيكلي ليشمل المنطقة مستقبلا وان يتم تصنيف المنطقة المجاورة كمناطق حرف او زراعية وخاصة الجزء الشرق من موقع المحطة.

وبناءً على ما سبق، وبعد التأكد من أن جميع الإجراءات البيئية والاجتماعية قد تم الأخذ بها بعين الإعتبار للحد والتخفيف من الأثار البيئية المتوقعة فأنه لا مانع لدينا من استكمال اجراءات الاقامة والتشغيل للمحطة علماً بأنه لا يوجد هناك أي تعليمات او قوانين وأنظمة تحدد فيه المسافات والأبعاد للبناء خارج حدود موقع المحطة، لحين اصدار الموافقة النهائية من قبل سلطة جودة البيئة

وتغضلوا بقبول فائق الاحترام والتقدير ،،

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المولة جودة المبل

م. بمجتم الجرارين مدير سلطة جودة البيئة — محافظة الخليل

Palestine – Hebron – Beir Sabei St. P.O. Box 3841 Tel: 2229269 / 2225328 Fax: 2229279

فلسطين- الخليل - شارع بنر السبع - ص.ب 1130

## **ANNEX 15- KHELIT SHARBATI DOCUMENTS**



HEBRON CHAMBER OF COMMERCE & INDUSTRY (HCCI)



اتفاقية تصريف المخلفات الصناعية لمناشير الحجر (الربو) في مدينة الخليل

الفريق الاول : صالح حجازي علي الرجبي هوية رقم 927285148 بصفته الشخصية و و بصفته ممثلاً لورثة حجازي علي الرجبي

الفريق الثاني : اللجنة القطاعية لقطاع الحجر في غرفة تجارة و صناعة محافظة الخليل و يمثلها السيد رياض غيث

مقدمه :

بما أن الفريق الأول بصفته المذكورة اعلاه يملك قطعة الارض رقم 427 ، 844 من الحوض رقم 2 في خلة الشرباتي الواقعة في المنطقة الجنوبية في الخليل و البالغ مساحتها سبع دونم، و حيث يرغب الفريق الثاني في استخدام هذه الارض كمكب لترحيل مخلفات الحجر(الربو) فقد اتفق الفريقان المذكوران اعلاه على ما يلي:

1- تعتبر مقدمة الاتفاقية جزء لا يتجزأ منها و تقرأ معها

غرفة تجارة وصناعة

محافظة الخليل

- 2- التزم كلا الفريقين بتوفير الارض اللازمه لتصريف ربو المناشير وتوفير البنية التحتية اللازمه لها وتنفيذ كافة الاجراءات اللازمة لتشغيل المكب وفق شروط التشغيل المطلوب تحقيقها لكافة الاطراف ذات العلاقة بما يضمن الاداء السليم الامن وهذه الاطراف هي بلدية الخليل وسلطة جودة البيئه والغرفة التجاريه واية جهات ذات تاثير على تشغيل المشروع وبما يضمن حفظ حقوق كافة الجهات بصفاتهم الفردية والجماعية من مواطنين ومجاورين وفئات ذات تاثير او قرب جوار من المشروع .
- 3- حيث ان بلدية الخليل قد استعدت لتجهيز المكب ويشمل ذلك كافة الاجراءات التي تحقق الاداء الامثل لتشغيل المكب لاستيعاب المخلفات الصناعية (ربو مناشير الحجر السائل والجاف) ويشمل ذلك تقديم كافة الاعمال المطوبة للمكب من احواض تجميع للربو بكافة اشكاله لتهيئته للتجفيف بمساحات واحجام ملائمة للاحمال اليومية المكب من احواض تجميع للربو بكافة اشكاله لتهيئته للتجفيف بمساحات واحجام ملائمة للاحمال اليومية المكب من احواض تجميع للربو بكافة اشكاله لتهيئته للتجفيف بمساحات واحجام ملائمة للاحمال اليومية المكب من احواض تجميع للربو بكافة اشكاله لتهيئته للتجفيف بمساحات واحجام ملائمة للاحمال اليومية المتوقع وصولها الى المكب مهما بلغت الكميات من كافة المناشير المنتجه لمادة الربو في المنطقة الصناعية لمدينة الخليل وتجهيز الاحواض بالسواتر باشكالها المختلفة سواء كانت سواتر من الكتل الحجريه الصناعية لمدينة الخليل وتجهيز الاحواض بالسواتر باشكالها المختلفة سواء كانت سواتر من الكتل الحجريه الصناعية لمدينة الخليل وتجهيز الاحواض بالسواتر باشكالها المختلفة سواء كانت سواتر من الكتل الحجريه الصناعية لمدينة الخليل وتجهيز الاحواض الترسيب من الربو الجاف وان تكون هذه السواتر بمثابة حواجز لتجفيف الصناعية لمدينم المتربيع) او السواتر لاحواض الترسيب من الربو الحاف وان تكون هذه السواتر بمثابة مواجز لتجفيف الجدران مرابيع) او السواتر لاحواض الترسيب من الربو الحاف وان تكون هذه السواتر مثابة حواجز لتجفيف الربو السائل بما يحقق الاداء الامن ويشمل الاجراء تجهيز الطرق ونقاط الوصول داخل المكب وخارجه بما يحقق النوبي المركبات.

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فلسطين- الخليل - دوار ابن رشد - شارع خالد بن الوليد - ص.ب: ٢٧٢ - هاتف ٢٢٢٨٢١٨ - ٢ - ٢٠٩٧٢ - فاكس: ٢٢٢٧٤٩٠ - ٢ Palestine - Hebron - P.O.Box: 272 Tel.: 00972-2-2228218 - Fax: 00972-2-2227490 - E-mail: info@hebroncci.org www.hebroncci.org

- 4- يقوم الفريق الثاني بتنظم تسيير شاحنات ترحيل مخلفات المناشير (الربو) باشكاله المختلفة سواء من خلال مركباتهم الخاصة او من خلال مقاولين من القطاع الخاص لنقل الربو الى مكب الفريق الأول وفق مسارات يتم تحديدها بالتنسيق مع كافة الجات ذات العلاقة (بلدية الخليل ، غرفة تجارة و صناعة محافظة الخليل و سلطة جودة البيئة).
- 6- اتفق الفريقان على ان يتم تحصيل مبلغ 40 شيكل لكل شاحنة نقل اوصهريج حجم صغير اقل من 10 متر مكعب ومبلغ 50 شيكل لكل شاحنة او صهريج حجم كبير يزيد عن 10 متر يستلمها الفريق الثاني على أن يتقاضى الطرف الثاني مبلغ عشرين شيكل (20 شيكل) لا غير لكل نقلة كمصروفات ادارية لغايات الحراسة و الجباية و ادارة المكب.
- 7- يلتزم الفريق الثاني بالقيام بكافة اعمال ادارة المكب و حراسته و جباية اي اموال بدل استخدام المكب تحت رقابة و اشراف غرفة تجارة و صناعة محافظة الخليل.
- 8- تعهد الفريق الأول بضمان استخدام هذه الارض كمكب وفق ما ورد في هذه الاتفاقية و يتحمل المسؤولية الكامله عن اي اعتراض قد يصدر من الغير بادعاء اية حقوق له و يتحمل مسؤولية صد هذا الاعتراض.
- 9- اتفق الطرفان على ان يتم اجراء الحساب الخاص بالنقلات بدفع ما يخص الفريق الأول من اجور هذه النقلات في بداية كل شهرين بصورة دورية.
- 10- تعهد كلا الفريقين بضمان الحفاظ على حقوق المجاورين واملاكهم وعدم الحاق اي اضرار بالاراضي والممتلكات المجاورة.
  - 11- مدة هذه الاتفاقية سنتين اعتبارا من تاريخ توقيع هذه الاتفاقية قابلة للتجديد بمعرفة الطرفين.

