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THE COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION (CDR)

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ AND AITANIT WASTEWATER TREATMENT PLANTS

EL MARJ WASTEWATER SYSTEM

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

November 24, 2020

ELARD LEBANON			
THE COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION (CDR)		**Document Type:**	**Draft Report**
		Contract Ref:	**19986**
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ AND AITANIT WASTEWATER TREATMENT PLANTS		**No. of Pages:**	**453**
ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE El Marj SYSTEM		**Version no.:**	**F**
Document Control			
Revision / Date	**Issued by:**	**Reviewed by:**	**Approved by:**
A-for Client Review March 18, 2019	Tarek Tabaja Lara Bou Ghanem Carole Atallah Nisrine Machaka-Houri Tarek Mashtoub Assaad Hassan Kassem	Rana Zbeidy Marc Metni	Ricardo Khoury
B-for Client Approval October 8, 2019			
C-for Client Approval November 28, 2019			
D-for Client Approval May 19, 2020			
E-for Client Approval July 1, 2020			
F-for Final Approval November 24, 2020			

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

a.s.l.	Above sea level
BTD	Bureau Technique pour le Développement
BTEX	Benzene, Toluene, Ethyl-benzene and Xylene
BWE	Bekaa Water Establishment
CDR	Council for Development and Reconstruction
CEMP	Construction Environmental Management Plan
CoM	Council of Ministers
DGA	Directorate General of Antiquities
DI	Ductile Iron
EC	Expropriation Commission
EDL	Electricité du Liban
ELARD	Earth Link and Advanced Resources Development
EMP	Environmental Management Plan
ESMP	Environmental and Social Management Plan
GBV	Gender-Based Violence
GoL	Government of Lebanon
HAP	Hazardous Air Pollutants
HSE	Health Safety and Environment
IBA	Important Bird Area
IEE	Initial Environmental Examination
IPA	Important Plant Area
IUCN	International Union for Conservation of Nature
LAP	Land Acquisition Plan
LARI	Lebanese Agricultural Research Institute
LRA	Litani River Authority
MoC	Ministry of Culture
MoE	Ministry of Environment
MoEW	Ministry of Energy and Water
MoIM	Ministry of Interior and Municipalities
MoPH	Ministry of Public Health
MTBE	Methyl Tertiary Butyl Ether
NSEQ	National Standards for Environmental Quality
ODS	Ozone Depleting Substances
OP	Operational Policy
PAP	Project Affected People

PPE	Personal Protective Equipment
ToR	Terms of Reference
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
uPVC	un-Plasticized Polyvinyl chloride
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WB	World Bank
WHO	World Health Organization
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

I. Introduction

Earth Link and Advanced Resources Development s.a.l. (ELARD) was awarded by the Council for Development and Reconstruction (CDR) (the "Implementing Agency") the development of an Environmental and Social Management Plan (ESMP) for the construction of sewage extension networks for the villages and towns of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and the lower part of Qabb Elias that will connect to El Marj Wastewater Treatment Plant (WWTP). These make up the Marj Wastewater System. This ESMP is prepared for the Marj Wastewater System to identify and assess possible impacts resulting from the Project and to propose measures to minimize the significance of negative impacts and maximize the benefits of positive ones. This document was prepared based on the requirements stipulated in the Terms of Reference, Activity I on Environmental and Social Management Plan – ESMP.

II. Regulatory and Institutional Framework

The ESMP report first refers to national legislation and international conventions ratified by Lebanon and relevant to the project. Various governmental institutions play a role in the permitting and supervision of the Project. These include the Council for Development and Reconstruction (CDR), Ministry of Public Works and Transport (MoPWT), Ministry of Environment (MoE), Ministry of Energy and Water (MoEW), Ministry of Interior and Municipalities (MoIM), in addition to the Bekaa Water Establishment (BWE). At a local level, the Qaimaqam of West Beqaa District, Governor of Zahle the Union of Zahle District Municipalities, the Union of Bekaa Al Awsat Municipalities, Union of Al Sahel Municipalities, the municipalities of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and Qabb Elias are primary stakeholders.

III. Project Description

The proposed El Marj Wastewater System includes the construction of 321.52 km of additional/extension sewer lines (gravity lines and force main) in Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, and the lower part of Qabb Elias and part of Saouiri within the public domain along the existing roads Right-of-Way. The remaining sewer lines and the force main in Saouiri will be located on private lands and have been mapped in a way to minimize expropriations.

Due to the considerable number of foreign nationals living in the Bekaa region who already work in the construction sector, it is likely that workers will be already living near the project areas, and thus no labor camp will be needed and no labor influx is expected.

IV. Description of the Environment

The proposed Project extends within the villages of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol and the lower part of Qabb Elias in the

Zahle Caza, and Saouiri which falls in the West Bekaa Caza, Bekaa Governorate of Lebanon. The additional/extension sewer lines will be constructed within the public domain along the existing roads Right-of-Way.

Average temperature recorded in the study area between January 2017 and December 2017 varies between -2.7°C in February and 38.2°C in July. The maximum wind speed reported ranged between 1.9 m/sec in December and 3.1 m/sec in May with a prevailing northwesterly and southwesterly wind most of the year. The average yearly precipitation in the project area ranges between 800 and 1,000 mm/year.

The literature review revealed a lack of ambient air quality data for the Project area. Since the Project area is rural and the Project is located in the villages of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and the lower part of Qabb Elias in proximity to residential areas, the main potential sources of ambient air pollution include the presence of solid waste open dumps (especially when waste is open burned), agricultural activities involving the use of pesticides, traffic (knowing that the study area is not congested), and private power generators.

The literature review revealed a lack of noise data for the Project area. No background noise measurements were taken during the conducted field investigations (as per the contractual agreement).

The proposed network extension is located between two Key Biodiversity Areas (KBAs); these KBAs comprise Important Bird Areas (IBAs) that are also important receptors. The Sannine-Rihane slopes and heights KBA (which also includes the core zone of the Shouf Biosphere Reserve - SBR) is to the west of the network and the upper Litani KBA is to the east of the Network. In addition, parts of the network in Wadi Ed Delem, Qabb Elias and Mazraat El Mehqane fall within the buffer and the transition zones of the SBR. Another part of the network (Majdel Anjar) is located at the edge of the Upper Litani River KBA. Furthermore, the proposed network reaches a point that is around 80 meters away from the Anjar Hima to the east; the nearest point is also 1.7 km away from the Kfarzabad Hima. However, no threatened or endangered plant species were observed in the proposed sites. The proposed locations for the sewer lines consist of the existing road network in all the villages except Saouiri, where no natural environment/landscape exists. Therefore, these sites have no ecological value. As for the sewer lines in Saouiri village, some of the sites have no or low ecological value in respect to biodiversity since they are abandoned/degraded lands. The lands comprising trees have medium ecological value due to the presence of planted trees.

Archaeological remains are identified in some of the villages where the extension of wastewater networks is planned. In Chtaura, the Tell is located near Ain Assaf, to the left of the main road leading to Masnaa. Evidence of occupation during the Late Chalcolithic, Bronze and Iron Age, Hellenistic, Roman, Byzantine, Islamic and Ottoman periods was found on the Tell. In Jdita, a cave near the village was probably occupied during prehistoric times. As for the village itself, it is partly built on a Tell, where remains of ancient occupation are attested. A dedicatory inscription dated to the roman period was found on a square base, among other ruins. The Tell of Taalabaya is a small Tell where Early Bronze Age, Roman and Byzantine remains were found above ground, during surveys conducted in 1966. The Jesuit monastery of Taanayel was built on the Tell. During the construction works, small objects were found. Both in

the ravine of Wadi Ed Delem and near the source, remains of possible prehistoric occupation were found. A roman relief was also located near the source. Additionally, ruins of different periods can be found within the Qabb Elias village and its surrounding. The Tell was occupied since the Early Bronze Age. A monument, possibly a tomb, cut in a rock wall overlooks the Bekaa Valley. It dates back most probably to the roman period. The remains of Fakhreddine Citadel can also be seen on the road leading to Chtaura.

Part of the proposed wastewater network in Zahle Caza is located in the northwestern parts of the study area extending over a distance of 8 km starting from Bouarej village (1,325 m asl) in the west, through Mreijat (1,130 m asl), until Marj village (868 m asl) in the Bekaa plain to the east. Topography changes from moderately sloping in the west to flat in the plain. The other part of the project is located in the south-eastern part of the study area (West Bekaa Caza) where the wastewater network will be constructed. The proposed wastewater network extends through Souairi Village. There are more than seventy (70) reported springs in the study area. Out of the seventy springs, twenty seven springs are considered to be down-gradient from the sewer lines proposed location. A total of nineteen (19) public wells are present in the Study Area with depths ranging between 20 and 350 m BGL. Additionally, many private wells (licensed and un-licensed) exist within the study area. Within the Bekaa valley, the depth to water is expected to be around 50 m BGL based on the existing private wells in the area. In the south-eastern part of the study area, the aquifer upon which lies the El Marj wastewater project is expected to be around 150 m BGL based on the public wells in the area. In the north-western part of the study area, the El Marj wastewater project will overlie the Mdairej semi-aquifer where the depth to water is expected to be around 70 m BGL. The general direction of groundwater flow is toward southeast from the north-western Zahle Caza part, and toward southwest from south-eastern West Bekaa Caza part.

The village of Bouerij and Zebdol extend over an area of 5 km^2, with an estimated population of around 3,000 permanent residents. Chtaura and upper Jlala extends over an area of 2 km^2, housing around 300 residences for a population estimated to be around 1,000-1,500 permanent residents, and 500 registered Syrian displaced persons. El Mraijet extends over an area of 4.72 km^2, has around 650 housing units, and a population estimated to be around 2,000 permanent residents, and 2,000 seasonal residents. Jdita village has an area of 6.11 km^2, housing around 1,400 residences for a population estimated to be around 8,000 permanent residents, and 4,000 seasonal residents. On the other hand, Makse has an area of 4.5 km^2, housing around 800 residences for a population estimated to be around 4,000 permanent residents, 1,000 seasonal residents, and 5,000 registered Syrian displaced persons. Taalabaya and lower Jlala extends over an area of 5 km^2, has around 10,000 housing units, and a population estimated to be around 51,000 permanent residents, 9,000 seasonal residents, and 12,000 registered Syrian displaced persons. Saouiri village has an area of 13 km^2, housing around 2,000 residences for a population estimated to be around 10,000 permanent residents, and 8,000 registered Syrian displaced persons. The study area has a total of 13 schools, and 4 universities and vocational schools. Several commercial activities are present in the area including farming and light industries. There are five dispensaries located in the area, and 4 hospitals. Mostly the main source of service water for all villages is springs and Artesian Wells. All villages are not fully serviced by the existing wastewater network mainly because of the recent residential expansions that took place after the network design and construction; however, Saourii village in particular does not even have a wastewater network. Chtaura and

upper Jlala, El Mraijet, Jdita, Makse, and Taalbaya and lower Jlala dispose of their municipal waste at Zahle sanitary landfill, only after the recyclables are removed at Zahle sorting facility operated by the Municipality of Zahle. Saouiri village on the other hand, has its own sorting facility; however, it uses manual sorting techniques. Remaining municipal waste is disposed in designated dumpsites. It is to be noted that the Municipality of Qabb Elias and the Municipality of Taalabaya did not provide their input on their demographic, social and economic characteristics.

V. Environmental and Social Impact Assessment

As part of the ESMP, an Environmental and social impact assessment was carried out to identify the main potential impacts that could arise from the construction and operation of El Marj Wastewater System in the villages of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and the lower part of Qabb Elias, analyzes these impacts, and assesses their significance so that any potentially significant impact can be properly mitigated.

An in-depth screening of the potential environmental and socio-economic impacts was conducted to identify the negative and positive impacts. Mitigation measures were later proposed for all the identified impacts shown in the tables below, in addition to the proposed monitoring plan for the project.

Construction Phase Environmental and Social Management Plan

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Emissions													
Air Emissions	Combustion and exhaust emissions	N/D	M	L	S	C	R	H	M	• Ensure well-designed, maintained, and operated equipment/vehicles. Precautionary control measures for emissions reduction could include proper engine fuel mixtures, regularly serviced exhaust emission systems, suitable engine tuning, and use of low sulfur content diesel, whenever available; • Use environmentally friendly equipment whenever possible (machinery with higher fuel efficiency or equipped with air pollution control devices to minimize exhaust emissions); • Keep a record of maintenance for all machinery, vehicles, and generators on site; • Report and monitor monthly fuel consumption records to keep track of consumption levels and identify overuse; • Avoid unnecessary idling of vehicles and equipment engines; and • Ensure that an effective Maintenance Plan and Schedule is in place for employed site machinery, vehicles, and power generators.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost
	Dust emissions	N/D	M	L	S	C	R	H	M	• Set physical barriers at site boundaries; • Ensure site roads are kept regularly damped down and compacted to minimize dust emissions; • Schedule deliveries of raw materials efficiently; • Wheel-washing of vehicles before departure from construction site; • Cover incoming and outgoing trucks with proper canopies; • Limit vehicular speed onsite to 20 km/h; • Maintain material stockpiles at minimum heights and adequate slopes and ensure that they are covered; • Surround the construction areas with scaffolding nets to control debris and dust from dispersing beyond the construction sites; and • Inform sensitive receptors of the scheduled construction works, ahead of time in conjunction with the concerned municipalities, especially for dust-generating activities.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost
Noise	Noise associated with site preparation, construction activities and operation of on-site generators, heavy machinery, equipment and vehicles	N/D	M	L	M	C	R	H	M	• Fit all machinery, equipment, and vehicles with exhaust silencers where possible; • Ensure proper inspection and maintenance of machinery, vehicles and generators; • Avoid idling and switch off engines when not in use; • Place noisy equipment away from sensitive receptors, behind stockpiles to provide acoustic barriers; • Control speed limits of vehicle movement on site and in the surrounding area; • Plan deliveries to and from the site during day time hours; • Respect scheduled working hours (7:00 am- 6:00pm) and avoid night-time work; • Avoid construction works on Sundays and public holidays; • Inform site staff and workers on the impact of noise and the applicable regulatory requirements; • Provide workers with noise protection equipment and enforce their use; • Conduct regular noise monitoring to ensure that noise emissions are compliant with national standards (Decision 52/1, provided in Appendix D); • Notify the residents of the plans and expected duration prior to initiating the works, in conjunction with concerned municipalities; and • Establish a noise complaint grievance mechanism as a measure to allow implementation of timely and effective actions to minimize noise impacts on downwind receptors.	Medium	Implementation: Contractor Supervision: CDR	• Noise PPEs: Washable and reusable ear plugs: ~1.5 USD/piece or Ear Muffs: ~28 USD/piece • Noise monitoring: 400 USD/Event
Soil and Ground Water Resources	Temporary or permanent change in topography, soil erosion and collapse from grading, trenching, or excavation works	N/I	H	L	L	C	I	H	H	• Ensure international standards (i.e. ASTM Soil Compaction Standards) are met during any excavation works, compaction and grading activities, in order to minimize expected disturbance during the construction phase; • Manage fixed routes for equipment movement and avoid multiple routes; and • Re-use excavated/cut materials as general fill where considered suitable.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
	Accidental spills of fuel, oil and chemicals	N/D	H	G	L	C	I	L	M	• Good housekeeping practices through handling and storage of chemicals, oil, fuels and lubricants within containment facilities (e.g. bunded areas, leak-proof trays) designed to prevent the release of spills/leaks to the soil and groundwater environment; • Maintenance schedule should be in place as part of the inspection procedures of all equipment/ generators/ machinery for risk minimization; • Maintenance of machines and equipment should take place off-site or onsite in a well-contained area with impermeable concrete pavement and drainage for vehicle washing and maintenance; • Oil spill response kits should be available wherever oils are being used/stored; • Promote awareness among workers on how to handle oil/lubricants; • Train workers how to clean up small-scale spills; • Ensure drip trays are present when re-fuelling; • Prepare a Spill Emergency Plan specific for the Project; and • In case of spill: - Immediately report incidents reporting to the concerned authorities; - Contain the source of spill (close valve, seal pipe, seal hole or as appropriate); - Check for hazardous flammable materials on site; - Prompt clean-up of the spill by removing affected top soil layer by trained employees who should be equipped with appropriate tools and Personal Protective Equipment (PPE); - Treat and contain the removed soil as hazardous waste; and - Adopt, to the extent possible, dry cleaning techniques to decrease resulting wastewater, and to avoid flushing of spills to deeper soil layers.	Low	Implementation: Contractor Supervision: CDR	Oil spill response kit: 80 USD Drip trays: 65 USD
	Inadequate solid waste management	N/D	H	L	L	C	R	M	M	• Segregate at source domestic-like wastes and construction wastes that can be reused onsite from those that need to be transferred for treatment or disposal; • Sort excavation waste resulting from construction activities into different types (bulky aggregates, fine aggregates, etc.); • Reuse part of the excavation waste in backfilling; and dispose of the rest (if any) in an adopted/authorized construction and demolition waste dump; • Material stockpiles should be of certain heights, slopes and be well covered and contained; • Schedule the works during dry season, when possible; • Progressively carry out rehabilitation of disturbed areas following completion of works at all construction sites (rehabilitation will include reinstatement of soil, surface leveling, re-vegetation and mulching, where applicable); and • Ensure that standards of "good housekeeping" are maintained (i.e., avoid littering, prevent storage of combustible waste for more than 24 hours to prevent attraction of pests and flies).	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost
	Inadequate wastewater management	N/D	M	L	M	C	R	H	M	• Ensure all connections are inspected and are not leaking through the regular inspection of septic/ holding tanks (if any) and connections to the wastewater sewage network; • Obtain a permit from the Municipality or the relevant Water Establishment to transport and discharge the domestic wastewater to an operating treatment facility; and • Restrict vehicle washing to contained maintenance areas offsite or onsite with impermeable concrete pavement and proper drainage.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Waste Generation	Construction-related solid and liquid wastes generation	N/D	M	L	M	C	R	H	M	• All construction workers and personnel should be responsible for ensuring that standards of "good housekeeping" are maintained. This will include: - Clear all rubbish and work associated debris; - Sort domestic and general waste into combustible (paper, food, cardboard, and wood) and non-combustible waste (metals, glass, rubble) streams at source by means of suitably labeled containers for safe collection, segregation and handling of all waste streams generated; and - Avoid storage of combustible waste for more than 24 hours to prevent attraction of pests and flies. • Regularly inspect garbage bins; • Sort and collect hazardous wastes separately from domestic waste. All hazardous waste bags should be properly labeled and stored so as to prevent occupational health hazards; • Compile log sheets of hazardous wastes, including type, amount and disposal method, to track final destinations and identify opportunities for improvement; • Transport excavation and construction wastes in covered/closed trucks for disposal in currently available dumpsite locations until a permitted sanitary landfill is made available by the government; the disposal location shall be approved by the concerned municipality, CDR and MOE; • Regularly inspect and maintain septic tanks (if any) to detect and prevent leaks; • Ensure that the quality of the hydro-test water is compliant with decision 8/1 for the discharge of wastewater into sewage network or surface water bodies; and • Collect the concrete wash water in a designated tank and allow for water to evaporate and the concrete to harden to dispose it off with construction waste.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost
Depletion of Resources													