الفريق الثاني	الفرق الاول
اللجنة القطاعية لقطاع الحجر في غرفة تجارة و	مالك المكب الشريك الاول
صناعة محافظة الخليل	
السيد رياض حسن يوسف غيث	صالح حجازي علي الرجبي

of Commerce &

حررت يوم السبت الموافق 27-7-2019 بمعرفة و مصادقة الغرفة عليها

ريام عي

1/24



السلطة الفلسطين ة بطاقة هوية روباتر זהוر 9 2728514 8 הרשות הפלסטינית à נבא ונפניב מספר הזהות الأسم الشذهب صالح امعو مدون، سم الاب حجازي مع مدد علي مع مدد علي 2 צאלח חגאזי علي عن הסב اسم العائلة اسم الام שם האם تلويز الولادة تيمرنا הלידה עלי رجبي רגבי ميسر 08/02/1963 מויסר مكان الولادة مجان مخرقه الخليل חברון جنس دكر זכר الخليل مدرت في درسم د חברון 20/03/2017 UAG UGLA: Udila Immi Imme Immin Ag UGAGUU Uduo Immi Immi Immin Ag UGAGUU Uduo Immi Immin Ag UGLA: Agust Ag UGLA: Agust Ag UGLA: Ag UGLA Immin Ag UGLA: Udila Immin Im 11/62/11/16 דעון געון رونون مرجعة ا 源 rt. בובין פֿינעוו מוּנענים ספח למעודה זהות ברפט לגעודה זהות AD LUAGUU ידוריון לא ערשות הפלסטננית مينيكسلغاا مكلسا





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انا الموقع ادناه عبد الجبار صالح محمد بوقان من القدس حامل هوية رقم ٧٣١٢٥ ٨٠ أوكل بموجب هذا السيد محمد محمود مصطفى عبد الكريم بوقان من الخليل حامل هوية رقم ١٨٦١ "١٨٦ وذلك مسمن جل افراغ وتسجيل المقار وهو عباره عن قطعة ارض واقعة بموقع خلة الشرباتي من اراضي الخليم واهى واقعة في الحوض رقم (٢) قطعة رقم (٢٢ و٢٤ ه) والبالغ مساحتها سبعة وعشرون دونما حسب قيودات دائرة المألية بالخليل وحدودها من الشرق الطريق العام ومن الغرب ملك الحاج عوده داود الرجبي ومن الشمال ملك عبد الرحمن الرجبي والحاج يحقوب الرجبي وملك نحيم وعاشور الكركي ومن الجنوب ملسك حربي سرحان أبو حماد وطك يونس وحسين برقان وذلك بالتنازل والفراغ في المقار الموصوف وافراغه وتسجيله باسم المشترى حجازى على الرجبي احمد الرجبي من الخليل حامل هوية رقم ٩٢٢٢٨٥١١ والنسي أتبضت الثمن الكافى للعقار المذكور وافوض وكيلى المذكور بالتوقيع نيابة عنى امام جميع الدوائر الرسمية وفيو الرسمية والمهيئات والاشخاص والمحاكم بجميع انواعها ودرجاتها مدنية او شرعية او عسكرية بعلى جميح المستندات مهما كانت لتأمين تسجيل الارض باسم المشترى واجراء جميع المحاطات في دوائر تسجيل الاراضى من تسجيل مجدد وافراز وبيع ورعن وفكه وايجاره وفكها واعادة تسجيل وانتقال بالار شوتصحيح خدود وفي المثول عنى لدى جميع المحاكم واقامة الدعاوى وفي المخاصمة والمدافعة بصفتي مدعي أو مدعى عليه و مشتكيلو مشتكي عليه وفي التحكيم والمصالحة وفي الحجز وفكه وازالة الشيوع واوكله في أجرام ما يراه مناسبا أوفي الاقرار عنى لدى عموم وكافق الدوائر وفي تنظيم المخططات والتصديق من كافة الدوائر والمجاورين وفي لاعتراض والتوقيح على جميع المعاملات والتصديق عليها والتي ينظمها المشترى لاتمام التمجيل وكالمست الورية خاصة متعلق بها حق الغير متروكه لرأيه وقوله وفعله وعمله محصورة في تنفيذ كل أو بعض ما جاه في هذاء الوكالة لتأمين التسجيل باسم المشترى المذكور أعلاه وفي دائرة الاراضي وفي تنفيذ التسجيل بأسم المشترى وكذلك أعطى الركيل المذكور حق توكيل من يشاء من المحامين أو خلافهم في كل أو بمض ما جاه في هذه الوكالة وكذلك له حق عزل الوكيل المره تلو الاخرى ولا يحق لي عزل الوكيل المذكير. • وغليه الممس من حضرة كاتب عدل الخليل التصديق على هذه الوكالمسة الدوريسسة حسب الاصول تحريرا في ١٢/٥/٥٨٢م توقيمهم الموكمهل



תמינהל השוורדוי למשוף יתודה רשומרון

0'00 0'00

الإدارة المدنية لمنطقة يهودا والسامرة

ضابط الادارة لشؤون الضرائب 22 P (4)

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مرسم من من المعناء معدينا المحمورال المرام المرام المرود صورة اخراج قيد ضريبة الأشية والاراضي الدينة / قريته

1105 مفحة	מסי זוספר ברל	שם הבעלים ועם וועוש	المرونات الوقع	عدمت معامل معام المسنف	גודל השטח וגביל מיס דרונם	חלקה וلقطمة	ور محرام الحوض
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1	ار المارية العادية المراجع المراجع المراجع 12 المرومية المراجع المراجع	איישראי השחרתי לאחר בעברי כט הבונית מערי בט הבונית לבינו איישראי בי איישראי איי	121	میردر میردر	ب قبواد هذا الكتب		اخراج مدا عام الموطة اسم الموطة
.1	واحص بوجب ا ۱۹ وصد بلاند ملتد المثلان مصحب مسلم	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	115				