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Biological Resources	Excavation and construction activities	N/D	M	L	M	C	R	H	M	• Minimize disturbance of natural land by excavating and constructing necessary areas of land only; • Stay away from the KBAs, himas and the SBR while transporting materials and equipment to and from the project's sites, i.e., use roads that are far away from their boundaries to minimize negative impacts on these areas • Prohibit unnecessary cutting or damaging of wild plants and trees, specifically the wild species; • Trees that will not be cleared should be separated from the construction area by a barrier placed at an appropriate distance from the tree trunk. It is generally recommended that the barrier is placed at a distance equal to the branch spread of the tree or half its height, whichever is greater. When branches are in the way, they should be pruned rather than removing the whole tree; • Olive and fig trees are sturdy, and usually respond well to transplanting especially in the fall season, when soil and air temperatures are still warm and thus the roots can become established. Thus, it is recommended to transplant all trees of these two species (67 olive trees and 21 fig trees; other tree species' survival chances following translocation are low) once they are cleared from the affected plots. For higher chances of successful transplantation of olive and fig trees, the following method is suggested: - Tree leaves should be removed off the top branches; - Dig a hole around the trunk (radius of 50 cm or greater depending on tree age and circumference) as deep as possible to expose the main roots of the tree. Trees could be removed with the help of a JCB Backhoe, while keeping as much of the soil intact as possible. - Trees should be removed with their soil and each gently put in a big pot. Some humus or peat moss should be added at the bottom of each pot before placing the dug tree in it. The top of the pot should also be covered with a layer of humus soil or peat moss. The trees should be delivered to the Municipality and watered regularly. • Coordinate with the Municipality of Saouiri, before initiating construction works to ensure translocation of all olive and fig trees (total of 88 trees) upon their clearance within the shortest period of time to increase their chances of survival; • Avoid construction works during the bird migration seasons within plots of Medium ecological value in Saouiri, in the area within 500 m from Hima Anjar-Kfarzabad, and in the section that falls within the buffer and transition zones of the SBR, because these areas fall on the migratory route of birds for both seasons. The peak spring migration season is from March to mid-May, whereas the fall one is during September and October;; • Proper disposal of domestic and construction waste at designated sites; • Enclosing all fine earth materials during transportation to and from the site to prevent spillage and dusting; • Proper storage and prompt transportation of construction material to prevent them from being washed away during rainfall or carried by wind; and • Storage of wastewater from the construction phase in tight septic tanks that shall be regularly emptied and transported for discharge into an operating wastewater treatment facility.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost
Water Resources Consumption	Water for construction activities and domestic use	N/D	L	L	S	C	R	H	L	• Adopt a water saving plan during the construction phase and limit the amount of water used for workforce daily uses.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost
Energy Resources	Energy consumption during construction activities	N/D	M	L	M	C	R	H	M	• Use equipment with higher fuel efficiency • Adopt a periodic inspection and maintenance schedule for power generators and equipment engines, as per manufacturer specifications, and maintain maintenance logs; • Report and monitor monthly fuel and energy consumption records to keep track of consumption levels and identify overuse; • Avoid unnecessary idling of vehicles and equipment engines.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost
Other Impacts													

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Traffic	Increase in traffic during construction	N/D	M	L	M	C	R	H	M	• Limit speed on the construction sites to 20 km/h unless otherwise advised, and adopt careful logistical and route planning; • Position any necessary traffic diversion signs and devices correctly. Signs and devices should be clearly displayed in the Arabic and English languages. Temporary traffic signals and signs should be employed to warn of hazards and provide directions, especially on narrow one-lane roads; • Coordinate with the concerned municipalities with respect to the planned road blockages, detours or diversion, and the scheduling of the construction works including material delivery, waste transfer, truck movement and other machinery operations in order to limit the disruption to the neighborhood from traffic inconveniences and traffic flow and to minimize noise and dust generation; • Follow a specific schedule for transport to avoid interference with peak traffic hours and minimize disturbance/delay to commuters at rush hours on the roads leading to the Project construction sites; and • Fill up all holes and trenches, and level all mounds and heaps of earth, and exposed surface reinstatement, which have been excavated or made in connection with the works immediately upon completion of any part of the works; and • Provide/display adequate warning signs to prevent accidental falling into open areas; and • Assemble a fence/ barrier along the construction work areas.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Archaeology	Potential damage to undiscovered archaeological features during excavation	N/D	H	L	M	C	I	H	H	• Coordinate with DGA for a survey to be conducted prior to the initiation of works, allowing to identify any possible prehistorical and archaeological remains on the different locations of the Project; and • Ensure that all crew members and site engineers are made aware of the laws and regulations related to archaeological findings and are capable of identifying any if encountered. • If any material were to be found during the survey, DGA is the only authority to determine the required operations and to give the approval to commence construction works. During construction, excavation and/or leveling works, excavation in sites of known archaeological interest should be avoided. Where this is unavoidable, prior discussions must be held with the DGA in order to undertake pre-construction excavation or assign an archaeologist to log discoveries as construction proceeds. Where historical remains, antiquity or any other object of cultural or archaeological importance are unexpectedly discovered during construction in an area not previously known for its archaeological interest, a "Chance-Find Procedure" should be applied. This procedure should be included in all sub-contractors' contracts under a "Protection of Prehistorical, Archaeological and Historical Sites" clause, developed in accordance with the Lebanese regulations (Decree 3057/ 2016) and the World Bank Guidance – OP 4.11. The following actions should be taken: • Stop construction activities. • Delineate the discovered site area. • Notify the responsible foreman/archaeologist who in turn should notify the DGA (within less than 24 hours). • Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remains, a night guard should be present until the responsible authority takes over. • Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out. • An evaluation of the finding will be performed by the DGA. The significance and importance of the findings will be assessed according to various criteria relevant to cultural heritage including aesthetic, historic, scientific or research, social and economic values. • Decision on how to handle the finding will be reached based on the above assessment and could include changes in the project layout (in case of finding an irrevocable remain of cultural or archaeological importance), salvage excavations, in situ conservation, preservation or restoration. • Implementation of the authority's decision concerning the management of the finding. • Construction works can resume only when permission is given from the DGA after the decision concerning the safeguard of the heritage is fully executed. In case of Archeological finds, the Contractor should refer to the Conditions of Contract (General Conditions of Contract (FIDIC); and CDR Safety, Health and Environmental Regulations). These include the following: • In case of delay incurred in direct relation to archaeological findings not stipulated in the contract (and affecting the overall schedule of works), the contractor may apply for an extension of time. However, the contractor will not be entitled for any kind of compensation or claim other than what is directly related to the execution of the archaeological findings works and protections. • The duration of any actions needed in case of Chance Finding cannot be determined ahead of time. As for the estimated price, it varies according to the needed manpower / time frame for the needed procedures, and can only be determined in accordance with the needed works.	Medium	Implementation: Contractor Supervision: CDR, DGA	Part of construction activities cost
Socio-economic	Creation of new job opportunities	P/D	H	L	M	C	-	H	B	-	-	-	-

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
	Child labor	N/D	M	L	M	C	R	M	M	• The assigned Contactor is bound to comply with laws prohibiting child labor and shall follow all applicable laws that recognize children's rights and minimum age of employment. • Maintain a record of labor registry and age verification. • Inform all workers of the internal GRM figuring in Section 6.2 for reporting any problems or complaints they might have, and ensure it is properly implemented.	Low	Implementation: Contractor Supervision: CDR/ World Bank	Part of construction activities
	Social tension between foreign and local workers, and the host community	N/D	M	L	S	C	R	M	M	• The Project implementing agency – CDR- should ensure that the awarded Contractor is committed to adherence to the principles that define equal employment opportunity, while also complying with Decision 29/1 of 2018 restricting a number of jobs in the construction sector to Lebanese citizens. Therefore, equal employment opportunities will be provided to all qualified candidates regardless of color, citizenship status (when applicable), race, religion, gender, and marital status through clear selection criteria. Nonetheless, construction works in Lebanon have always been occupied by foreign labor, namely Syrian labor force. • Inform all workers of the internal GRM for reporting any problems or complaints they might have. • Inform Lebanese citizens of the external GRM for reporting any problems they might face with workers, or any complaint they might have.	Low	Implementation: Contractor Supervision: CDR/ World Bank	Part of construction activities
	Labor- induced sexual abuse and exploitation/ harassment	N/D	H	L	L	C	I	M	M	• Conducting rigorous pre-employment checks of all candidates to avoid hiring any previous offenders; • The Contractor should have a Code of Conduct Policy that all hired labors should sign and follow; • All hired labors should undergo mandatory training that covers sexual abuse and exploitation/harassment, and Gender-Based Violence. Sexual abuse and exploitation/ harassment includes, but is not limited to: - Underage sexual activity; - Exchange of money, employment, goods, or services for sex or sexual favors; and - Engaging in sexual activities with sex workers. Gender-Based Violence can be broadly defined into five categories, and these include: - Sexual violence – rape, sexual assault, and sexual harassment; - Physical violence – hitting, slapping, and beating; - Emotional violence – psychological abuse; - Economic violence – denial of financial resources; and - Harmful traditional practices – forced marriages, and female genital mutilation. • Reporting allegations of sexual abuse and exploitation/ harassment and Gender-Based violence through confidential reporting tools. All allegations should be investigated, and if these allegations are proven, strict disciplinary measures should be promptly taken.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
	Damage to the existing infrastructure	N/D	H	L	S	C	R	M	M	• Trial pits should be executed along the network route to locate the existing infrastructure components; • Sewer lines should be installed at least[1] 3 meters horizontally from and 0.3 meters lower than existing water main lines; • Where the separation requirements cannot be met due to topography, inadequate right-of-way easements, or conflicts with other provisions of these regulations, lesser separation is permissible if: - The water main and the sewer are located as far apart as feasible within the conditions listed above; - The water main and the sewer are not installed within the same trench; and - The sewer line is appropriately constructed to prevent contamination of the water in the main by sewer leakage. • No water main lines should pass through or come into contact with a sewer manhole; and • Ensure the community GRM figuring in Section 6.1 is properly disseminated and implemented.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost
	Property loss due to expropriation	N/D	M	L	L	C	I	H	M	• The CDR and PMU should ensure the proper implementation of the LAP and the grievance redress mechanism developed in the LAP (Section 6) in order to fairly compensate PAPs and address all complaints and grievances within an acceptable period of time and to the satisfaction of the plot owners; and • Ensure the community GRM figuring in Section 6.1 is properly disseminated and implemented.	Medium	Implementation: CDR Expropriation Unit Supervision: CDR PMU/World Bank	Part of construction activities cost
	Disturbances to nearby sensitive receptors from noise and dust generation and traffic	N/D	M	L	S	C	R	H	M	• Properly implement the mitigation measures proposed for dust and noise emissions and traffic; and • Ensure the community GRM figuring in Section 6.1 is properly disseminated and implemented.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost
	Increased pressure on existing infrastructure	N/D	M	L	S	C	R	H	M	• The Project implementing agency – CDR – will ensure the compliance of the awarded Contractor with the proposed waste management plan (refer to Section 5.11.2 above. • Ensure the community GRM figuring in Section 6.1 is properly disseminated and implemented.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost

[1]Separation distances specified should be measured from the nearest outside edges of the facilities.

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Health and Safety Hazards	Potential risks to general health and safety of the sites' workers, nearby residents, commuters, and pedestrians	N/D	M	L	M	C	R	M	M	• Surround the construction areas with scaffolding nets; • Provide sufficient lighting; • Prohibit keeping trenches unnecessarily open and install barriers to avoid falling and tripping; • Fence off all construction sites to prevent unauthorized access, and the contactor must take any other reasonable steps to prevent unauthorized access; • Provide site boundaries by installing suitable physical barriers (roadblocks, tape, fence, etc.); • Mark excavation holes and openings with physical boundaries (barriers, tape or fence), or cover them; • Store and stack work materials (such as pipes, manhole rings, and cement bags) in a safe manner so that they cannot topple or roll over; • Tidily stack, protect and cover materials and equipment where necessary. Additionally, ensure an adequate space for new materials to be stored in secured covered areas to avoid damage, theft, and to protect these items from weather conditions. • Post material indicating the nearest police station and hospital with accident and emergency facilities; • Keep machinery and vehicles passages clear; • Implement a speed limit of 20 km/h for vehicles arriving to and leaving the construction sites; • Provide workers with the appropriate PPE (goggles, dust masks, helmets, hearing protection equipment, proper clothing, safety boots, etc.) and enforce their use; • Maintain the PPE (cleaning when dirty and replacement when damaged or worn out); • Training materials and toolbox talks should be offered to the workers in order to educate and increase workers' awareness of potential hazards and work-related injuries. A record of all safety meetings should be documented for the duration of each and should include the date, topic, attendees, recommendations, and additional comments. Suggested topics include: - Personal Protective Equipment (PPE) - Fire protection and prevention - Electrical safety - Trenching and excavation safety - Slips, trips, and falls protection/prevention, etc. • Safeguard security service providers in Lebanon include CIS Security Services, Protectron Security, Security Flash Control s.a.l. (SFC), Safeguard & Protection Company (SPC), Security Engineering s.a.l., and Security and Services (SAS) along with others. • Ensure the availability of adequate loading and unloading space; • Keep walkways free of tripping hazards such as work materials, and debris; • If work involving the use of flammable materials is being carried out, prohibit smoking and do not allow other work activities involving potential ignition sources to take place nearby; • Prohibit littering; • Avoid burning of materials on-site; • Provide easily accessible first aid kits at the active work site with the appropriate number of materials given the number of workers on-site. The locations of the first aid kits must be indicated to all workers; • Post adequate signs at visible locations throughout the construction area indicating type of operation, potential risks, and appropriate medical/ emergency action response; • Perform staff training about the fundamentals of occupational health and safety procedures, and about handling hazardous material containers and related wastes; • Implement the required air emissions and noise mitigation measures listed in sections 5.5.2 and 5.4.2 respectively; and • Follow the technical note that provides guidance on addressing issues associated with COVID-19, and proposes measures to minimize the risk of transmission of COVID-19 related to construction/civil works. The technical note is provided in Appendix F. Additional COVID-19 considerations in construction/civil works projects recommended by the World Bank are provided in Appendix G.	Low	Implementation: Contractor Supervision: CDR	PPEs Prices/ person: Overall ~12 USD Boots ~100 USD Helmet ~ 5 USD PVC Gloves ~2 USD Welding Gloves ~ 4USD Goggles ~ 3 USD Mask ~8 USD Reusable ear plugs ~1.5 USD Ear Muffs ~28 USD First Aid Kit (for 100 workers) ~200 USD

Operation Phase Environmental and Social Management Plan

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Emissions													
Air	Foul odor emissions	N/D	L	L	L	O	R	M	M	• Ensure proper construction of the sewage network; • Ensure that a regular inspection and maintenance schedule is in place for the sewage network to avoid blocked, broken or cracked pipes; and • Establish an odor complaint grievance mechanism as a measure to allow implementation of timely and effective actions to minimize impacts from odors on downwind receptors.	Low	BWE and concerned Municipalities	Part of operations activities cost
Noise	Noise from the normal operation and maintenance activities	N/D	L	L	L	O	R	L	L	• Notify nearby residents of the networks maintenance plans and the expected duration prior to initiating the works, in conjunction with the concerned municipalities; • Avoid idling of equipment and the generator when not in use; and • Equip all internal combustion engine-driven equipment with intake and exhaust mufflers.	Low	BWE and concerned Municipalities	Part of operations activities cost
Soil and Ground Water Resources	Potential contamination from wastewater overflows and/or leakages	N/D	M	L	M	O	R	M	M	• Proper operation and maintenance procedures for the sewage network including replacing network portions with an expired design life; • Continuous monitoring of any signs of overflows; • Ensure sewage network manholes are closed with proper lids to prevent blockages from fallen bulky objects; and • Prepare an Emergency Response Plan in case of sewer overflows due to clogs in sewer lines or ground subsidence. The Emergency Response Plan will most likely consist of diverting the existing sewage flow to ensure uninterrupted service during maintenance activities, by installing a temporary bypass using flexible pipes, and a sump pump. An Emergency Response team assigned by BWE (operator) must follow the established Emergency Response Plan, and must have access to all sewer facilities, in order to repair any component due to contingencies related to sewer overflows. In case of overflow: - Clean the sewer line to remove grease, grit, and other debris that may lead to sewer overflow (in case of overflow due to clogging); or - Replace sewer line and backfill around the manhole equally to prevent tipping, and compact the fill (in case of ground subsidence).	Low	BWE and concerned Municipalities	Part of operations activities cost
Waste Generation	Operation-and maintenance-related solid and liquid wastes generation	N/D	M	L	L	O	R	M	M	• Implement the measures suggested in section 5.6.3.1 during maintenance activities; and • Provide low toxic or environment-friendly (biodegradable) detergents for general cleaning purposes.	Low	BWE and concerned Municipalities	Part of operations activities cost
Depletion of Resources													
Biological Resources	Normal operation	N/D	L	L	L	O	R	L	L	• Proper management of liquid and solid waste generated by maintenance activities; • Prevention of littering in the area; • Control hunting within the project area.	Beneficial	BWE and concerned Municipalities	Part of operations activities cost
Energy Resources	Energy consumption during maintenance activities	N/D	L	L	S	O	R	M	L	• Adopt a periodic maintenance schedule of power generators, as per manufacturer specifications, and maintain maintenance logs; • Upgrade machines/equipment used for maintenance activities to more energy efficient technology for the purpose of reducing consumption; and • Switch off all machines/ equipment or any other energy consuming appliances when not in use.	Low	BWE and concerned Municipalities	Part of operations activities cost
Other Impacts													

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Traffic	Increase in traffic during maintenance works	N/D	L	L	S	O	R	M	L	• Avoid maintenance works during peak traffic hours; • Display temporary traffic signals and signs to warn of hazards and provide directions especially on narrow one-lane roads; and • Coordinate with municipal police in case of need for road closure and rerouting to be able to carry out specific maintenance activities, preferably ahead of time.	Low	BWE and concerned Municipalities	Part of operations activities cost
Socio-economic	Improvement of overall socioeconomic and environmental conditions of serviced communities and receiving environment from containment of wastewater	P/I	H	L	L	O	-	H	B	-	-	-	-
Health and Safety Hazards	Potential health and safety risks to operation and maintenance workers and nearby receptors, pedestrians, and commuters from maintenance works or from sudden overflows or leakages	N/D	M	L	S	O	R	L	L	• Provide workers with the appropriate PPE (goggles, dust masks, helmets, hearing protection equipment, proper clothing, safety boots, etc.) and enforce their use; • Post adequate signs at visible locations throughout the maintenance area indicating type of operation, potential risks, and appropriate medical/emergency action response; • Prohibit keeping trenches unnecessarily open and install barriers to avoid falling and tripping; • Fence all maintenance sites to prevent unauthorized access; • Store and handle chemicals (if any) as directed by their material safety data sheets and use the required PPEs; • Conduct regular training for workers about health and safety requirements; and • Implement the required ambient air emissions and noise mitigation measures above listed in sections 5.4.3 and 5.5.3 respectively.	Low	BWE and concerned Municipalities	PPEs Prices/ person: Overall ~12 USD Boots ~100 USD Helmet ~ 5 USD PVC Gloves ~2 USD Welding Gloves ~ 4USD Goggles ~ 3 USD Mask ~8 USD Reusable ear plugs ~1.5 USD Ear Muffs ~28 USD First Aid Kit (for 100 workers) ~200 USD
	Improved public health conditions from the proper management of wastewater	P/I	H	L	L	O	-	H	B	-	-	-	-

Environmental and Social Monitoring Plan during Project Construction and Operation

Phase	Impact	Parameters to Monitor	Frequency	Monitoring Location	Number of Samples/Monitoring Points	Standards/Guidelines National/International	Institutional Responsibility	MoE Ref.
Construction	**Emissions**							
	Air Pollutants	• Recorded respiratory health problems among workers • Color of fumes from equipment and construction generators • Emissions of Generators' and construction equipment	• Workers' respiratory problems: monthly • Color of fumes from equipment and generators: daily (visual) • Generators' and equipment's emissions: before starting construction works and monthly afterward (visual)	• Workers' respiratory problems: workers' health records • Color of fumes from equipment and generators: stacks • Generators' and equipment's emissions: stacks	• Generators and equipment stacks for color of fumes • Emissions at generators and equipment stacks for air emissions, and ambient air quality at nearest receptors	• MoE Decision 8/1, dated 2001 (National Standards for Environmental Quality (NSEQ)- Appendix 2-9 for stack emissions • MoE Decision 52/1 – Section 14 for ambient air quality (at receptors)	Site HSE officer	Construction Manager/ Contractors
	Noise	Leq, Lmax, Lmin, L90 dB(A)	• Three times daily during grading and excavation • Once daily during concrete pouring and pipes laying	Near sensitive receptors	Depending on number of receptors	MoE Decision No. 52/1 (Section 10 (Noise Standards)	Site HSE officer	Construction Manager/ Contractors
	Wastewater Generation	Leakages	Daily	Networks and septic tanks (labor sanitary facilities)	Visual inspection	Decree No. 2761of 1933 (Provides guidelines related to wastewater management and disposal; related to the pollution caused by the discharge of liquid waste, emphasizes the prohibition of direct or indirect wastewater discharges and waste disposal into water streams)	Site HSE officer	Construction Manager/ Contractors
	Solid Waste Generation	• Waste types • Waste generation rates (kg or tons/day) • Waste reused • Waste transported for offsite reuse/recycling • Waste disposed of • Method and location of disposal	Daily	Construction site (waste storage)	Daily records	Law 80/2018 (ISWM Law) Law No. 973 dated 1974 (Related to solid waste pollution; followed by the application of Decree No. 8735)	Site HSE officer	Construction Manager/ Contractors
	Depletion of Resources							
	Energy Resources	Fuel bills and fuel quantities consumption follow up	• Daily records • Monthly report	Construction site	Fuel and electricity bills	-	Contractor	Construction Manager/ Contractors
	Water Resources	Water consumption (m3/day) (install water meters to calculate volume consumed per week if applicable)	• Daily records • Monthly report	Construction site	Water bills	-	Contractor	Construction Manager/ Contractors
	Other Impacts							
	Socio-economic	• Number/ percentage of local workers • Number of internal and external grievances submitted/ resolved per month and the	• Local workers: Before commencement and during construction works (monthly) • Number of grievances: During construction works (monthly)	Construction site and at sensitive receptors; Workforce	• Employee records • GRM records • Training records	-	Contractor, concerned municipalities, and PMU	Contractors, concerned municipalities, and PMU

Phase	Impact	Parameters to Monitor	Frequency	Monitoring Location	Number of Samples/Monitoring Points	Standards/Guidelines National/International	Institutional Responsibility	MoE Ref.
		duration for resolving these complaints • Number of Sexual abuse and exploitation/ harassment training sessions, and number of participants • Number of Gender-Based Violence (GBV) training sessions, and number of participants • Number of labors aged below 18 years	• Trainings on topics related to sexual abuse and exploitation/harassment: before commencement and during construction works • Trainings on topics related to GBV: before commencement and during construction works • Verify the age of applicants and update records of labor registry during the recruitment process prior to the commencement of construction works and during, especially when replacing workers and when hiring new ones.					
	Health and Safety Hazards	• Proper PPE use • Good housekeeping practices • Number, type and cause of accidents and injuries • Number of trainings addressing COVID-19 prevention, and number of COVID-19 cases reported	Continuous	Construction site	Accidents and health records	National Decree No. 11802 dated 2004 (Organizing prevention, public safety and occupational health in all institutions, as per the Labor Law)	Site HSE Officer	Contractors
	Archaeology	Monuments/objects found during the works	Daily	Construction site	Visual inspection	National Decree No. 3057 dated 2016 which defines and regulates the procedures followed by the DGA for preventive and rescue excavations.	Workers, Site HSE Officer, Contractor and Supervision Consultant	Contractors
Operation	**Emissions**							
	Wastewater	Leakages/overflow	Daily	Networks	Visual inspection	Decree No. 2761of 1933 (Provides guidelines related to wastewater management and disposal; related to the pollution caused by the discharge of liquid waste, emphasizes the prohibition of direct or indirect wastewater discharges and waste disposal into water streams)	Operator	BWE
	Solid Waste Generation	• Quantity of sludge generated • Method of disposal	During network maintenance activities	Maintenance locations	Records of waste generation and management	Law No. 973 dated 1974 (Related to solid waste pollution; followed by the application of Decree No. 8735)	Operator	BWE
	Other Impacts							
	Socio-economic	Number of grievances submitted/ resolved and the duration for resolving these complaints	During operation phase and maintenance activities	At sensitive receptors and maintenance locations	GRM records	WB OP 4.01	Operator, concerned municipalities, and BWE	BWE, concerned municipalities
	Public health and safety	Number and cause of accidents during maintenance works	During maintenance activities	Maintenance locations	Accidents records	National Decree No. 11802 dated 2004 (Organizing prevention, public safety and	Operator	BWE

Phase	Impact	Parameters to Monitor	Frequency	Monitoring Location	Number of Samples/Monitoring Points	Standards/Guidelines National/International	Institutional Responsibility	MoE Ref.
						occupational health in all institutions, as per the Labor Law)		

1. INTRODUCTION

1.1 GENERAL OVERVIEW

Earth Link and Advanced Resources Development s.a.l. (ELARD) was awarded by the Council for Development and Reconstruction (CDR) (the "Implementing Agency") the development of an Environmental and Social Management Plan (ESMP) and Land Acquisition Plan (LAP) for the construction of sewage extension networks for 14 villages:

- Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and the lower part of Qabb Elias that will connect to El Marj Wastewater Treatment Plant (WWTP); and

- Baaloul and Qaraoun that will connect to Aitanit Wastewater Treatment Plant (WWTP) that also services Machghara and Aitanit.

An ESMP was already prepared, submitted in January 2018 and approved for the Aitanit Wastewater System (Baaloul and Qaraoun) under the same contract. This ESMP is prepared for the El Marj Wastewater System to identify and assess possible impacts resulting from the Project and to propose measures to minimize the significance of negative impacts and maximize the benefits of positive ones. This document was prepared based on the requirements stipulated in the Terms of Reference, Activity I on Environmental and Social Management Plan – ESMP.

1.2 OBJECTIVES OF THE ESMP

The ESMP is an important decision-making tool to ensure that the environmental impacts of the Project are identified and evaluated prior to its commencement and that appropriate control measures are implemented in a timely manner.

The objectives of this ESMP study are to:

- Identify applicable Lebanese legislations, policies, standards as well as international agreements and treaties relevant to the Project;
- Provide a detailed description of the Project activities;
- Describe the environmental baseline conditions of the Study Area likely to be affected by the proposed Project activities;
- Identify the nature and extent of any significant potential environmental and social impacts be they positive (beneficial) or negative (adverse), temporary or permanent;
- Propose appropriate mitigation measures to minimize the significance of the identified impacts;
- Develop an appropriate monitoring plan to ensure the implementation of the proposed mitigation measures during construction and operation;
- Develop a robust Grievance Redress Mechanism (GRM) for workers and affected communities; and
- Conduct and report on public consultation.

1.3 STRUCTURE OF THE ESMP

The ESMP report consists of the following sections:

- Introduction;
- Institutional and Regulatory Framework;
- Project Description;
- Environmental Baseline Study;
- Environmental and Social Impact Assessment;
- Grievance Redress Mechanism
- Public Participation;
- Environmental and Social Management Plan;
- References; and
- Appendices.

1.4 PROJECT PROPONENTS

1.4.1 The World Bank (WB)

The World Bank (WB) is providing financial assistance to the project through the CDR. The WB responsibilities, in the context of this Project, are to:

- Provide technical support to the CDR and other relevant stakeholders as required to ensure a reasonable implementation of the Banks' safeguards; and
- Supervise the implementation of the Bank's environment and social safeguards through the implementation of the ESMP described in this document.

1.4.2 The Council for Development and Reconstruction (CDR)

The CDR is the implementing agency on behalf of the Government of Lebanon which has received financing from the WB toward the cost of the Lake Qaraoun Pollution Prevention Project, which the Project – subject of this study – falls under.

By that, the CDR is leading the execution of the Project and provides procurement, engineering and supervision services. The CDR shall ensure that the recommendations of this ESMP study for El Marj Wastewater System are included in the Terms of Reference (TOR) of the contractors executing the construction activities.

1.4.3 Engineering Consultant

Bureau Technique pour le Développment (BTD) has been assigned by the CDR to provide engineering services to this Project and to prepare detailed engineering, Bill-of-Quantities and tender documents for the implementation of the El Marj Wastewater System. BTD shall integrate the recommendations of the ESMP study into the detailed design, where the ESMP shall become an integral part of the tender documents. Additionally, the contractor is required to prepare a Construction Environmental and Social Management Plan (CESMP) in line with the ESMP of the tender documents that details how the contractor shall implement the provisions of the CESMP. The CESMP must be reviewed and cleared by the CDR, MoE, and WB before the commencement of construction activities.