- Filled -القامير سي دائر لاموع ف فقط وقد م مستكانة وجمر وسار أردن لاعم , بغامد الدول - المائع ورته المرحوم عطا جالج برقان وهم توتس وحسير وفاحمه وزوجه مدى مصلح برقان سرايي وتسلوم الفتس جاليا الكرسيران في - بالترى حجاز مالى المرجم ومرج مسرالحال مرهارة المتارة المحتا بما من ادناه مرامدتنا مر بالدياب مرابقول مركد الفريقة المذكورية أعل المع ومع الفاعد الأول الفريعير الثاني مقطع- أرجنه المائنة حمد أملاك محافظ ونه من عنة المربان جند التربط والترجاف الكرين : أولا - معقبة ولأرصر الموجه عمداً مدل عربة الحليل في منفقة عله أر ال على ما حد جوالى عشرة رومان مصل مزروعًا بالعين والتخار والم عد مزروع جدورم سراف المعر إما) ومدامة بال المتر و ال ومد الشال أيفًا على لمنترى ومداكلوم على حزى أيوجار. منعد الفعيران ول محققًا مدرمون الثاني عند الملك الملكور أعلاه ماه ماد وهم ويارا الدنا اعدة لافرد الارم ول مودل محمد م العقد وا متعدم المبلغ مع الجمع أثيرهم عد هذا الملك المذكور أعلام وا الغريب إلى وأجنع ما لما له بد معارصه ولا منا ف ماني - 1 مقد الغرب الأول إثبات طنا رسم المرم المرواني المرواني" ورا عليه وعز ها و إذا عرد أي على ع عنا السع من الغرب الغال وفر عدروق مر انعلیٰ کل ما سی مردس سرعط وار وال مر والعو و الا تا عدا الم و قديم الرتفا مر برص الع في والم الله عا ذمن والحاصر . 12 VOV/ E Elians - in Join mel ر الفر معمر بنا ن ا) برشرقان: توتن عظا منان tothe م مسر برتمان Q?) ~ Graki (" 5 6 . vis (8 1.57 15 Server ille

ing the flow of the عقد ما مد با مدام - مراهبرل مد رجوع ولا الإيد يؤون . إمامغ عبد الحام جالج رقاند مرالحلي مرت المندرياب العرب الكاني - المجري محروب على أجر العني مسالحلي / عارة الحت روالين الما في أدياع القعد إمزيما بد إستكورات اعترام عن أنه سبع العرب الأول للمزامي الداد 5 - 21 br 11:00 34-11-20 2 2 20 1 40/ - العدى المساع مساحة م المرص الرائي في خلم المرابي مي خلا مدال عسى من الدين مصطلا مذروقي بالعب ويعتب ريتره ريتوهز أرجد مسجاب جرماء وتقوان والمسكية ع المحل في هذا المراسية م المطرفين إليام طرفف بلك والحاج عوره والار وال و--- استان مين عيد الصر المحين وامحاع مصفف والحن وملك تنك وعامق رالك ومناف محدي مرعانه أيرجار ريك يونو دمسه مرقا م والم المولعيم المثالي معضي المؤول عنه تطعي الأرمس لمذكور في البند الأول بيعي أله - 1 - 1 - 1 - 1 - 1 - تعلم الغرمية الأول أمام المجمع والأمل 5 الاحا ب دين 1 - الماحية، وفق عبقه المشه وبذا عقد أحيج المانك المرض والوصر مملك المذكر · vilanti ve vi u vi ci an pier جه اعدم اعدم الامنان م البند الأول مر مترب م الالا الل الما في في ال المسير مقام الكاليفيف وي ال لم المشترك في أرام المعرب الوز ألك كما تحيد ال ور المسرام الدي ميم أرجد المشاعل مع المالغ مد أجعا لفر - . ا معد العرب الدول البابغ إنها ت هذا السي له م عميع الدوار المسؤول م لعب دار المرم الرجيل اد اي عاقد ع عند الس عن إمو سر مزول تر سب و 1 4 - ومن ميزم ما ملحم عدهذا الثاني مدهنه ومصاري ولي و لا 1 SWILLE A ap 40 (1 mill عا وسع الاتفام ورد مر زس مر ال هم 14 VD /7/9 216000-الغرب الإول ال (95-7), v. v. v. v. 10/1 -Wille Unile alite -06 2002 221



بلدية الخليل

تاريخ ۳۱/۰۳/۲۰۱٦

مطالعات المذكرة

Page 1 of 1

Å.

رقم المذكرة ٢٥٧٣٤ تاريخ المذكرة ٣١/٠٣/٢٠١٦

المذكرة من قبل تيسير منير عايش الشويكي / رنيس شعبة معالجة المياه العادمة والربو

المسؤول المباشر: مروان عبد الرحمن نمر الاخضر

الموضوع مكب حجازي الرجبي النص

سيد رئيس قسم الصحة المعترم نحية طيبة وبعد فق مع هذه المذكرة صور عن ملكيات مكب حجازي الرجبي بحوار مكب يونس الرجبي اسم الموظف المرسل من المرسل من المرسل

المطالعات	ب الرد	ت. الاستارم		
	۲۱	/. ٣/٢ . 13	تيسير منير عايش الشويكي	مروان عبد الرحمن نمر الاخضر

*1/.*/*.13	تاريخ	بلدية الخليل
Page 1 of 1		مطالعات المذكرة

رقم المذكرة ٢٥٧٥٠ تاريخ المذكرة ٣١/٠٣/٢٠١٦

المذكرة من قبل مروان عبد الرحمن ثمر الاخضر / رئيس عسم الصرف الصحي

المسوول المباشر: أ. د. داود اسحق داود الزعتري (اداري)

الموضوع مكب الربو حجازي على الرجبي

النص

لاخ العزيز ابو العبد و من سعادتكم التكرم الايعاز الى الدائرية القانونية لتدقيق الاور اق الثلوتية للارض المقترحة مكب الربو في منطقة خلة حبل جو هر واقبل فانق الاحترام

المطالعات	ت. الرد	ت. الاستلام	المرسل	اسم الموظف
	٣	لخضر ۱/۰۳/۲۰۱۶	مروان عبد الرحمن نمر الا	نضال عبدالمنعم محمد التميمي





خلةالشرباتي

Le.i.h

، مد القطعة

بونس محمد عبد الجليل الرجبي
أبأد أبو سنبنة

		••
خلة	•	الموقع
- 2	•	ألحوض
جز ُ ٩	•	ächäl



# جدول أفرار المساحات

المساحات	قسألئم	ارقام ال
بالإمثار المربعت	نمائي	مۇھىت
15014		1
7789		2
1372		3
24175	جەۋىخے	ال <sub>مح</sub>

# ANNEX 16- GRM PREPARED BY THE WB AND PWA FOR HEBRON REGIONAL WATER PROJECT



Note	Responses	Inform the complainant	Competent authority	Reception Method	Complaint closing date Follow-up Responsibility	Complaint Topic	Complaint Details Complaint Status Date of Complaints	Complainant	Complaints code	١0.

مشروع الخليل الإقليمي لمعالجة المياه العادمة

ابلاغ رد لمقدم الشكوى

التاريخ:....

الأخ المواطن / الأخت المواطنة/ السادة مؤسسة......

## الموضوع: ابلاغ رد حول الشكوى رقم ( )

تحية طيبة وبعد،

) المقدمة من طرفكم	، وبناء على متابعة الشكوي رقم (	أطيب التحيات.	تهديكم وحدة/قسم الشكاوي في
لاتى:	، نود ابلاغكم بالرد ا		بتاريخ/ وموضوعها
*	- , -		C C

مع فائق الاحترام والتقدير

مسؤول الشكاوي

مشروع الخليل الإقليمي لمعالجة المياه العادمة

اشعار استلام شكوى

التاريخ: اسم المشتكي: رقم الشكوى: موضوع الشكوى: مرفقات الشكوى (ان وجد): وسيلة الرد على الشكوى: اسم الموظف/ة المسؤول/ة: توقيع الموظف/ة المسؤول/ة: الختم:
مشروع الخليل الإقليمي لمعالجة المياه العادمة

بطاقة مراجعة

بطاقة مراجعة
اسم مقدم الشكوى
الرباعي:
العنوان:
رقم الشكوي:
موضوع الشكوي
تاريخ تقديم الشكه م:
-رينيم مدري. تاريخ المراجعة:

 اسم الموظف/ة المسؤول/ة:.
 توقيع الموظف/ة المسؤول/ة
 هاتف وحدة/قسم الشكاوى
الختم ان وجد:

مشروع الخليل الإقليمي لمعالجة المياه العادمة

## طلب تقديم شكوى

التاريخ:....