1.4.4 ESMP Practitioner

ELARD has been assigned by the CDR to act as the environmental and social safeguard consultant for this Project. ELARD has prepared this ESMP in close coordination with the Implementing Agency and other stakeholders.

1.5 BACKGROUND INFORMATION

1.5.1 Project Location

The Project is located in the villages of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol and the lower part of Qabb Elias in the Zahle Caza, and Saouiri which falls in the West Bekaa Caza, Bekaa Governorate of Lebanon. The Project location is shown in Figure 1-1.

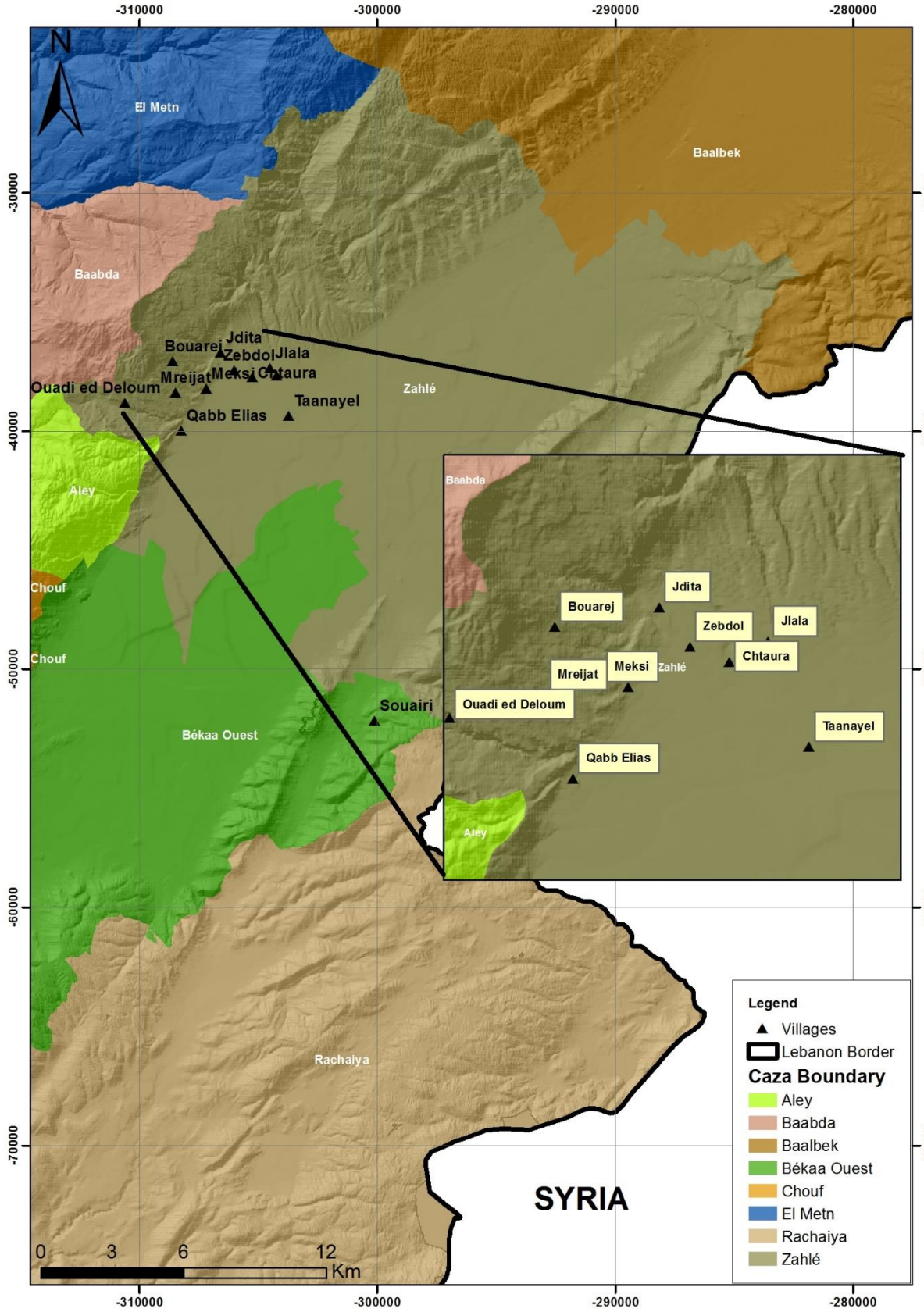


Figure 1-1 Project Location General Overview

1.5.2 Project Need and Objectives

One of the main components of The Lake Qaraoun Pollution Prevention Project is to improve the collection of domestic sewage through the construction of new networks, rehabilitating part of the old ones, and the establishment of new pumping stations where topographically needed.

This includes, among others, the construction of a sewage network and pumping stations in 14 villages in Zahle and West Bekaa Cazas divided into two main systems:

- El Marj Wastewater System (subject of this report): includes Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and the lower part of Qabb Elias connected to El Marj WWTP; and
- Aitanit Wastewater System includes the villages of Baaloul and Qaraoun connected to Aitanit WWTP that also services Machghara and Aitanit.

It should be noted that the Anjar/Majdal Anjar pumping station implementation is part of a different project, while Bar Elias, Qab Elias and El Raouda pumping stations are part of a project funded by the Italian Government. These are the subject of other ESMP reports.

2. LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 INTRODUCTION

This section presents an overview of public and private institutional stakeholders relevant to the Project, as well as applicable legislation, policies, standards and international treaties and agreements setting the regulatory environmental requirements associated with the Project.

The objective is to ensure compliance not only with Lebanese environmental laws and regulations, but also with the World Bank Safeguards Policies as well as relevant international agreements of which Lebanon is signatory, and to observe non-statutory corporate standards and good practice guidance.

2.2 INSTITUTIONAL FRAMEWORK RELEVANT TO THE ESMP STUDY

Various governmental institutions play a role in the permitting and supervision of the Project. These include the Council for Development and Reconstruction (CDR), Ministry of Public Works and Transport (MoPWT), Ministry of Environment (MoE), Ministry of Energy and Water (MoEW), Ministry of Interior and Municipalities (MoIM), in addition to the Bekaa Water Establishment (BWE).

At a local level, the Qaimaqam of West Beqaa District, Governor of Zahle the Union of Zahle District Municipalities, the Union of Bekaa Al Awsat Municipalities, Union of Al Sahel Municipalities, the municipalities of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and Qabb Elias are primary stakeholders in the El Marj Wastewater System addressed in this ESMP report. The role of the different institutions with a particular focus on environmental protection is summarized in Table 2-1.

Table 2-1 Public Administrations Concerned with the Protection of the Environment

Public Administration	Prerogatives
Council for Development and Reconstruction (CDR)	The CDR will lead the execution of the project components and designate competent parties to implement them. The CDR will also supervise the implementation of the Environmental and Social Management Plan (ESMP) and will make sure that the recommendations are included in the Terms of Reference (TOR) of the contractors executing the construction activities. The CDR will be also responsible for the needed land acquisition procedures for the execution El Marj System. In addition to that, the CDR will prepare the necessary reports to be submitted to the World Bank. Finally, CDR submits reports to MoE periodically on CESMP and OESMP implementation as needed.

Public Administration	Prerogatives
Ministry of Environment (MoE)	MoE is the national competent authority responsible for the protection of the environment in Lebanon. MoE is responsible for reviewing the ESMP report for the Project and for issuing the conditions for approval of the Project. Upon approval of the ESMP, MoE is responsible to enforce and supervise the implementation of the Environmental and Social Management Plan (ESMP), through reviewing and approving the Construction Environmental Management Plan (CEMP) and the Operation Environmental Management Plan (OEMP) prepared by the contractor and submitted by CDR and BWE respectively, imposing regular reporting on their implementation by CDR (construction phase) and BWE (operation phase) to monitor their proper implementation, conducting regular audits/inspections during construction and operation activities, pointing out non-compliances, and mandating corrective action) as needed. Moreover, MoE is responsible for making sure the environmental monitoring plan is being implemented by requesting that CDR and BWE provide the monitoring results for the construction and operation phases respectively in the periodic reports to be submitted to MoE and verifying them.
Ministry of Energy and Water (MoEW)/Bekaa Water Establishment (BWE)	The MoEW, through the Bekaa Water and Wastewater Establishment (BWE), is responsible for wastewater and potable water management. The MoEW will be responsible for approving the design of wastewater networks, and other matters related to water resources management. The BWE will monitor the implementation of the ESMP for the project activities during the operation phase.
Ministry of Interior and Municipalities (MoIM)	MoIM manages the affairs of Municipalities and Unions of Municipalities, stops all kinds of infractions and violations, and oversees local authorities' affairs and operations.
Ministry of Public Works and Transportation (MoPWT)	According to Decree 13379/1998, the Directorate General of Roads and Buildings of the MoPWT is responsible for the inspection of sewage networks. Moreover, classified road networks fall under the MoPWT authority. Consequently, it is important to coordinate with the MoPWT when implementing the project.
Litani River Authority (LRA)	LRA has overall responsibility for the management of the Litani River and the Qaraoun lake. It shall oversee the implementation of this project which contributes to the protection of the quality of the River and the Qaraoun Lake.
Unions of Municipalities and Municipalities	The Municipalities and unions of municipalities will supervise the implementation of the ESMP and particularly the ESMP recommendations related to the activities of the current Project during its operation. Local road networks fall under the municipalities' authority. Consequently, it is important to coordinate with the municipalities when implementing the project. The Municipalities and unions of municipalities are responsible to manage complaints from local residents and may be involved if complaints are received during Project implementation.

2.3 RELEVANT LEBANESE REGULATIONS AND STANDARDS

2.3.1 Overview of the Legal Framework in Lebanon

The Lebanese Constitution represents the strongest legislative text in Lebanon and when in contradiction with the Constitution, a proposed legislation(s) cannot be issued. International

treaties/agreements ratified by Lebanon have the second priority in the Lebanese legislative framework. The legal structure in Lebanon is shown in Figure 2-1.

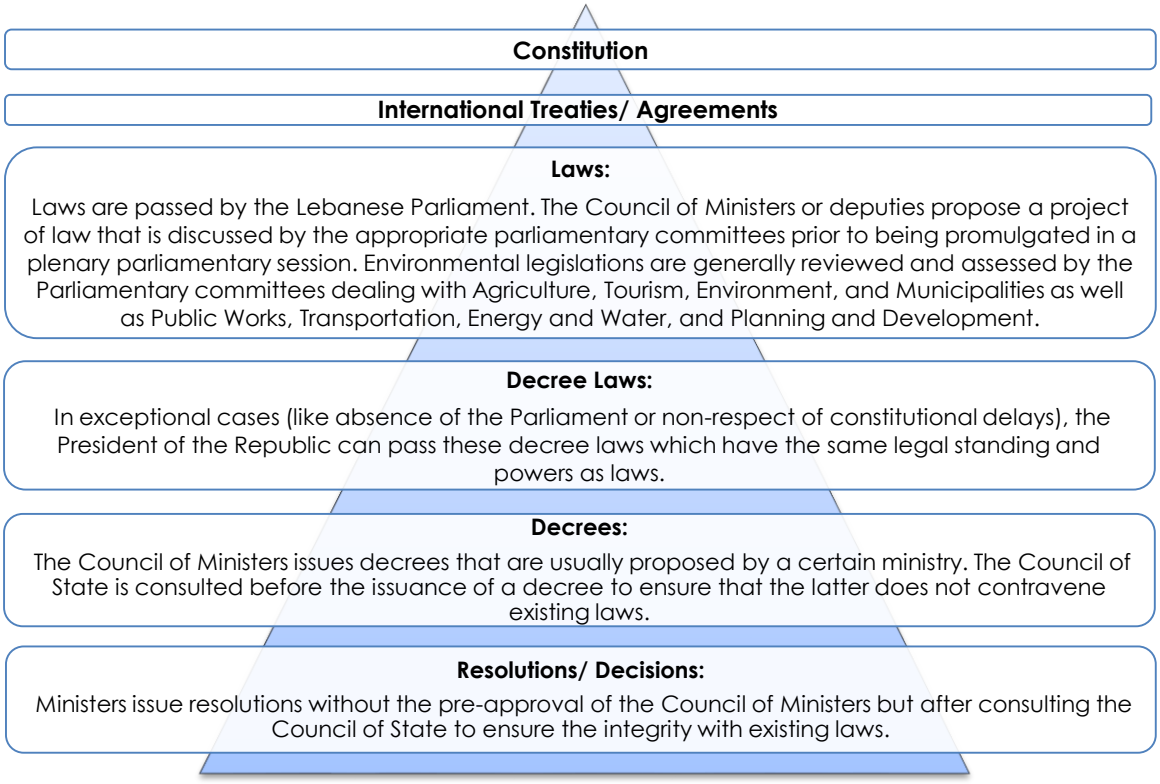


Figure 2-1 Hierarchy of Legislation in Lebanon

2.3.2 Synopsis of the Legislative Framework for Environmental Protection

Table 2-2 presents an overview of the main environmental legislations found in Lebanon dealing with environmental permitting, the management of water resources, solid waste, wastewater, as well as air quality.

Table 2-2 Summary of Relevant Environmental and Social Legislations

Law / Decree	Year	Reference Entity	Relevant Provisions
Environmental Legislations			
Decision 152/1	2020	MoA	Creating a national Hima "protected area" in Kfarzabad, Zahle district, Bekaa governorate on the plots of the LRA.
Decision /998/1	2020	MoE	Specifying the measures and principles of application of the section of Decree 5606/ 2019 relating to hazardous waste generators and their duties (procedure for declaring hazardous waste generation/ suspension of generation, withdrawal of generated hazardous waste, and periodic reporting. • Article 1: Hazardous waste generation reporting mechanism • Article 2: Electronic database for hazardous waste generators • Article 3: Permanent cessation of hazardous waste generation from facilities • Article 4: Recall of hazardous waste from allocated storage facilities and/or treatment facility. • Article 5: Reporting to the Ministry of Environment
Circular 7/1	2019	MoE	Regulates the selection of proper wastewater treatment technologies and the construction and operation of wastewater treatment plants for industrial and classified establishments. Refers to the Environmental Safeguards for planned and existing activities developed by MoE/ EU/UNDP
Decree 5605	2019	CoM	The decree specifies the principles for sorting domestic solid waste at the source into three categories: organic waste, recyclables, and inert waste. Section 2: • Article3: Sources of Domestic Solid Waste • Article 4: Composition of Domestic Solid Waste • Article 5: Responsibility for waste sorting • Article 6: Separation of waste according to the suitable color • Article 8: Sorting mechanism and its stages
Decree 5606	2019	CoM	The decree specifies the principles of management (sorting, storage, transport, and disposal) of hazardous waste. Section 2- Waste Generation and Transport; in specific chapter 1 (Articles 8:, 9, 10, 11 12, 13, 14, 15, 16, and 17) defines the obligations of the waste generator
Law 80	2018	Parliament	Integrated Solid Waste Management Law. It sets the framework for Integrated Solid Waste Management based on the principles of Law 444/2002. It combines the ISWM draft law of 2006 with thermal treatment waste

Law / Decree	Year	Reference Entity	Relevant Provisions
			to energy plants to be constructed in big cities (Tripoli, Beirut, Saida and Jieh). The ISWM law includes the following: • Article 4: The sustainability principle • Article 7: The principle of prevention of uncontrolled dumping, landfilling and burning of solid waste • Article 8 : Polluter Pays Principle • Article 31: Removal of illegal solid waste on private and public property • Article 21: Sorting
Decision 45	2018	MoE	Sets a new Integrated Solid Waste Management (ISWM) policy for Lebanon having the following targets: • Achieving 35% material recovery, 50% energy recovery and 15% sanitary landfilling by 2035; • Devolving to the municipalities the responsibilities of reduction, re-use, sorting at source in addition to sweeping and waste collection. Municipalities will also be responsible for treatment and final disposal in part or in whole based on environmentally and economically viable projects. • Creating sanitary landfills in Beirut, Mount Lebanon, North and South Governorates • Building three interim storage plants for different types of waste including expired drugs, healthcare waste (hazardous and non-infectious and those requiring special management)
Law 77	2018	Parliament	The water resources law aims to organize, develop, and protect water resources. It also aims to promote sustainability by strengthening water establishments. It covers the following: Master plan for water resources and water basins, preserving the quality of water, financial regulations of the water sector, sanitation, compensation for pollution, management of public water utilities, addressing natural hazards that can affect the water sector, and violations and penalties.
Law 78	2018	Parliament	The law for the protection of air quality aims to protect ambient air quality by identifying, monitoring and assessing, preventing and controlling air pollution resulting from anthropogenic activities. This excludes air pollution caused by physical hazards, natural disasters, and occupational and indoor air pollution.
Circular 7/1	2017	MoE	Integrated Solid Waste Management guidelines on the for Municipalities, Union of Municipalities, Qaemmaqams and Governors. It includes information regarding: • Sorting at source • List of establishments accepting recyclables • Positive Environmental Impact related to sorting at source, and the scope of use of recyclables.
Circular 9/1	2017	MoE	Preventing wastewater discharge into artesian wells. The MoE requests the MoIM to ask all concerned parties, especially municipalities and water establishments, to strictly prevent wastewater discharge into artesian wells and to oblige all owners of bottomless artesian wells (ذات الغور المفقود) to close them within one month from the date of issuing the circular; to avoid serious environmental and health damage caused by groundwater pollution.

Law / Decree	Year	Reference Entity	Relevant Provisions
Law 63	2016	Parliament	Litani Pollution Prevention Framework Law - Budgeting for the Implementation of pollution curbing projects in the Litani River basin from source to mouth
Decree 3989	2016	CoM	Designation of an Environmental Police Department within the Ministry of Environment to regulate environmental crimes and enforce penalties; and specification of their organization and mandates.
Decision 261/1	2015	MoE	Defining the procedures for the review of scoping and EIA reports
Decision 262/1	2015	MoE	Defining the procedures for filling and review of an objection on MoE Decisions related to EIAs
Decree 8157	2012	CoM	Establishing the National Council for the Environment and specifying its mandates and organization.
Decree 8633	2012	CoM	Sets the EIA Procedures. It is under the Framework of the Environmental Law. It stipulates the EIA procedures and regulations related to all development Projects that have a potential impact on the environment.
Decree 8213	2012	CoM	Strategic Environmental Assessment of Policies, Plans and Programs in the public sector.
Decree No. 8471	2012	CoM	Environmental Compliance for Establishments Decree. According to this decree, industrial enterprises are required to carry out an EA including an Environmental Management Plan (EMP) at the facility level and to execute the required mitigation measures in order to be eligible to apply for the Environmental Compliance Certificate (ECC). The ECC is a three-year renewable certificate proving the adherence of the industry to environmental standards and application of an environmental management system.
Decree 2275	2009	CoM	Application Decree on the organization and mandates of the MoE, its divisions and departments.
Law 690	2005	Parliament	Law on the Organization of the Ministry of Environment. The Law gives the Ministry of Environment the prerogative to set the standards and norms for the protection of coastal zone, riverbeds and different water resources taking into account the protection of the environment and the conservation of its natural resources.
Decision 3/1	2005	MoE	Environmental Guidelines for the establishment and operation of small-scale wastewater treatment plants.
Law 646	2004	Parliament	Construction Law – Amendment of the Decree-law 148/83.
Law 444	2002	Parliament	Sets the framework for environmental protection. Provides the principles and rules for protecting different environmental matrices (air, water, soil…) from pollution with wastewater, hazardous wastes, chemicals, and noise, etc.; and specifies the penalties for violating environmental laws. • Section 1 (Basic Principles and General Provision) • Section 2 (Organization of Environmental Protection), paragraph 4 (Environmental Monitoring Mechanisms) • Section 3 (Environmental Information System and Participation in Environmental Management and Protection) • Section 4 (Environmental Impact Assessment)

Law / Decree	Year	Reference Entity	Relevant Provisions
			• Section 5 (Environmental Protection) • Section 6 (Responsibilities and Sanctions)
Decision 8/1	2001	MoE	National Standards for Environmental Quality (NSEQ) • Provides standards for stack emission levels and air pollutants emissions discharge limits from generators. Appendix 1 (ELVs)- Tables 1 to 3) and Appendix 2-9 (minimum stack height for generators) • Provides ELVs for wastewater discharged into different receiving media (sewerage system, surface water, sea).
Decision 52/1	1996	MoE	Specifying the National Standards for Environmental Quality (NSEQ) and the Environmental Limit Values (ELVs) for air, water, and noise: • Section 10 (Noise Standards) • Section 14 (Ambient Air Quality standards)
Law 64/88	1988	Parliament	Environmental protection against hazardous waste that could harm air, water, biodiversity, soil, and people; states fines for activities that result in pollution and hazards to the environment and public health. • Table 1 (specifies hazardous substances and non-hazardous waste).
Decree-Law 69	1983	CoM	Decree-law on urban planning.
Decree-Law 68	1983	CoM	Organizing drilling to extend lines of public services in roads. تنظيم أشغال الحفر لمد خطوط الخدمات العامة في الطرق وبراحتها
Law 118	1977	Parliament	• Article 74: License for digging roads to extend public water pipes • Article 51: Regulate traffic and public transport
Decree 8735	1974	CoM	Protection against pollution from solid and liquid waste (prohibiting the digging of wells for the disposal of raw sewage, banning sewage infiltration from septic tanks and the use of untreated sewage for the irrigation of vegetables and some fruit trees), and assigning solid waste management to municipalities.
Law 973/74	1974	Parliament	Relating to solid waste pollution; followed by application Decree No. 8735.
Decree 2761	1933	CoM	Provides guidelines related to Wastewater Management and Disposal; related to the pollution caused by the discharge of liquid waste, emphasizes the prohibition of direct or indirect wastewater discharges and waste disposal into water streams.
Decree law 16 L	1932	CoM	Mandates the establishment of buffer zones for the protection of all surface and groundwater resources from any type of activity/potential source of pollution. Requirements for buffering are found in Decision 320/26.

Law / Decree	Year	Reference Entity	Relevant Provisions
Decision 320	1926	High Commissioner	Related to the protection and use of water bodies belonging to the public domain.
Social Legislations			
Decision 291/	2018	MoL	Restricts a substantive number of jobs to Lebanese citizens in order to protect the workforce and reduce unemployment. These consist of all jobs practiced by Lebanese citizens include tiling, plastering, gypsum board, iron, wood and aluminum profile installation and other decorative tasks. Engineering is also restricted to Lebanese citizens. On March 21, 2018, a clarification letter was issued by MoL regarding Decision 29/1, which states that Syrians are allowed to occupy jobs in the construction sector that are not restricted to the Lebanese as per Decision 29/1 of 2018.
Decree 3058	2016	CoM	Integration of immovable heritage to private and public buildings and properties.
Decree 3057	2016	CoM	Defines and regulates the procedures followed by the DGA for the preventive and rescue excavations.
Law 340 – Penal Code (Abolishment of Article 522)	2016	Parliament	Abolishment of Article 522 of the Penal Code that exempts a rapist from punishment if he marries his victim.
Decree 3791 (amending Decree 7426 of 2012)	2016	CoM	• Set and apply the official minimum wage for employees and workers subject to the labor law and the cost of living ratio. • Raises the minimum daily wage to USD 20.
Law 293	2016	Parliament	Law on Protection of Women and Family Members from Domestic Violence. Advances women's rights and safety. Establishes important protection measures and related policing and court reforms.
Decree 8987	2012	MoL	Forbids the employment of adolescents and children under 18 years of age in jobs that pose a risk to their health, safety and behavior
Law 37	2008	Parliament	Defines and regulates the protection and management of cultural properties.
Decree 11802	2004	CoM	• Organizing occupational safety, safety and health in all institutions subject to labor law • Provides the general regulations for the prevention of occupational hazards and accidents, and the promotion of health and safety in all industrial establishments subject to the Labor Law. These cover prevention and safety, occupational health, the safe use of chemicals at work, as well as occupational noise standards.

Law / Decree	Year	Reference Entity	Relevant Provisions
Law 207	2000	Parliament	Prohibits all forms of discrimination between men and women in the workplace concerning employment type, remuneration, employment, promotions and raises, vocational training and attire.
Ministerial decree	1998	MoC	Prohibits the illicit trafficking of cultural artifacts
Law 623	1997	Parliament	Implementing penalties for vandalism of water, telephone and electricity infrastructure
Decision 49/1	1997	MoL	Forbids the employment of adolescents and children under 18 years of age in non-industrial settings, unless a medical examination proves them apt to perform such work.
Law 58	1991	Parliament	Expropriation law which was modified later on by the Law enacted on 12/08/2006.
Law 21	1990	Parliament	Ratification of the UNESCO convention for the protection of antiquities.
Labor law and its updates	1946	MoL	Sets the framework and rules governing the relationship between employers and employees, including: • Minimum age of employment: 13 years (if the candidate is in good health); subject to yearly medical examinations until the age of 18. • Minimum age for employment in industrial workplaces and tedious tasks and works requiring substantial physical effort, or those posing health risks: 15 years • Minimum age for employment on tasks and works that pose risks or hazards to health and safety: 16 years • Employment record issued by the Ministry of Labor specific to every employee, comprising name, nationality, employer name, photograph, specialty, health consultations, and dates of joining and leaving each establishment. • Working hours for employees under the age of 18 years: ≤o hours, including a one-hour break following 4 continuous working hours. Working hours must exclude the period between 7:00 pm and 7:00 am. • Adolescent employees must be given a resting period of at least 13 consecutive hours between two working shifts. Overtime work and work during breaks, on weekends and holidays are forbidden for adolescents. • Minimum vacation days for adolescents: 21 days following employment for a complete year; 2/3 of which must be taken continuously. • No gender discrimination is allowed in the workplace regarding work type, remuneration, employment, promotion, training and clothing. Employment of women in industrial settings and other tedious and risky works is forbidden. • The right of women for a paid maternity leave (10 weeks according to the latest legislation) • It is forbidden to fire women during their maternity leave • Maximum weekly working hours: 48 hours with a 1-hour break (mid-day)

Law / Decree	Year	Reference Entity	Relevant Provisions
			• Working hours can be reduced based on the level of physical effort required by the job • Right of employees to a continuous 9-hour resting period during a working day • The right of employees for a continuous 36-hour break every week • The right of employees hired since at least 1 year to 15 days of vacation per year, without the right of employers to fire employees during their leave. The right of employees to a paid occupational sick leave in case of occupational accident, the duration of which varies based on the case.
Decision 225	1934	High Commissioner	Establishes a system for penalizing violations related to laws on ancient monuments and ruins and historical buildings.
Law 166/LR	1933	Parliament	Sets "the regulation of ancient monuments".

2.3.3 EIA Decree and Project Relevance to Environmental Protection Law

The EIA Decree No. 8633/2012 sets specifications and criteria for environmental standards and requirements, principles, and measures necessary to assess the environmental impact of development projects. The EIA Decree addresses the objectives of the regulation, definitions, as well as various stages of the national EIA process such as screening, scoping, implementation, and review of the EIA report, in addition to the period of validity, and the appeal process. The EIA Decree also lists all the activities for which an EIA study or permit conditions are mandatory, and those that require an IEE (refer to Appendices 1, 2 and 3 of the EIA Decree). The main steps of the EIA Implementation Process in Lebanon are summarized in Figure 2-2 as described in Appendix 9 of the EIA Decree.

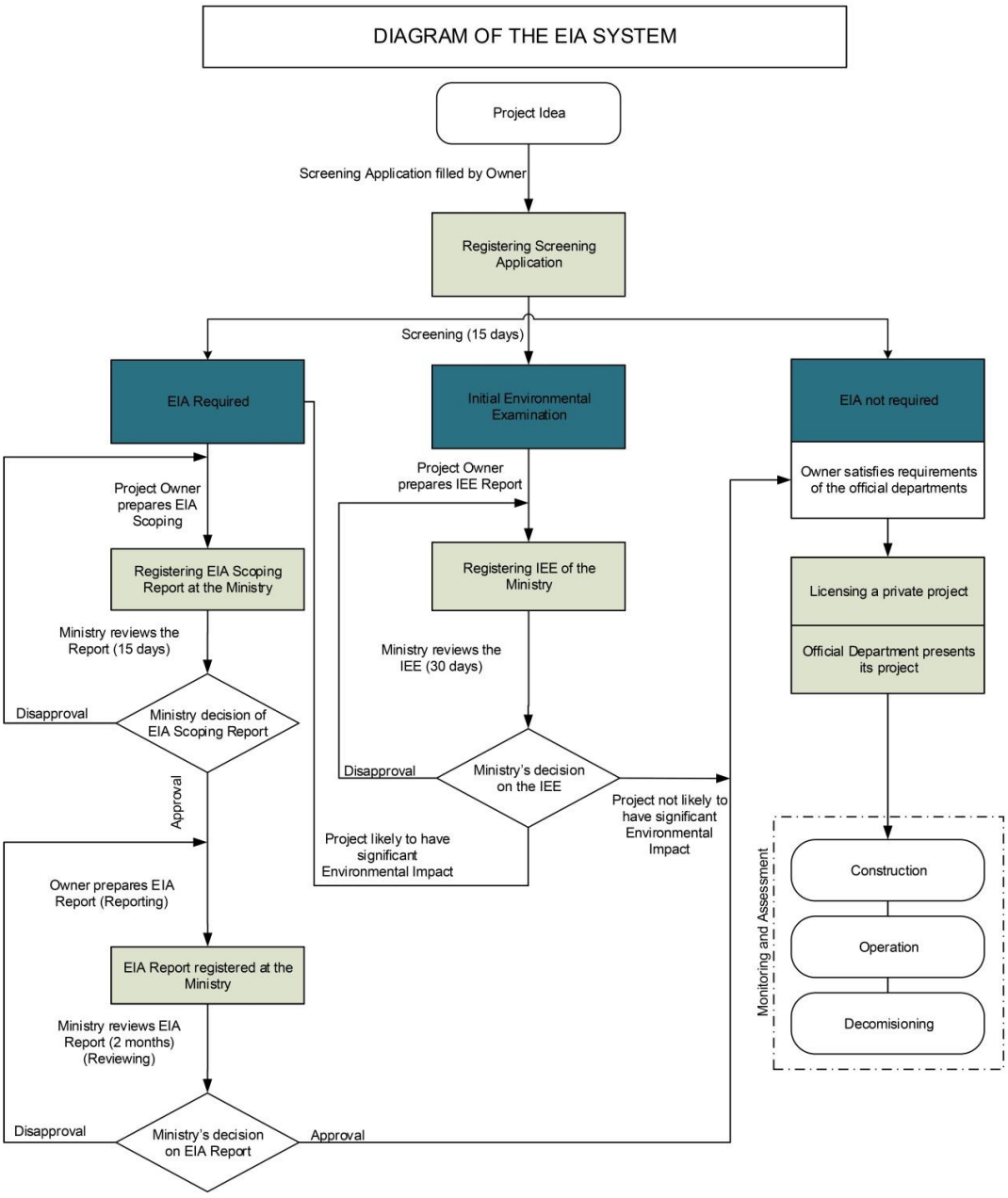


Figure 2-2 Schematic Diagram of the IEE Licensing Procedure

2.3.4 Relevant National Environmental Standards

The main legislative texts that stipulate environmental standards in Lebanon are listed in Table 2-3. National emission and discharge standards were established by MoE in Decision 52/1 dated 1996 and later updated and complemented in the Ministerial Decision 8/1 dated 2001. The relevant national standards are detailed in Appendix D and grouped into the following:

- Ambient Air Quality and Stack Emissions
- Noise
- Wastewater Discharges and Treated Effluent Reuse.

Table 2-3 Relevant National Environmental Standards

Relevant Standards*		
Ministerial Decision No. 52/1, MoE	29/7/1996	National Standards for Environmental Quality and Environmental Limit Values for Air, Noise, Water and Soil
Ministerial Decision No. 8/1, MoE	30/1/2001	Updates/complements Decision No. 52/1 by developing National Standards for Environmental Quality (NSEQ) related to air pollutants and liquid waste emitted from classified establishments and wastewater treatment plants into receiving water bodies for both new and existing facilities.