رقم الشكوى:
القسم الأول: حول المشتكي/ة
اسم مقدم/ة الشكوى الرباعي:
رقم الهوية:
اسم المؤسسة مقدمة الشكوى:
الصفة: اعتباري شخصي وكيل وصي ولي
الجنس (للأفراد فقط): ذكر
العمر (للأفراد فقط): تاريخ الميلاد: / /
رقم الهاتف:
البريد الالكتروني:
القسم الثاني: حول الشكوى
موضوع الشكوى:
الجهة المقدم بحقها الشكوي:
هل الشكوى منظورة أمام القضاء: نعم 🛛 لا
هل تقدمت بشكوى في ذات الموضوع سابقا: نعم 📃 لا
-   اسم الجهة المقدم بحقها الشكوى سابقا:
- هل تلقيت ردا على الشكوى السابقة: نعم، تاريخ الرد:/ لا


القسم الثالث: مرفقات الشكوى (وثائق ومستندات)

 -1
 -2
 -3
-4
-5

أقر وأصرح انا مقدم/ة الشكوى...... وبيانات ومرفقات صحيحة وحقيقية والتزم واتعهد بتحمل كامل المسؤولية القانونية فيما لو تبين خلاف ذلك في أي وقت من الأوقات أو إذا تبين أن الشكوى المقدمة من قبلي كيدية.

وعليه أوقع

توقيع و/أو بصمة مقدم/ة الشكوى: ...... تاريخ تقديم الشكوى: / / / توقيع و/أو بصمة الشخص الذي استعان به مقدم الشكوى في كتابة الشكوى: ..... اسم الموظف/ة مستلم/ة الشكوى: ...... توقيع الموظف/ة مستلم/ة الشكوى: ......

، الرابع: (خاص لاستخدام مسؤول الشكاوى)	القسم
مية حول الشكوى:	التوص

الشكوى	قبول	رفض الشكوي
 	» رفض الشكوى:	- مبررات

التاريخ:

مسؤول الشكاوى

التوقيع.....

## **ANNEX 17- CONSENSUAL AGREEMENT**



#### Consensual Agreement Regarding the Northern Boundary of the Wastewater Treatment Plant Site in Hebron

The First Party: The Palestine Water Authority and the Hebron Municipality The Second Party: Khalil Abdul Hameed Abo Sbeih

After the Second Party has submitted a complaint stating that he has concerns regarding the boundaries of the land allocated to the Treatment Plant, and after the company implementing the Plant has demarcated some points that face the land from the Northern Area of the Plant; an objection has been submitted at the Project Complaint Center. In addition, a survey planning submitted by the Second Party to the First Party has been submitted. Furthermore, the First Party performed the matching process between the planning submitted by the Second Party with the planning prepared by the Palestine Water Authority during the period of purchasing the land in 2004. Moreover, after deep examination, it was discovered that there were procedures of boundary modification to perform straight boundaries between both lands; the thing that resulted in increase or decrease in some intervention areas in the boundaries between both lands. Furthermore, after performing the accurate calculations, which are attached herein, it was discovered that there was a deducted area of the land of the Second Party, which estimated at 212.5 m<sup>2</sup>. However, the land deducted from the First Party to the Second Party estimated at 71 m<sup>2</sup>. Accordingly, the variance between both areas was 141.5 m<sup>2</sup>, and the variance between the areas deducted shall be deemed the right of the Second Party and he shall have the authority to make decisions thereof.

Therefore, the Second Party has donated such area for the project and the public interest, which will be reflected on the arrangement and organization of the boundaries between both lands. Furthermore, this shall have a positive benefit on the workflow and support of this vital and strategic project. Moreover, the Second Party shall have the priority right in utilizing the treated water resulting from the Plant to irrigate plantation according to the agreements prepared by the Ministry of Agriculture.

First Party			Second Party	
Eng. Mourad Al-	Tamim Badawy	Marawan Al-	Khalil Abdul	
Fuqaha		Akhdar	Hameed Abo Sbeih	
[Signed]	[Signed]	[Signed]	[Signed]	
25/9/2019	25/9/2019	25/9/2019	25/9/2019	
			922898358	
Witness		Witness	Witness	
Eng. Salah		Bahaa [ <mark>Illegible</mark> ]	Eng. Mohanad Al-	
[ <mark>Illegible</mark> ]		[Signed]	Shafiee	
[Signed]		25.9.2019	[Signed]	
25.09.2019		936175595	947927984	
851757435				

اتفاقية رضانية بخصوص الحد الشمالي لموقع محطة معالجة المياه العادمة في الخليل

الفريق الأول : سلطة المياه الفلسطينية وبلدية الخليل الفريق الثاني : خليل عبد الحميد أبو صبيح

بعد أن تقدم الطرف الثاني بشكوى تتضمن تحفظه على حدود قطعة الأرض المخصصة لقطعة المعالجة ، و بعد أن تم ترسيم بعض نقاط من قبل الشركة المنفذة للمحطة لواجه قطعة الأرض من الجهة الشمائية للمحطة ، تم تقديم اعتراض لدى مركز شكاوى المشروع و تقديم مخطط مساحة مقدم من قبل الفريق الثاني الى الغريق الأول، وقد قام الفريق الاول بالقيام بمطابقة المخطط المقدم من الطرف الثانمي مع المخطط المعد من قبل سلطة المياء الفلسطينية في فترة شراء الأرض عام 2004 ، وبعد التحقق الكثيف تبين أن هذك اجراءات تعديل حدود لتحقيق استقامات للحدود بين القطعتين ، الامر الذي أدى الى زيادات أو نقصان في بعض مناطق التداخلات في الحدود بين التطعتين، وبعد الحسابات الدقيقة والمرفقة في هذه الاتفاقية تبين أن هناك مساحة مقتطعة من أرض الفريق الثاني تبلغ مساحتها 212.5 متر مربع ، بينما تبلغ مساحة الأرض المقتطعة من الفريق الأول للفريق الثاني 71 متر مربع ، وأن الفرق بين المساحلين تبلغ 141.5 متر مربع ، ويعتبر الفرق بين المساحات المقتطعة حق للفريق الثاني وله حق القرار فيه.

وبذاء على ما سبق، قام الفريق الذاتي بالتبرع لهذه المساحة لصالح المشروع والمنفعة العامة التي ستتعكس على ترتيب وتنظيم الحدود بين القطعتين ولما لمها فاتدة تتعكس ابجابا على مسيرة ودعم هذا المشروع الحيومي والاستراتيجي وله حق الاولوية في الانتفاع من المياء المعالجة الخارجة من المحطة لري المزروعات وفق الانفاقيات المعدة من قبل وزارة الزراعة.