2.4 INTERNATIONAL AGREEMENTS AND TREATIES

Lebanon has ratified 50 International Conventions (48 actually in force). Those treaties and conventions, which are most relevant to the proposed Project activities, are listed in Table 2-4.

Table 2-4 Ratified or Signed International Agreements Relevant to the Project

Agreement	**Objective**	**Relevance to Project**
Convention on Biological Diversity, Rio de Janeiro – 1992 Ratified by Lebanon in 1994	1. To conserve biological diversity; 2. To use biological diversity in a sustainable way; and 3. To share the benefits of biological diversity fairly and equitably.	Protection and conservation of biodiversity during construction and operation activities
Convention to Combat Desertification – 1994 Ratified by Lebanon in 1994	To combat desertification	Control land clearance and Project footprint size
The Framework Convention on Climate Change, or Global Warming Convention (UNFCCC)– 1992 Ratified by Lebanon in 1994	To achieve stabilization of greenhouse gas concentrations in the atmosphere in order to prevent dangerous anthropogenic interference with climate system	Reduce greenhouse gas emissions from construction and operation activities
The Kyoto Protocol – 1997 Ratified by Lebanon on 13/11/2006	To reduce greenhouse gas emissions in an effort to prevent anthropogenic climate change	
Paris Agreement – Paris Climate Conference (COP21), part of the UNFCC – 2015.	To reaffirm the goal of limiting global temperature increase well below 2 degrees Celsius; To establish binding commitments by all parties to make "nationally	

Agreement	Objective	Relevance to Project
Agreement Entered into force on October 2016. Signed by Lebanon in 2016. Not yet Ratified	determined contributions" (NDCs), and to pursue domestic measures aimed at achieving them; To commit all countries to report regularly on their emissions and "progress made in implementing and achieving" their NDCs, and to undergo international review; To commit all countries to submit new NDCs every five years, with the clear expectation that they will "represent a progression" beyond previous ones; To extend a mechanism to address "loss and damage" resulting from climate change; and To call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country's NDC.	
Vienna Convention for the Protection of the Ozone Layer – 1985 Montreal Protocol on Ozone-Depleting Substances – 1987 and its amendments Ratified by Lebanon between 1993 and 1999	To protect human health and the environment from any activity that modifies the ozone layer Adopt measures to control human activities found to have adverse impact on the ozone layer	Regulate the use of ODS (ozone depleting substances) during all phases of the Project
International Labour Convention No. 139, 120 and 136 Lebanon has ratified 50 International Labor Conventions (48 actually in force)	Prevent vocational risks ensuing from cancer causing materials and tools Deals with sanitation in offices Protect workers against the risks of intoxication ensuing from benzene	Protect workers' health and ensure proper sanitation and hygiene for base camps, work environment and offices
Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property; Paris, 14 November 1970 Ratified by Lebanon in 1992	To find means to protect cultural heritage from the dangers of illicit export and transfer of ownership	Protection of any potential cultural properties and natural heritage found in the project sites
Convention concerning the Protection of the World Cultural and Natural Heritage; Paris, 16 November 1972 Ratified by Lebanon in 1983	To identify, protect, conserve, present and transmit the cultural and natural heritage to future generations	

2.5 WORLD BANK SAFEGUARD POLICIES AND EMISSION LIMITS

2.5.1 World Bank Safeguard Policies

In addition to the Lebanese laws and regulations, the ESMP and subsequent safeguard instruments (e.g. ESIAs and ESMFs) should comply with the safeguards policies and procedures of the World Bank–specifically OP/BP 4.01 on Environmental Assessment and Involuntary Resettlement (OP/BP 4.12). Under the Bank's safeguard requirements, El Marj Wastewater System has been assigned an EA Category "B" given the nature of the proposed activities which will not have highly significant adverse environmental and social impacts.

Table 2-5 presents a synthesis of the Bank's safeguards policies and indicates which ones have been triggered by project activities funded under El Marj Wastewater System.

Table 2-5 El Marj Wastewater System Applicable World Bank Safeguard Requirements

Yes	If applicable, how might it apply
[✓]	Environmental Assessment (OP/BP/GP 4.01 Environmental Assessment should be conducted for projects which fall under World Bank Category B. OP 4.01 is triggered as the project could have impacts on the environment due to site clearance, trenching, excavation, backfilling, grading, compaction and associated civil works. To identify and manage potential adverse impacts on the environment from project-funded interventions –such as those mentioned above- the borrower will prepare an Environmental and Social Impact Assessment (ESIA)/ Environmental and Social Management Plan (ESMP) for site-specific schemes/activities. Where ESMF is applied, the ESMP will need to be prepared, approved, and disclosed before any construction works would start on the ground.
[✓]	Involuntary Resettlement (OP/BP 4.12) The need for involuntary resettlement or land acquisition in specific subproject areas will only be known during project implementation, when site-specific plans are available. Therefore, subprojects will be screened for applicability of the resettlement policy and any subprojects involving involuntary resettlement or land acquisition will only be approved after preparation of a resettlement plan acceptable to the Bank. Several issues will increase the complexity of land acquisition, such as the lack of reliable land record systems, and the inability of people losing land to either document ownership or be physically present to make their claims for eligibility. The safeguards framework will therefore include procedures for identifying eligible project-affected people, calculating and delivering compensation, and mechanisms for land dispute grievance redress. OP 4.12 covers those persons affected by involuntary taking of land. The other social dimensions including poverty impacts, gender, and civic engagement, etc. will be covered by ESIA of site-specific subprojects. The site-specific ESMPs will include measures to minimize and mitigate adverse social impacts, particularly on poor and vulnerable groups.

In view of this, the ESMP will address the requirements of the triggered policies.

Under the requirements of OP4.01, environmental screening enables project classification for proposed projects into three main categories, depending on the type, location, sensitivity and nature of environmental impacts.

- Category A: Significant adverse environmental impacts, broad, irreversible, major resettlement.

- Category B: The impacts are localized, short-term, and reversible and have no severe effects on the environment. Simple and low/moderate cost mitigation measures will be sufficient to restore the potential damage or keep it to the lowest possible.
- Category C: likely to have minimal or no adverse environmental impacts.

As earlier explained, EL Marj Wastewater System has been classified as a **Category B project**.

In addition, due to the nature of El Marj Wastewater System activities, the General and Industry Environmental, Health and Safety Guidelines (EHSGs), in particular the General Guidelines and Sector Guidelines for Construction and Decommissioning should be used as appropriate[2].

2.5.2 Environmental Assessment (OP 4.01)

For all projects financed by the Bank, environmental screening is conducted according to the environmental impacts expected of the project, and all projects are assigned an environmental category, A, B, C, or FI, with a decreasing order of environmental impact severity. The instruments for this policy vary from a strategic environmental assessment, environmental and social management framework, environmental and social impact assessment, depending on the project specific circumstances. This project has been assigned environmental category "B" since the environmental impacts are expected to be minimal, during the construction phase, and can be mitigated via an environmental management plan.

2.5.3 Involuntary Resettlement (OP 4.12)

Significant efforts are to be made in the design and screening stages of the construction phase to avoid adverse impacts on people, land, property, including people's access to natural and other economic resources, as far as possible. The Resettlement Policy Framework (RPF) sets the guidelines for the Resettlement and Compensation Plans (RAPs) that would have to be prepared when any program investment triggers this policy. The RAPs would also have to be approved by the Bank as a condition for a particular municipality to have its construction project financed.

2.5.4 Public Consultations and Disclosure Policy

Public Consultation: The Bank requires that stakeholder consultations be undertaken during planning, implementation and operation phases of the project. Under the Bank's OP 4.01 Policy, for all Category A and B projects, during the EA process, the borrower consults project affected groups and local non-governmental organizations (NGOs) about the project's environmental aspects and takes their views into account. The borrower initiates such consultations as early as possible. For Category A projects, the borrower consults these groups at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared. In addition, the borrower consults with such groups throughout project implementation as necessary to address EA related issues that affect them.

Disclosure: According to OP 4.01, for meaningful consultations between the borrower and project-affected groups and local NGOs on all Category A and B projects, the borrower

[2] See ifc.org/ehsguidelines

provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted.

For a Category A project, the borrower provides for the initial consultation a summary of the proposed project's objectives, description, and potential impacts; for consultation after the draft EA report is prepared, the borrower provides a summary of the EA's conclusions. In addition, for a Category A project, the borrower makes the draft EA report available at a public place accessible to project-affected groups and local NGOs.

Any separate Category B report is made available to project-affected groups and local NGOs. Public availability in the borrowing country and official receipt by the Bank of Category A reports, and of any Category B EA reports, are prerequisites to Bank appraisal of these projects.

Once the borrower officially transmits the Category A EA report to the Bank, the Bank distributes the summary (in English) to the executive directors (Eds) and makes the report available through the Bank's external website. Once the borrower officially transmits any separate Category B EA report to the Bank, the Bank makes it available through the Bank's external website. If the borrower objects to the Bank's releasing an EA report through the World Bank External Website, Bank staff submit the issue of further processing to the Eds.

Approval & Disclosure of Instruments

"All safeguards instruments including the ESMF, ESIA, ESMP, RAP, etc. will be approved/cleared by the World Bank and disclosed on the Bank's website as well as locally in a manner culturally appropriate and in a language understood by all affected Persons and stakeholders. For any changes made to these documents, the same approval and disclosure process will be followed".

2.5.5 WBG Emission Limits

Table 2-6, Table 2-7 and Table 2-8 present the WBG emission levels for ambient noise, effluent discharges and ambient air quality.

Table 2-6 Indicative Limits for ambient noise

WB Ambient Noise Limits		
Receptor	**One hour Laeq (dBA)**	
	Day (07:00– 22:00)	**Night (22:00 – 07:00)**
Residential; Institutional; educational	55	45
Industrial; commercial	70	70

Table 2-7 Indicative Limits for discharge of liquid effluent into sewer systems

Parameters/pollutant	**Effluent pollutants threshold (WB requirements)**
pH	6 – 9 pH
BOD mg/l	30
COD mg/l	125
Total nitrogen mg/l	10
Total phosphorus mg/l	2
Oil and grease mg/l	10
Total suspended solids mg/l	50
Total coliform bacteria (Most Probable Number/100 ml)	400

Table 2-8 Indicative limits for air quality (WB Requirements, µg/m³)

	Ambient air pollutants threshold			
Exposure period	1-hour	8-hour	24-hour	1-year
Carbon monoxide CO µg/m³	N/A	N/A	N/A	N/A
Sulfur dioxide SO_2 µg/m³	N/A	N/A	125	N/A
Nitrogen oxides NO_x µg/m³	200	N/A	N/A	40
Particulates PM_{10} µg/m³	N/A	N/A	150	70
Particulates $PM_{2.5}$ µg/m³	N/A	N/A	N/A	N/A
TSP µg/m³	N/A	N/A	230	80
Ozone	N/A	160	100	N/A

3. PROJECT DESCRIPTION

This section describes the proposed Project and its different components to a level of detail commensurate with the available data at this stage of design. The term Project refers to the proposed El Marj Wastewater System, namely in the villages of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and lower Qabb Elias – subject of this ESMP report.

3.1 EXISTING WASTEWATER MANAGEMENT SYSTEMS

With the exception of Saouiri village that discharges its wastewater into cesspools, the remaining 11 localities are connected to the municipal wastewater network which covers between 40% and 90% of the building units as shown in Table 3-1. Collected wastewater is mostly discharged into water bodies and diverted downstream to irrigation canals.

Table 3-1 Wastewater Network Coverage and Discharge Location in the 12 Localities

Locality	Wastewater Network Coverage (%)	Discharge location
Bouerij	51	Makse River
Chtaura and Jlala	93	Chtaura River
El Mraijet	87	Makse River
Jdita	80	Chtaura River
Makse	59	Makse River
Qabb Elias and Wadi Ed Delem	85	El Siyade River
Saouiri	0	Cesspools
Taalabaya	90	Berdaouni River
Zebdol	43	Chtaura River

The proposed El Marj WWTP is located between El Marj and Qabb Elias localities, with approximate coordinates of 33°44'38.79"N and 35°50'46.41"E, as shown in Figure 3-1. The WWTP is designed to operate at an average flow of 43,200 m^3/day and on a peak flow of 86,400 m^3/day. The treated effluent will be discharged into the Litani River.

The WWTP consists of the following units:

- Two mechanically-operated fine screens, and one by-pass manually-operated fine screen where large solids are retained and collected manually to garbage bags;
- Two Sand/grit/grease and oil removal tanks;
- Influent lift station with seven (six duty and one standby) submersible pumps in phase 1, and another seven (six duty and one standby) submersible pumps in phase 2;
- Four primary clarifiers;
- Four anaerobic tanks with two submersible mixers per tank, eight anoxic tanks with two submersible mixers per tank, and four Aerobic tanks. These biological tanks are utilized to maintain a desired bacterial mass;

- Four secondary clarifiers;
- Two chlorine contact tanks;
- Four raw sludge thickeners;
- Four aerobic sludge digesters;
- Four belt filter presses;
- Four GAC filters to eliminate the odor emissions: two will be installed in the pretreatment building, and two in the sludge dewatering building.

Figure 3-1 El Marj WWTP Proposed Location – Aerial View

3.2 PROPOSED WASTEWATER MANAGEMENT SYSTEMS

The proposed El Marj wastewater system includes the construction of 321.52 km of additional sewer lines (gravity lines and one force main). The additional sewer lines in Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, and the lower part of Qabb Elias and part of Saouiri will be constructed within the public domain along the existing roads Right-of-Way. The remaining sewer lines and the force main in Saouiri will be located on private lands. The following sections present the proposed wastewater management systems specific to each of the above-mentioned localities.

3.2.1 Construction Works in the Localities

Construction works in the 12 villages will comprise of:

- A total length of 319.42 km sewer lines (including house connections) made up of either unplasticized Polyvinyl Chloride (uPVC), Glass Fiber Reinforced Plastic (GRP), Glass

Reinforced Epoxy (GRE), or concrete as gravity sewer lines with a diameter ranging between 150 mm and 1,000 mm.

- A force main laid over a 2.1 km asphalt road, constructed from either Ductile Iron (DI) lines or GRP lines of 300 mm in diameter. Alignment of the proposed sewer lines in the village of Saouiri is shown in Appendix A of this report.

The locations of the proposed sewer lines are shown in Figure 3-2 and Appendix A.

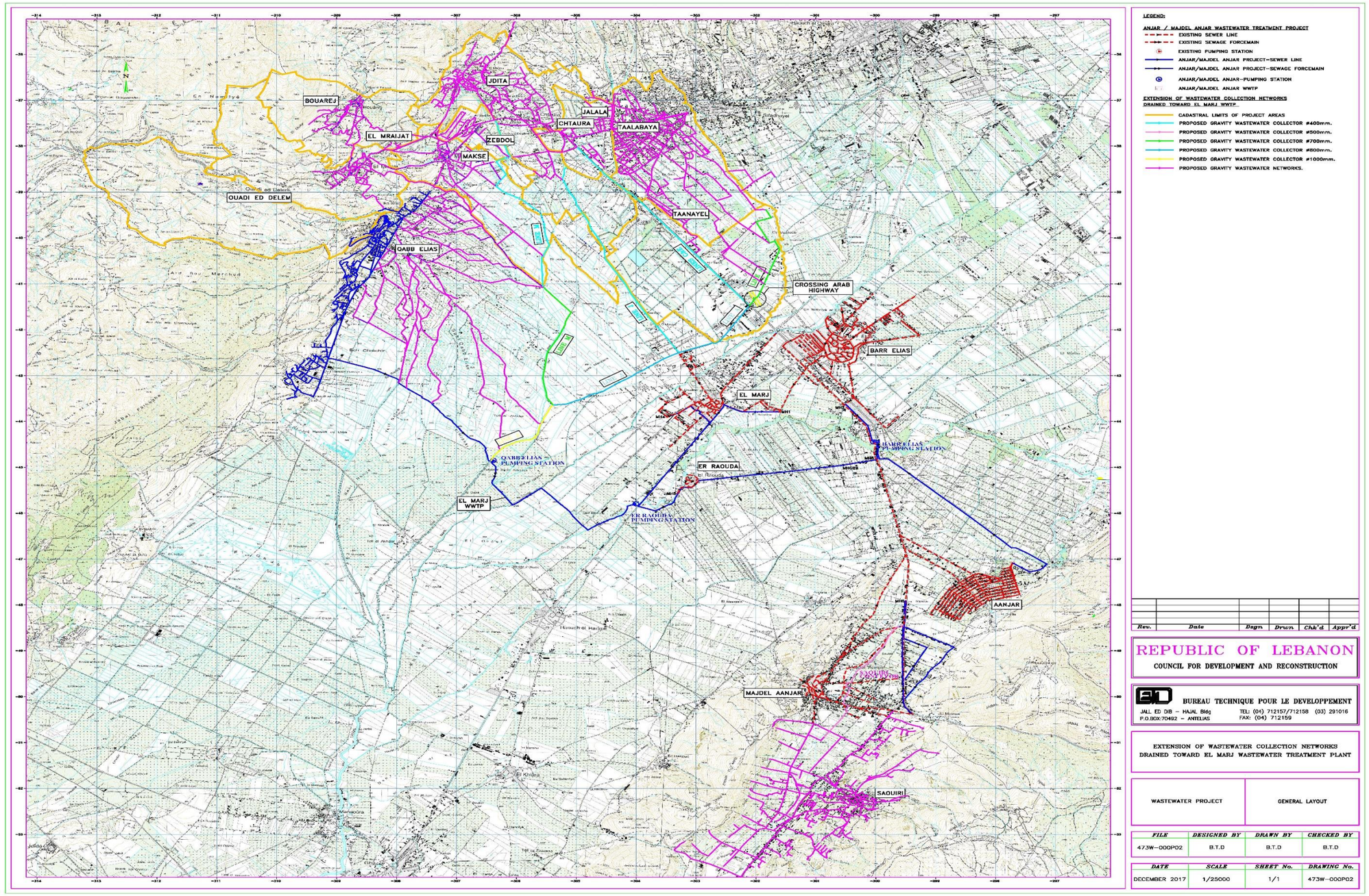


Figure 3-2 Map Showing the Proposed Sewer Lines[3]

[3] Anjar/Majdal Anjar pumping station implementation is part of a different project, while Bar Elias, Qab Elias and El Raouda pumping stations are part of a project funded by the Italian Government. These are the subject of other reports.

3.3 CONSTRUCTION PHASE

3.3.1 Main Construction Activities

Activities involved in the site preparation and construction works of the proposed additional sewer lines in the 12 localities are:

- Site clearance
- Excavation
- Backfilling
- Pipe works
- Concrete works
- Plastering
- Waterproofing
- Metal works
- Testing and commissioning
- Road reinstatement.

3.3.2 Main Construction-related Materials

The main potential construction-related materials associated with the construction of the proposed additional sewer lines are listed in Table 3-2. These have been extracted from the Bill-of-Quantities prepared by the Engineering Consultant.

Table 3-2 Main Construction-related Materials Associated with the Sewer Lines Construction Activities

Construction-related Materials Associated with the Sewer Lines Construction Activities	Quantity (Unit of measurement)
Pipeworks	321,520 m*
Sand or gravel bedding and surrounds	210,327 m*
Reinforced concrete bedding and surrounds	15,732 m*
Concrete manholes	6,299 units
Manhole covers and frames	6,303 units
Concrete works	255 m^3
Asphalt for reinstatement of paved roads including base, sub-base and wearing courses	270,549 m^2

* As per BoQ, materials provided in linear meters and not quantities or volumes

Sourcing of raw materials will be from duly permitted sites; these have not yet been defined and will be defined once the contractor is selected.

3.3.3 Construction Schedule of Main Activities

The overall duration of construction activities for the proposed Project is 30 months, and is detailed per activity in Table 3-3.

Table 3-3 Proposed Construction Schedule for the Installation of Additional Sewage Networks

Activity	Duration (months)
Mobilization, materials delivery to site	1.5
Excavation, sand bedding, pipe laying, hydro-testing, backfilling, and reinstatement	5.5
Installation of additional sewer networks	19
Testing and commissioning	4
Total Period	**30**

3.3.4 Construction Equipment

Equipment and machinery employed at a typical construction site where the proposed works are executed are presented in Table 3-4 below. Nevertheless, the count of equipment and machinery to be used is not available at this stage. The awarded Contractor shall provide this at a later stage.

Table 3-4 List of Construction Equipment and Machinery

Equipment/Machinery
Air compressor
Asphalt spreader/paver
Backhoe loader
Bench Saw
Bulldozer
Circular Saw
Compressor
Concrete mixer truck
Drill
Dump truck
Excavator Truck (Poclain)
Fuel tanker
Grinder
Ground excavation dozer
Hole Cutter
Jack hammer
Leveling ground grader
Mobile Concrete pump
Mobile Crane
Pick Up
Plate compactor
Pneumatic breaker (Breaking hard ground)
Rock Breaker (Jack Hammer)

Equipment/Machinery
Roller compactor
Shovel Truck
Water tanker
Welding machine

3.3.5 Power Supply and Energy Consumption

For each construction site, the needed electricity will be supplied by Electricité Du Liban (EDL), if possible and private generators as needed. Details regarding the capacity of the generators, fuel consumption for the generators, equipment and machinery, and construction site fuel storage tanks are not available at this stage.

3.3.6 Water Supply

Water during construction will be needed for concrete batching activities, hydro-testing, compaction, dust suppression, and daily domestic use of workers. Water tankers will supply water from providers in the area. Water will be stored in plastic tanks onsite. Water consumption quantities are not available at this stage and will be estimated by the selected Contractor at a later stage.

3.3.7 Wastewater Generation

Wastewater generated during the construction phase will consist mainly of hydro-test water (for the hydraulic testing of pipes), concrete washout water, and domestic wastewater (onsite temporary toilets, lavatories, etc.). Wastewater will be either collected and discharged at the nearest existing manhole connected to the sewage network, or collected into an onsite temporary septic tank that will be regularly emptied by service providers in the area.

3.3.8 Solid Waste Management

Domestic solid waste generated during this phase will be disposed of along with the municipal solid waste stream generated in the Project area, collected by the municipalities of the 12 concerned localities.

Construction and demolition waste that cannot be reused onsite will be appropriately disposed of at a location approved by the involved municipalities and MoE. Hazardous wastes (oil, grease, bitumen, chemicals, etc.) will be stored and disposed in coordination with the concerned municipalities and the MoE. No waste will be left on-site after the completion of construction works, and onsite waste burning will be prohibited.

3.3.9 Manpower, Transportation, and Security

The number of workers needed varies depending on the construction activities. The average manpower forecast required for the execution of works is not available at this stage. The selected contractor shall decide on the team size, number of workers of different categories, their functions/ roles, and the schedule and shifts.

There is still a lack of data on the location of the labor camp – if any – at this design stage. Due to the considerable number of foreign nationals living in the Bekaa region who already work in the construction sector, it is likely that workers will be already living near the project areas, and thus no labor camp will be needed. However, two site offices, including a meeting room, a kitchen and a restroom will be set up at the project site for site engineers and supervisors (contractor/ consultant), as well as space for parking equipment and vehicles. Additionally, access to restrooms will be provided for workers during the construction phase. Occupational Safety and Health Administration (OSHA) recommends providing one (1) unit for every 20 workers on site. As for drinking water, since it is likely that workers will be hired from the area, the Contractor might agree with them on either a daily or a monthly fee, and they would be in charge of their food and beverage expenses, as is often the case.

Transportation of construction materials and wastes, and laborers, will be carried out by the awarded Contractor in conformance with the applicable laws and regulations related to road and public safety.

Construction sites will be secured from public access and trespassing by proper fencing and delineation of sites, installation of warning boards, and appointment of onsite guards. Additionally, a Project sign will be installed on site upon commencement of works displaying the Project name, implementing agency, assigned contractor, funding organization, and information on the GRM.

3.4 OPERATION PHASE

During the operation phase, operation and maintenance teams of the BWE will carry out day-to-day activities of the wastewater network.

3.4.1 Wastewater Management

Under the normal operating and maintenance conditions of the sewage networks, no wastewater is expected to be generated. Nevertheless, faulty operation and maintenance practices or sudden malfunctioning in the sewage collection lines is expected to result in raw wastewater overflows. This might result in the generation of foul odors and bases for vector breeding – if not promptly resolved.

3.4.2 Solid Waste Management

Solid wastes will be generated during maintenance works involving the repair of sewer pipelines – mainly wastewater/ sludge residues. Such wastes will be disposed of in El Marj WWTP in coordination with the concerned municipalities and the BWE.

4. ENVIRONMENTAL AND SOCIAL BASELINE

This section establishes the baseline environmental and social conditions within the designated Study Area. Aspects considered cover the physical, biological and socioeconomic environment. For this purpose, published documents were reviewed and analyzed in order to define the characteristics of the existing environment and the projected future environment assuming the non-implementation of the Project.

The desk study involved a review of the published literature, reliable Internet sources and available satellite images of the Project Area. Information on the area was verified and supplemented through an environmental baseline field investigation. The field survey was in the form of a walk-through along the proposed Study Area.

The results of the field and desk surveys were documented through maps, photographs and text describing the existing state of the environment prior to the construction of the proposed Project.

4.1 PROJECT BOUNDARIES

The proposed Project extends within the villages of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and the lower part of Qabb Elias, in the Caza of Zahle, in the Bekaa Governorate of Lebanon (Figure 3-2). The additional sewer lines in all localities, except for part of Saouiri, will be constructed within the public domain along the existing roads Right-of-Way. The remaining sewer lines and force main that will be constructed in Saouiri will be located on private lands. Affected plots, their total areas, and areas needed for expropriation for the construction of the sewer lines in Saouiri are presented in Table 4-1. Additionally, plot /2070/ is state-owned by the GoL, and thus land acquisition of this plot will be through the process of designation, whereby 28 m^2 out of the 27,317 m^2 require acquisition.

A Land Acquisition Plan (LAP) has been prepared for the project, where all property to be expropriated has been identified and assigned a monetary value based on the assets that will be affected. Project affected persons (PAPs) have been consulted, and plot owners will be compensated based on replacement cost of land, trees and physical structures that will be affected. The LAP report was submitted to CDR and the World Bank on October 10, 2019, and can be referred to for additional details regarding land acquisition.

Table 4-1 Affected Plots and their areas in Saouiri

Plot Number	Plot Area (m^2)	Expropriation Area (m^2)
/506/	1,225	288
/510/	4,934	216
/511/	4,308	65
/512/	4,461	65
/513/	5,957	74
/514/	11,496	72
/560/	7,319	18

Plot Number	Plot Area (m²)	Expropriation Area (m²)
/559/	8,447	66
/2130/	2,019	17
/558/	7,201	41
/517/	3,988	37
/518/	3,161	36
/519/	3,473	40
/520/	6,927	96
/521/	10,327	165
/522/	3,351	51
/523/	1,539	119
/524/	7,477	85
/527/	4,712	8
/2131/	2,549	9
/2158/	4,277	14
/2159/	1,927	8
/550/	4,026	12
/549/	10,836	63
/548/	9,543	64
/541/	3,143	274
/954/	5,860	347
/947/	22,091	255
/2405/	1,363	137
/2404/	1,303	60
/2406/[4]	2,557	2,557
/1714/	1,179	56
/1717/	3,653	96
/1718/	1,650	82
/1719/	3,046	137
/1720/	1,462	143
/1726/	2,553	69
/1725/	4,739	128
/1724/	2,776	70
/1742/	4,388	438
/2195/	5,563	241
/1739/	563	2
/1738/	1,549	47

[4] Plot /2406/ consists of a road constructed for allotment purposes (طريق إفراز); the entire plot will be expropriated for construction of the network

Plot Number	Plot Area (m^2)	Expropriation Area (m^2)
/1747/	5,962	72
/1753/	7,647	29
/1737/	895	101
/111/	5,642	318
/110/	8,455	282
/109/	1,415	268
/108/	10,215	296
/1652/	16,805	215
/1656/	16,261	160
/1657/	7,170	121
/1672/	7,898	505
/1682/	1,362	269
Total	**294,645**	**9,504**

4.2 PHYSICAL ENVIRONMENT

4.2.1 Climate and Meteorology

Climatic and meteorological data for the year 2017 were obtained from the Lebanese Agricultural Research Institute's (LARI) two stations that are in proximity to the study area: Houch Aammiq and Barr Elias stations.

4.2.1.1 Temperature

The Study Area is characterized by hot, dry summers and relatively cold, wet winters. Average Minimal and Maximal temperatures recorded between January 2013 and December 2017 are represented in Figure 4-1. Average monthly temperatures recorded at Houch Aammiq station ranged between a minimum of -2.2°C in January 2015 and a maximum of 38.2°C in July 2017. Average monthly temperatures ranged between a minimum of -2.7°C in February 2017 and a maximum of 36°C in July 2017 at Barr Elias station.

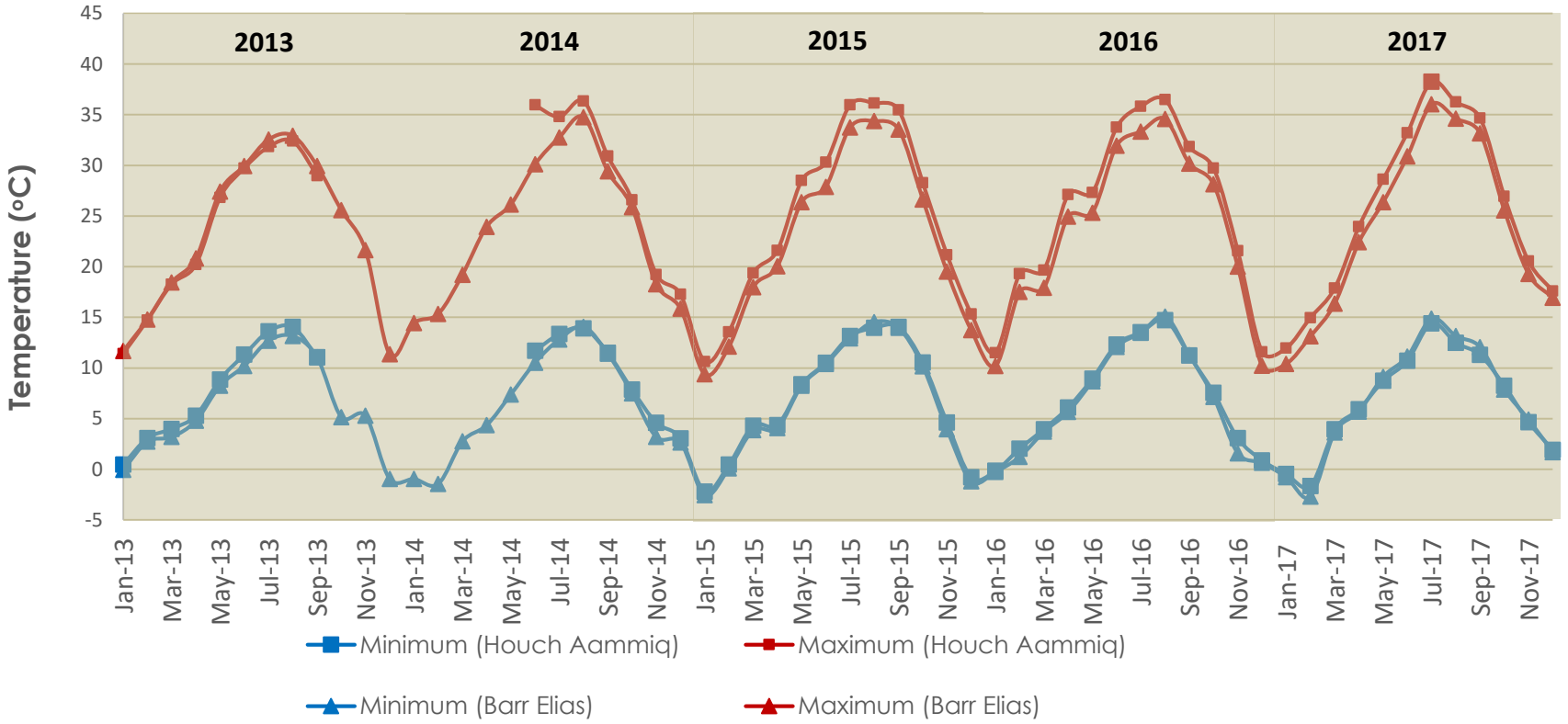


Figure 4-1 Monthly Average Maximum and Minimum Temperatures (2013 – 2017)

4.2.1.2 Precipitation

The monthly precipitation in the project area is shown in Figure 4-2. The highest precipitation recordings (30.8204.8 mm and 26.487.2 mm) are observed in December January 2016 and January 2013 in Houch Aamiq and Barr Elias and Houch Aamiq stations respectively. A rainfall map of the study area is provided in Figure 4-3, showing the average yearly precipitation in the study area ranging between 800 and 1,000 mm/year.