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#### Consensual Agreement Regarding the Southern Boundary between the below Parties in <u>Hebron</u>

The First Party: The Palestine Water Authority and the Hebron Municipality The Second Party: Abdul Fattah Rashid Al Atrash

The Second Party has submitted a complaint stating the existence of a road in the middle of the lands of the First Party, and stating that he has the right to pass and utilize such road. Moreover, the Hebron Municipality has appointed a specialized committee to follow up the route of that road through coordination between the representatives of the Water Authority. In addition, after performing the field examination, consensual agreements have been established between both Parties in a manner that ensures the attainment of the public interest to fulfill the desired objective, which is providing a road in the vicinity of the lands of both Parties.

Therefore, the Planning Department at the Hebron Municipality has been appointed to develop a route for the boundary road, which is adjacent to the boundaries of the lands of both Parties, in a manner that achieves the public interest of all Parties. In addition, this shall be in accordance with the planning and design of the Planning Department at the Hebron Municipality and under the reference conditions of laws of roads in the municipalities and the local government.

First Party			Second Party	
Eng. Mourad Al-	Tamim Badawy	Marawan Al-	Abdul Fattah	
Fuqaha		Akhdar	Rashid Al Atrash	
[Signed]	[Signed]	[Signed]	[Signed]	
26/9/2019	26/9/2019	26/9/2019	949137459	
			26/9/2019	
Witness		Witness	Witness	
Eng. Salah		Eng. Malek	Eng. Mohanad Al-	
[ <mark>Illegible</mark> ]		Mahmoud	Shafiee	
[Signed]		[ <mark>Illegible</mark> ]	[Signed]	
851757435		[Signed]	947927984	
26.09.2019		26.9.2019		
		943338285		

الفريق الأول ; سلطة المياء الفلسطينية وبلدية الخليل الفريق الثاني : عبد الفتاح راشد الأطرش

بعد أن نقدم القريق الثاني بشكوى نتضمن وجود طريق في منتصف أراضي الفريق الأول وله حق المرور. والانتفاع منها, وبعد تكليف يلدية الخليل لجنة مختصة لمتابعة مسار هذه الطريق بالنتسيق مع ممثلين سلطة المياه ، ومن خلال التحقق الميداني ثم التوسل الى تقاهمات رضائية بين الفريقين بما يضمن المصلحة العامة لتأمين الهدف المنشود وهو توفير طريق على محيط أراضي الفريقين.

وبناء على ما سبق. كم تكليف قسم التضليط في بادية الخايل أوضع مسان الطريق الحدودية المحاذية لحدود أواضي الفريقين بما يحقق المنفعة العامة لجميع الأطراف، وفق تخطيط وتصميم قسم التخطيط في بلدية الخليل وضمن الشروط المرجعية لقوانين الطرق في البلديات والحكم المحلي .

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#### Consensual Agreement Regarding the Western Boundary of the Wastewater Treatment Plant Site in Hebron

The First Party: The Palestine Water Authority and the Hebron Municipality The Second Party: Ragab Sabry Abo Snenah

The Second Party has submitted a complaint stating that he has concerns regarding the boundaries of the land allocated to the Treatment Plant. In addition, after demarcating some points that face the land from the Western Area of the plant by the company implementing the Plant, an objection has been submitted at the Project Complaint Center regarding the demarcation of the Western boundary. Moreover, after deep examination, it was discovered that there were procedures of boundary modification and a mistake in the surveying process, which resulted in the increase or decrease in some mentioned intervention areas between points No. 6 and No. 7 in the area planning in the boundaries between both areas. In addition, after reviewing the marks of the area in the fixed chain land, it was discovered that this area, indicated in this agreement, lies within the lands of the Second Party, which is 129.66 m<sup>2</sup>.

Therefore, boundaries amendment will be implemented in accordance with the planning of the final street, in a manner that fulfills the interest of both Parties. Furthermore, both Parties have mutually agreed to open a neutral road between the lands of the First Party and the Second Party within the extension of the lands of both Parties. In addition, this will be implemented in accordance with the planning and design of the Planning Department in the Hebron Municipality and in light of the reference conditions of road laws in municipalities and the local government. Furthermore, the Second Party shall have the priority right in utilizing the treated water resulting from the Plant to irrigate plantation according to the agreements prepared by the Ministry of Agriculture.

First Party			Second Party
Eng. Mourad Al-	Tamim Badawy	Marawan Al-	Ragab Sabry
Fuqaha		Akhdar	Hassan "Hassan
			Mousa" Abo
			Snenah
[Signed]	[Signed]	[Signed]	[Signed]
26/9/2019	26/9/2019	26/9/2019	26/9/2019
			95966634-8
Witness		Witness	Witness
Eng. Mohanad Al-		Eng. Basel Abo	Eng. Salah
Shafiee		Ghayaza	[ <mark>Illegible</mark> ]
[Signed]		[Signed]	[Signed]
947927984		I.D. 901750927	851757435
		26.9.2019	26.09.2019

#### اللاقية رشانية يفصوص المد الغربى لموقع معطة معاتجة المياء العائمة في الخليل

الفريق الإول : سلطة المياء الطسطينية وبلنية الخليل. الفريق الالتى : رجب سبر ي أبو سنينة

يعد أن تقدم الطرف الثاني بشكرى تتحدن تعطله على حدود قطعة الأرجى المضمسة للعلمة المعلمة ، و بعد أن تو ترسيم بعدى نقاط من قبل الشركة المنطنة للمعطة لواجه قطعة الأرجى من المهة الغربية للمحطة ، تم تقديم اعتراض لدى مركز شكلوى المشروع عن ترسيم الثليك الملام للعد الغربي ، وبعد التحق الثلايف تبين أن خذك اجراءات تعديل حدود وخطأ انتزيل مسلمي ، الأمر الذي أدى الى زيادات أو نقصان في يعمن ملطقة التداخل المشار اليها بين النقطة 6 ونقطة 7 في مخطط المسلمة في العدود بين القطحين، وبعد الرجوع في علامات المسلمة في ارحن الملسة الثانية، نبين أن هذه المسلمة لم المار اليها في هذه الالفاقية حسن أراضي الفريق الذي والتي تبلغ مسلطتها 129.66 مثل مربع.

وبناء على ما سيق، سيئم تعنيل الحدود حسب ما يتلائم مع تخطيط التارع الانهادي بما يعلق مصلحة الطرابين ، وقد تم الانفاق على فتح طريق حيادية بين ار اطنى القريق الأول والقريق الذي على امتداد قطع الأر اطنى للتريقين وابق تتعليط وتصميم قسم التفطيط في بلدية الغايل وحسن التروط المرجعية تقوانين الطرق في البلايات والحكم السملي .وله من الأرثورية في الانتفاع من الدياء المعالمة الخارجة من المصلة آراي المزرو عات وابق الانفاقيات السعة من قبل وزارة الزراعة.

الريق ڈائي الإيق تول " spen sundce viell' H.Fug العصيم All greet re again Jan 12/12/19 28.9.2019 26/7/2019 1 5966634 -8 2415 Conceptor of in all - a glaggalin TAT: tip Tale 947927984 1D. 901750927 851757 135 26.9.2019 76.69.2019

# ANNEX 18. RING ROAD REPORT FOR HRWWTP V4. 6 JULY 2020







#### Hebron Regional Wastewater Management Project (HRWMP) Phase 1

Project No.: P117449

### **Ring Road for HRWWTP**

**Final Report** 

**Prepared By:** 

**Palestinian Water Authority** 

July 6, 2020





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#### Abbreviations and Acronyms

GRM	Grievance Redress Mechanism
HWWTP	Hebron Regional Wastewater Treatment Plant
HM	Hebron Municipality
MoM	Minutes of Meeting
MoLG	Ministry of Local Government
PWA	Palestinian Water Authority
Sqm	Square meter
WWTP	Wastewater Treatment Plant
YM	Yatta Municipality





#### 1. Introduction

Since the earlier start (April 2019) of the onsite excavations works on Hebron Regional Wastewater Treatment Plant (HWWTP), one landlord (Abdelfattah Alatrash) whose land is adjacent to the Wastewater Treatment Plant (WWTP) filed a complaint<sup>1</sup> (on July 28, 2019) appealing that landowners used the very old dirt road that goes through the WWTP to reach to their land and farms. The complaint was documented in the Grievance Redress Mechanism (GRM) system for HRWWTP project.

To address the complaint, , PWA informed HM to take measures in order to reach intermediation actions to consensual understandings with the owners of grievances. HM suggested the construction of a Ring Road around the land of the treatment plant to serve as an access road to the adjacent lands. Discussion of this issue was documented in the Minutes of Meeting (MoM) with the World Bank mission in September 2019.

The construction of the Ring road will provide the land owners adjacent to the treatment plant with the opportunity to easily and safely access their lands, since most of them are forced to take remote agricultural roads to reach their places of residence; some of the neighbors are forced to take the path of the valley of the roundabout. The road is expected to improve living standard in the region. Since this will allow the WWTP neighbors to invest and transport their agricultural products with ease and allow the Hebron Municipality in the future to enhance the level of services and infrastructure in the area. The opening of the 4-meter agricultural road is expected to reduce complaints related to access to land. Also, the road will secure the privacy of the treatment plant lands.

#### 2. Ring road Description

2.1 General Description

The ring road will be constructed around the perimeter of the land of the WWTP, (gates) and the entrances and exits will be connected to a public road leading to the WWTP and in specific locations where the site particularity allows, gates will be installed from WWTP side. Under any circumstances, these gates will be permanently closed, except for operation and maintenance and emergency cases. These gates and entrances are opened and closed by automatic control through the SCADA system, as the operators of the WWTP may need emergency evacuation escape or responding to emergency calls. This may be the case when the lateral non main gate is the only available emergency evacuation, especially when the main entrance is inaccessible as emergency conditions. However, referring to updated Hebron master plan in WWTP region, the ring road will be connected to the road network to serve all the

<sup>&</sup>lt;sup>1</sup> GRM System: Complaint Code : HRWWTP 03





landowners adjacent to the Plant in addition to the lots located behind. For more details, see figure 1.

The existing road to the WWTP is a dead-end road, which can be a source of concern for everyone. Therefore, the future Ring Road will enable drivers to maneuver and to take a path leading to a safe destination for travel, whether it be to Qalqas or Al-Hailah or Yatta in accordance with the warning signs that will be provided on the site indicating the safe behavior of vehicles and pedestrians.

The topography of the Ring Road path is an encouraging reality, as inclinations slopes are acceptable and are within the required limits and design limitations for such roads. The path of the Ring Road simulates the lines of the topographical contour on the perimeter of the plot of land, which makes implementation feasible and simple, the implementation will not require exaggerated expenses for excavations or embankments.

The proposed Ring Road will be 1,500 meters in length in a specific path around the periphery of the WWTP so that the path will secure optimal benefit and welfare of the neighboring properties and the neighboring areas as well as ensuring privacy and security of the WWTP, the WWTP operators and the landlords. Also, the ring road will consider and connect the road network around WWTP. The ring road will also serve and facilitate access to the parcels located in the second row of the adjacent land to the WWTP.

Due to the Covid-19 emergency situation in Palestine, PWA provided support to HM in conducting consultations with the landowners while respecting social distancing procedures.

PWA also provided support to HM in consultations with Yatta municipality (YM). Yatta municipality was provided with details and description of the proposed ring road as the road will also serve residents from Yatta. PWA has received a written approval from YM (annex 2) to the construction of the 4m agricultural road as an exception.

#### 2.2 Ring Road options

Technical options for the right of way, the ring road, are one of the following:

- 1. 4 m width agricultural road, completely deducted from state lands. Extendable to 8 m in future stage 2 (4m from WWTP lands as stage 1 and 4m from landlords in stage 2).
- 2. 8 m width urban road, 4m from the WWTP lands and 4m from landlords.

At the beginning, HM, adopted the 8 m wide road option to comply with the MoLG laws. As a result, HM decided that the right of way on a ring road would be 8 m wide with two lanes. There will be one single lane for each direction. Each lane will have a width of three and a half meters with a shoulder width of 0.5 m each. The road will be furnished with all safety and security equipment, warning, guidance, traffic signs, marking and painting Street surface after pavement and providing all necessary fences, safe side rails, retaining walls, longitudinal





sloping, transversal sloping and , super elevations and, rainwater drainage equipment such as catchment basins, pipes and channels.

However, the 8 m width road option, was excluded due to the lack of financial resources necessary for the construction of the road in addition to the lengthy time required to prepare and finalize the registration process. This impedes progress towards the solution of the problem, in the near future, and consequently the access of the neighboring landlords to their properties. In addition, clarification of the land donation status is required to ensure that land donation is done in light of the World Bank voluntary land donation guidelines. For instance, the guidelines indicate that "voluntary land donation will not be permitted in cases of site-specific infrastructure as community pressure could be too onerous for a person to refuse, thus removing the power of choice." Given that the site is specific for the ring road it is unclear how a donation could take place. Also, further investigation is required to ensure that all landowners have other options to reach out to their lands.

As a result, and in order to address the complaint, PWA has suggested a 4 m width agricultural road as an exception, which will allow a relatively quick implementation of a solution that meets the needs of the owners of neighboring lands and prevents further complaints and reactions. This option also meets the plans of the municipality of Hebron for the development of the area (future master plan). Given the possibility of implementing the second stage, upon securing the necessary funding, HM will expand the width of the road to 8m in order to fulfill the requirements of the MoLG. HM will work with landowners on the implementation of the 8m width road.

The agricultural Ring Road will follow the rights of usage in accordance with laws and regulations of the MoLG. After construction, the road will be documented as a public road and one of the fixed assets of the city of Hebron.



Road General

3. Names of beneficiaries' landlords





The Palestinian Land Authority provided PWA with the final land settlement files related to WWTP and landlords. Some of the plots have several beneficiaries. The table below includes the name of landlords, lot numbers and land area of each lot.

No.	Name	Lot Nr.	Area ( sqm)	
1	Abd Al Hameed Abo Sbeih 1	13	8298	
2	Abd Al Hameed Abo Sbeih 2	37	55156	
3	Nathmi Mohammad Abd Al Rahman Al Jamal	7	21126	
4	Hasan Sabri Abbas 1	11	6268	
5	Hasan Sabri Abbas 2	13	13223	
6	Rajab Sabri Abbas	12	6905	
7	Mohammad Issa Hasan Mosa	14	5373	
8	Khaled Ibraheem Abbas	15	3498	
9	Zainab Ya'qoub Abbas	23	847	
10	Yousef Mahmoud Ibraheem Abo Isneeneh Omar Mahmoud Ibraheem Abo Isneeneh	35	8550	
11	Mohammad Salem Jebra'eel Makhamreh	33	7397	
12	Na'emeh Ibraheem Abbas Abo Isneeneh	31	1722	
13	13Mohammad Issa Ibraheem Hasan Mosa34			
14	25	19734		

#### Table 1: Name of landlords, Lots and Areas<sup>2</sup>

<sup>&</sup>lt;sup>2</sup> According to land Authority final settlement data base.







Figure 2: Landlords Lots No.

#### 4. Land Classification and Land Use

The surrounding area of WWTP classified as substances farming and grazing area with few plots planted with olive trees. The ring road will facilitate the movements and access of landowners to their lands. The figure below shows the land use (in blue) surrounding ring road.







Figure 3: Land use Surrounding Ring Road.

#### 5. Consultations

In accordance with the World Bank safeguard policies, affected people should be consulted. Consultations will be transparent and meaningful and should provide the affected people with all information regarding the road design and the land needed. People will be informed about the existence of a GRM system to enable them to raise any concerns or complaints.

Due to Covid-19 confinement, the Bank team advised PWA<sup>3</sup>, to use alternative ways of managing consultation and stakeholder engagement. During the week commencing May 18<sup>th</sup> 2020 one-to-one consultations by phone were conducted individually with landowners informing them about the 4-meter agricultural road. Landowners were also informed that there will be second phase where the agricultural road will be expanded in the future to 8 meters once HM will secure funding.

Except for one landowner (Mohammad Salem Jebra'eel Makhamreh, owner of lot n. 33, that PWA unable to reach him because he was outside the country), PWA consulted with all the landowners and their legal authorized persons<sup>4</sup> (annex 4). PWA explained the design of the road to the stakeholders, clarified reasons for adopting the 4-meter agricultural road option and asked whether they have any concerns. Consulted stakeholders agreed to the design. Some of them recommended to expand the road to 8-meter as soon as funds would be available.

<sup>&</sup>lt;sup>3</sup> In accordance with the WB Technical Note on public consultations and Stakeholder Engagement in WB-

supported operations when there are constraints on conducting public meetings during the Covid-19 pandemic.

<sup>&</sup>lt;sup>4</sup> In the case where owners of land are women, have special needs or underage.





PWA conducted consultations with HM regarding the construction of a 4 m agricultural road option. during the consultations PWA clarified the reasons to postpone the 8 m option to a second stage and to start immediately in the construction of the 4 m agricultural road as an exception. These reasons are mainly related to lack of funds, lengthy legal procedures and recent complaints filed by the land owners and incidents reported by the contractor (May 2020). HM provided a written approval (see Annex 1) to the construction of the 4 m road on exceptional basis.

PWA also consulted YM regarding the 4 m agricultural road and obtained their written approval (see Annex 2) to the proposed solution also on exceptional basis.

#### 6. Environmental, Social, Health and Safety Plan

Environmental assessment is carried out for the ring road in compliance to the requirements of World Bank safeguard policy. According to this policy, the ring road project requires Environmental, Social Management Plan (ESMP), which entails mitigation measures, institutional setup, and monitoring plan. Since the ring road will be constructed within the footprint of HWWTP, therefore, the ESMP of the ring road will be highly aligned with the HWWTP ESCHIA and ESCHIA Addendum in identifying the impacts and mitigation measures related to the construction of the whole project.

#### 7.1 Specific ring road Impacts

Potential environmental impacts likely to occur during construction phase of the ring road are:

- Nuisance to people in surrounding of site due to dust/noise/smoke generated by the movement of vehicles /machinery which will be mitigated by regular air testing, vehicle noise and smoke tests;
- (ii) Pollution due to running heavy equipment which will be mitigated by providing adequate arrangement for the safe disposal wastes like oil;
- (iii) Health and safety of workers which will be mitigated by proper implementation of OHS including training of contractor's crew about First Aid and Health & Safety procedures; and
- (iv) Community health and safety, which will be mitigated through implementation of traffic safety plan, appropriate procedures for child labor, labor influx, Gender Based Violence (GBV), consultations and GRM.

#### 7.2 Mitigation Measures

In order to eliminate or reduce potential negative environmental impacts, mitigation measures are typically recommended to prevent the impacts associated with operation of the ring road. Mitigation measures are highly dependent on the significance of the predicted impact, the





nature of the impact or the phase of the project (construction versus operation). More details on mitigation measures presented in the following section.

7.3 Recommendations, guidelines, Environmental Monitoring and Management Plan Hebron Municipality, the project owner, will prepare the ESMP and ESMP matrix for the ring road, which will be included in the Conditions and Specifications of the Construction Contracts. It will be the responsibility of the Contractor to implement the mitigation measures in the ESMP. The Contractor will be responsible for appointing a staff to implement and oversee monitoring and management arrangements during the construction phase of the ring road, including but not limited to: (i) Traffic man and (ii) Health and Safety Advisor.

Hebron Municipality will be responsible for ensuring the procedures for monitoring and management outlined in the ESMP are adhered to for the duration of the project. Hebron Municipality will retain an overriding audit function of all of its contractor activities, perform additional monitoring, and enforce compliance where needed.

Environmental and social management and monitoring will cover all aspects of the environment and social issues indicated above which will be affected by the ring road project. Most of the activities mentioned under the environmental and social aspect in the ESCHIA and ESCHIA addendum are also considered as actions that protect the environment and social issues including community health from the road construction. For convenience, these common activities will not be repeated here but are included in the ESMP matrix in the ESCHIA report and in the Environmental Monitoring and Management Matrix (Table 30-33) in the ESCHIA Addendum.

#### 8 Implementation

The construction of the Road will start immediately after getting the approvals from HM and YM. The planning department in HM is responsible for finalizing the detailed design of the road based on the comments provided by the surveyors of the PWA and West Bank Water Department.





#### Annexes

#### Annex 1: Hebron Municipality Approval

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دولة فلسطين وزارة الحكم المحلي پلديـــټالخليل +978-2-2228121-2-3 فتكرر 2228293 مندرق بريد: "%"⊡ اnfn@hebron-city.ps

افرة: : : / 10/ 2020/12 / 2020/12

حضرة المهندس زياد دراغمة المحترم ناتب مدير وحدة إدارة المشاريع سلطة المياه الفلسطينية

الموضوع : فتح طريق بعرض 4 مثر بشكل استثلاثي حول محطة التنقية لخدمة الأراضي الزراعية حول المحطة

تحية طية ويعن -

بالإشارة إلى الموضوع أعلام، وبعد الاطلاع على تقاصيل شكوى المواطنين المجاورين لمشروع محطة تنقية المياء العادمة – الخليل وذلك بخصوص حق الوصول إلى أراضيهم من خلال أرض المحطة وبعد الاطلاع على الحل المقترح المرفق برسائتكم بتاريخ 2020/5/19 فإننا نود إبلاغكم أنه لا يوجد لدينا أية اعتراضات على تقاصيل المل المقترح والمتمثل يفتح طريق زراعي بعرض 4 أمتار بشكل إستثنائي على محيط أرض المشروع.

واقيلوا فانق الاحترام والتقدير

مواقع بلدية الخليل الالكتروني : www.hebron-city.ps

كان تيس





Annex 1: Translation of Hebron Municipality Letter

State of Palestine

Ministry of Local Government

Hebron Municipality

Date: 1/07/2020

To: Eng. Zeyad Daragmeh

Deputy Head of Project's Management Unit

#### Subject: The construction of a 4-meter road as an exception around the WWTP to serve the surrounding agricultural land

In reference to the above subject, and following the complaint filed by the HWWTP neighboring landowners requesting access to their adjacent lands, Hebron municipality has no objection to your proposal detailed in your letter dated on 19/05/2020 specifying the construction of a minimum of 4 meters agricultural road as an exception on the perimeter of the project's land.

Best Regards

Mr. Taysir Abu Sneineh

Hebron Mayor







#### Annex 2: Yatta Municipality Approval

يسم الله الرحمن الرحيم دولة فلسطين State of Palestine **Ministry of Local Government** وزارة الحكم المحلى YATTA MUNICIPALITY بلاية يط Tel. : 02-2279502 Tel. : 02-2279394 تلفون : 02-2279394 تلفون : 02-2279394 MUNICI فاكس : 02-2279606 Fax: 02-2279606 الرقم: 11/11/227 التاريخ ٢ / ٢ / ٢٠

عناية الأخ م. زياد دراغمة المحترم

نائب مدير عام وحدة المشاريع/سلطة المياه

## الموضوع : فتح طريق بعرض 4 متر بشكل استثنائى حول محطة التنقية لخدمة الأراضى الزراعية حول الموضوع : فتح طريق بعرض 4 متر بشكل استثنائى حول محطة المعطة الموطع الموطة المحطة المحلة المحطة المحطة المحظة المحطة المحظة المحظة المحظة المحظة المحظة المحطة المحطة المحطة المحظة المحة المحظة الم

تحية طيبة وبعد،،،

لاحقاً للمناقشة الهاتفية بتاريخ 2020/5/16 ، فإننا وبعد الإطلاع على تفاصيل شكوى المواطنين المجاورين . لمشروع محطة معالجة المياه العادمة /الخليل وذلك بخصوص حق الوصول إلى أر اضيهم من خلال أرض المحطة وبعد الإطلاع على الحل المقترح المرفق برسالتكم بتاريخ 2020/5/17 فإننا نود إبلاغكم أنه لا يوجد لدينا أية إعتر اضات على تفاصيل الحل المقترح والمتمثل بفتح طريق زراعي بعرضي 4 أهتار ويتكل استثنائي

على محيط أرض المشروع.

واقبلوا بفائق الإحترام والتقدير



www.yatta-munc.org

E-mail:info@yatta-munc.org





Annex 2: Translation of Yatta Municipality Letter

State of Palestine

Ministry of Local Government

Yatta Municipality

Date: 26/06/2020

To: Eng. Zeyad Daragmeh

Deputy Head of Project's Management Unit

#### Subject: The construction of a 4-meter road as an exception around the WWTP to serve the surrounding agricultural land

Following our phone discussion on 16/05/2020, and following the complaint filed by the HWWTP neighboring landowners requesting access to their adjacent lands, we have no objection to your proposal detailed in your letter dated on 17/05/2020 specifying the construction of a minimum of 4 meters agricultural road as an exception on the perimeter of the project's land.

Best Regards

Mr. Issa Smeirat

Yatta Mayor





Annex 3: One to One Consultations with Landlords MOM by phone the Landlords:

General							
During consultations PWA raised the following issues:							
	1. Explain details and preliminary design of the agricultural road						
,	2. Replied to the landlord questions and concerns						
	3. Informed the landowner of the GRM						
SN	Lot No	Name of the Landlord or Person Authorized to act on his behalf	Name of Caller on behalf of PWA	Discussion			
1	13	Abd Al Hameed Abo Sheih	Tameem	Owner of plots No. 13 and 37 The landlord welcomed the proposal and expressed its importance to serve the lands around the WWTP. He suggested expanding the width of the ring road up to 6 m from the WWTP land PWA			
2	37	Owner of both lots	Badawi	explained that the solution for right of access is to build a 4 meter wide road as an exception. HM, upon securing funding and in agreement with the landlords, may expand the 4m agricultural road to an 8m urban road.			
3	35	Taleb Mohammad Al Jamal	Tameem Badawi	The landlord welcomed the proposal and he didn't have any concerns and objections.			
4	7	Nathmi Mohammad Abd Al Rahman Al Jamal	Tameem Badawi	Mr. Talib El-Gammal, authorized on behalf of Mr. Nazemi, was contacted. He welcomed the proposal and he didn't have any concerns and objections.			
5	11		Tameem	Authorized to represent the owners of plots No. 11, 12, 14, 34			
6	12			Mr. Rajab proposed to open the road with a width of 8 m by contribution from all parties. PWA			
7	14	Paich Sahri Abbas		explained that due to a lack of funding, the time required to complete the necessary legal			
8	8 34 Kajao Saon Abbas	Badawi	Palestine. The solution for right of access is to build a 4 meter wide road as an exception. HM, upon securing funding and in agreement with the landlords, may expand the 4m agricultural road to an 8m urban road.				





**Ring Road Report** 

	9	15			Owners of plots No. 15 and 28
	10	28	Khaled Ibraheem Abbas, Laila Ibraheem Abbas	Tameem Badawi	Mr. Zakarya Abbas, authorized on behalf of Mr. Khaled Ibraheem Abbas and Mrs Laila Ibraheem Abbas, was contacted. He demanded that the road be designed in a way that does not affect the plot of Mrs. Layla due to the length of the side adjacent to the road and the lack of depth. PWA explained that the proposed agricultural road has a width of 4m as an exception, which will be completely deducted from the WWTP land. HM, upon securing funding and in agreement with him and other landlords, may expand the 4 m agricultural road to an 8 m wide urban road. PWA will pass on his concern to HM.
	11	33	Mohammad Salem Jebra'eel Makhamreh	Tameem Badawi	Out of the country. PWA tried to obtain the contact details of Mr. Mohammed through his relatives and the municipality of Yatta, but to no avail.
Ī	12	31			Owners of plots No. 23 and 31
	13	23	Na'emeh Ibraheem Abbas Abo Isneeneh, Zainab Ya'qoub Abbas	Tameem Badawi	Mr. Ayoub Abbas, authorized on behalf of Ms. Na'emeh Ibraheem Abbas Abo Isneeneh and Ms Zainab Ya'qoub Abbas, was contacted. Mr. Ayoub proposed to open the road with a width of 8 m by contribution from all parties. PWA explained that due to a lack of funding, the time required to complete the necessary legal procedures, and the difficulty of holding a final consultation meeting due to the emergency in Palestine. The solution for right of access is to build a 4 meter wide road as an exception. HM, upon securing funding and in agreement with the landlords, may expand the 4m agricultural road to an 8m urban road.
	14	25	Abd Al Fattah Rashed Al Atrash	Tameem Badawi	Owner of plot No. 25 This landlord is the complainant (see complaint No.3 in GRM system under title "Right of access to his land"). He welcomed the proposal, and stated that all he want is to reach his land safely and smoothly. He recommended to open the road with a width of 8 m by contribution from all parties. PWA explained that due to a lack of funding, the time required to complete the necessary legal procedures, and the difficulty of holding a final consultation meeting due to the emergency in Palestine. The solution for right of access is to build a 4 meter wide road as an exception. HM, upon securing funding and in agreement with the landlords, may expand the 4m agricultural road to an 8m urban road.