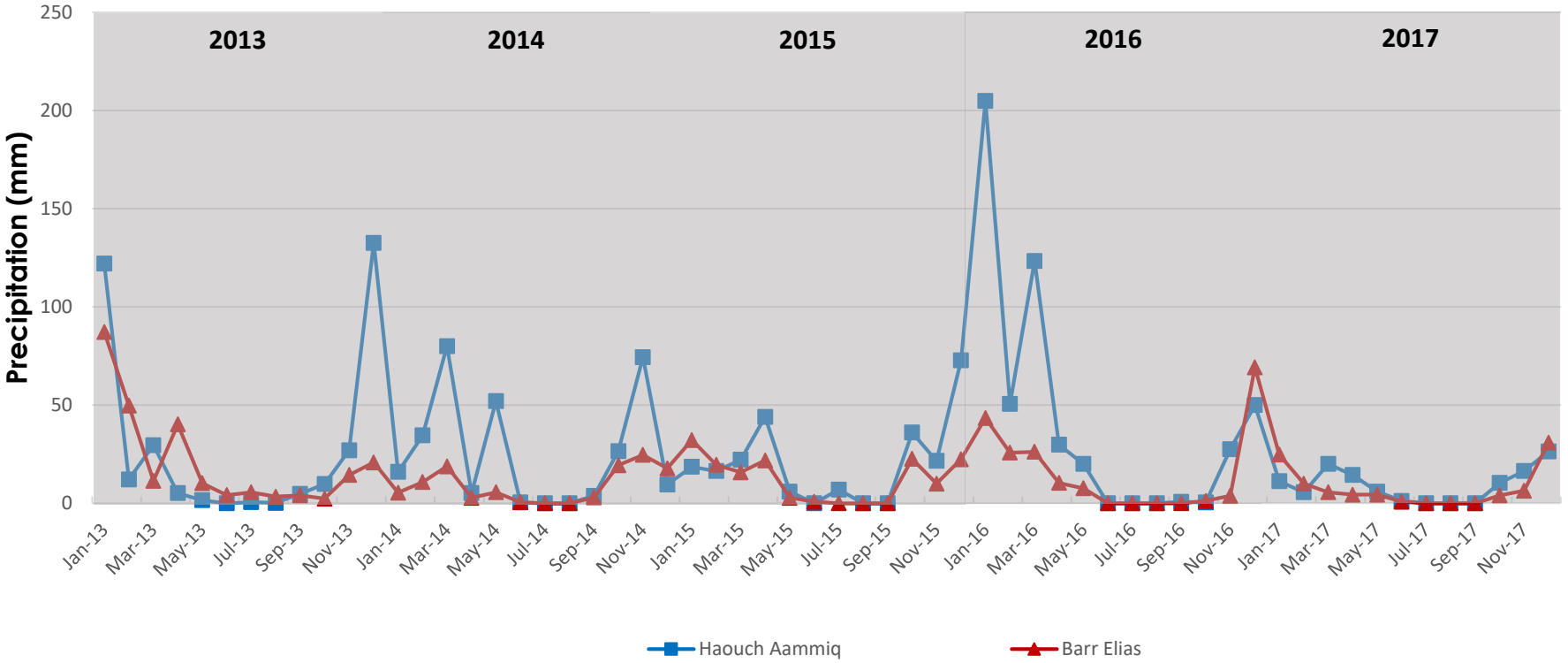


Figure 4-2 Monthly Precipitation at Houch Aammiq and Barr Elias Station (2013 – 2017)

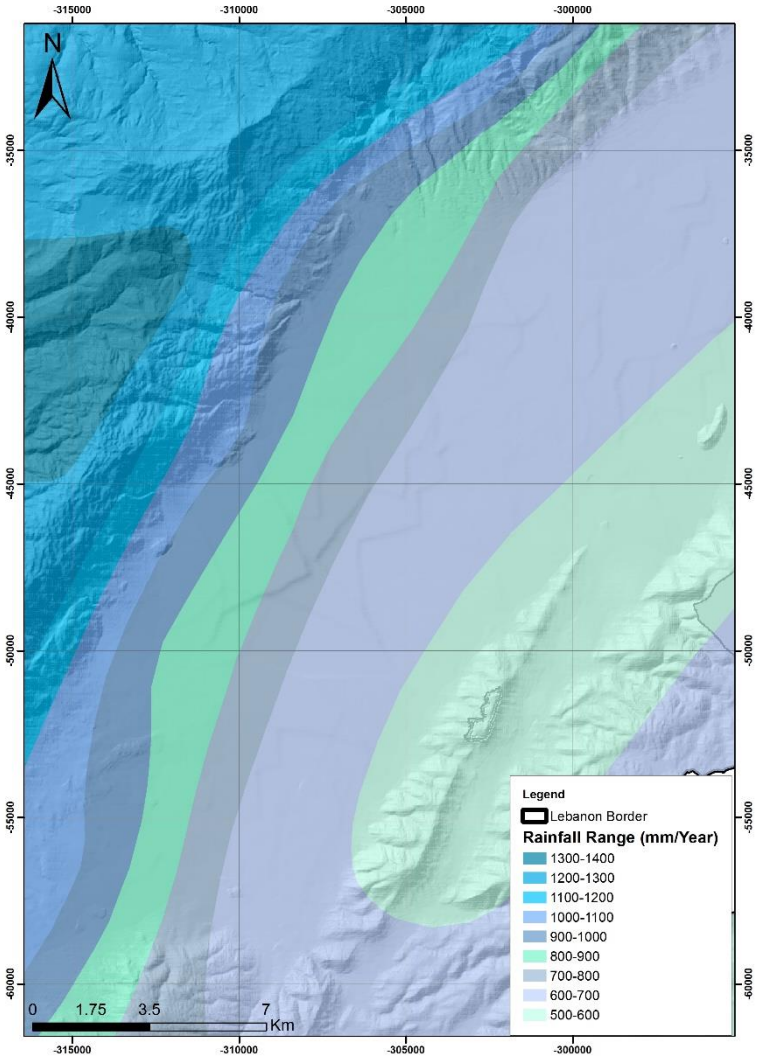


Figure 4-3 Rainfall Map of the Study Area
Source: Plassard, J., 1972

4.2.1.3 Wind

The monthly average and maximum wind speed at Houch Aammiq Station is shown in Figure 4-4, with an average speed lower than 1 m/s, and a maximum speed varying between 1.9 m/sec and 3.1 m/sec. The Project area is predominated by the northwesterly and southwesterly winds most of the year. The wind rose is shown in Figure 4-5.

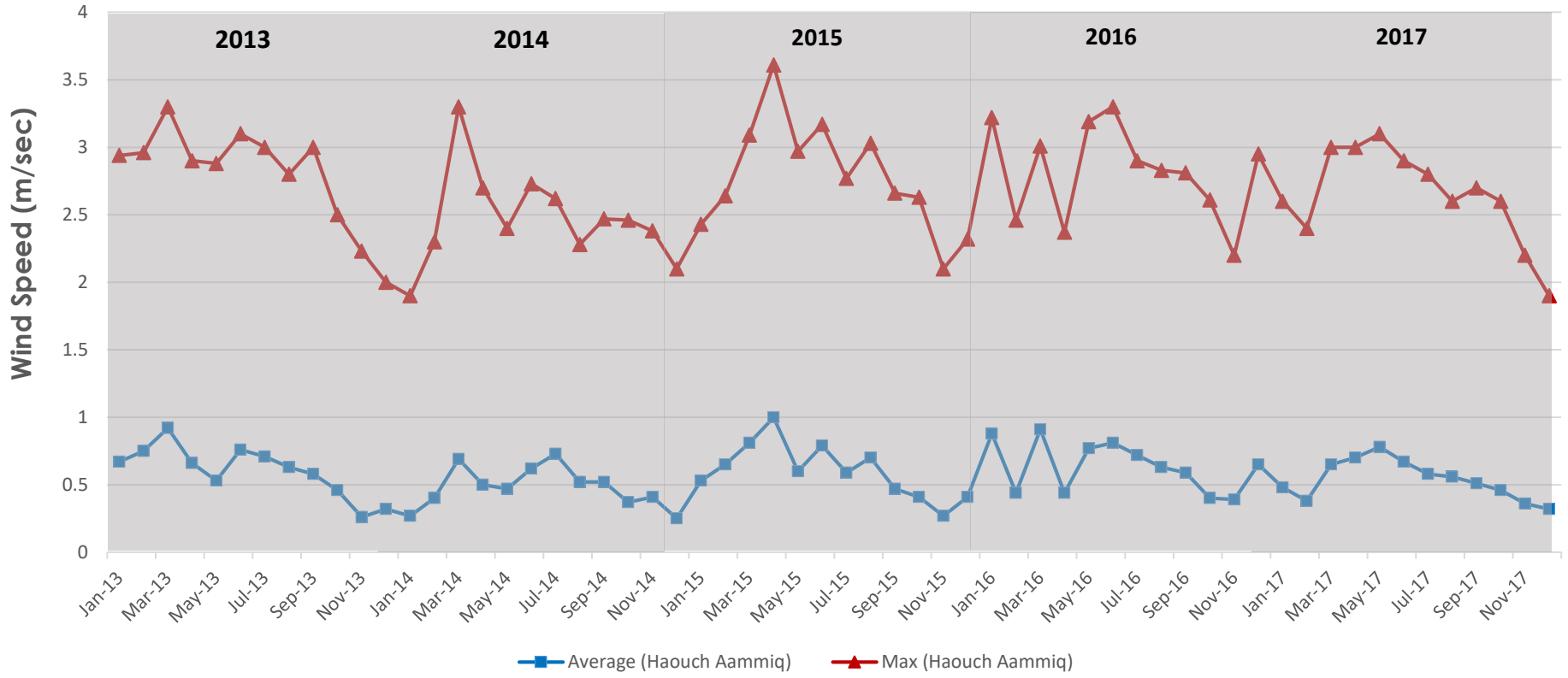


Figure 4-4 Monthly Wind Speed at Houch Aammiq Station (2013 – 2017)

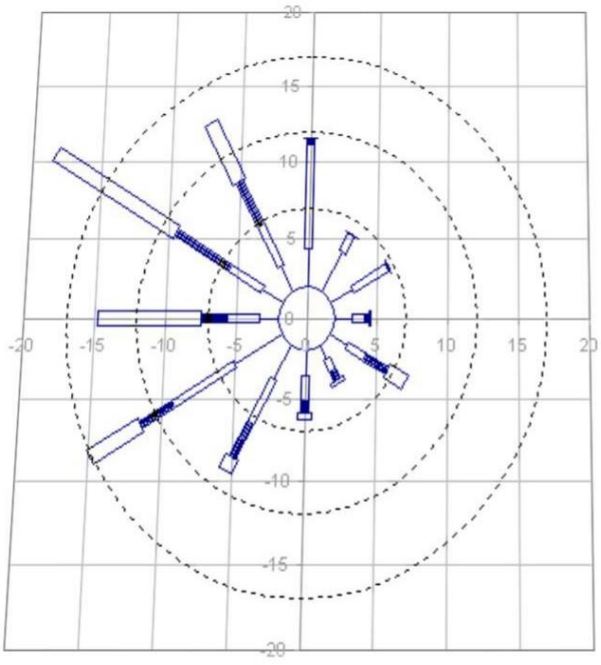


Figure 4-5 Wind Rose for Project Area

4.2.1.4 Humidity

Average relative humidity ranged between 1.74% and 91.18% throughout the period from January 2013 to December 2017 as recorded in the Haouch Aammiq station, whereas it ranged between 47.01% and 90.57% as recorded by Barr Elias station. Observations are illustrated inFigure 4-6.

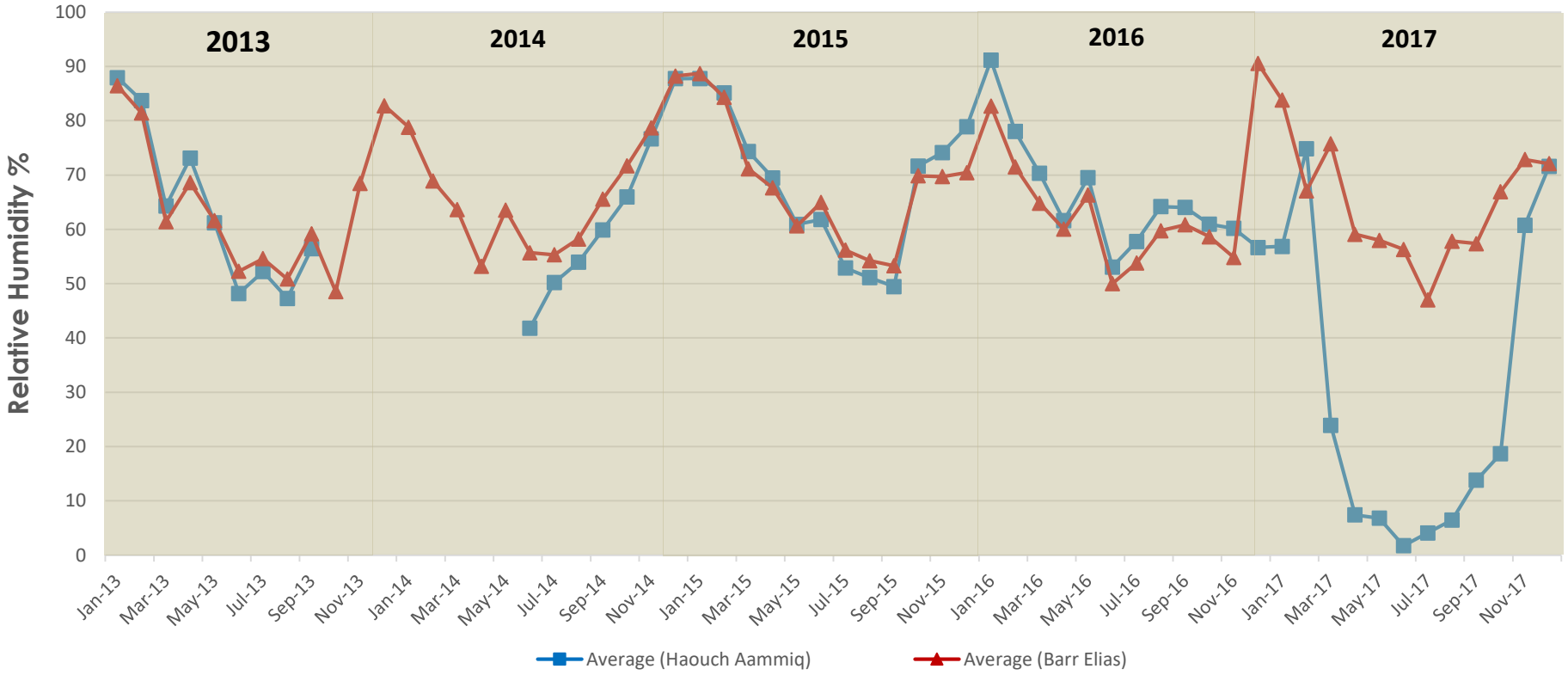


Figure 4-6 Monthly Relative Humidity at Houch Aammiq and Barr Elias Station (2013 – 2017)

4.2.2 Ambient Air Quality

Air pollution is defined as the modification of the natural characteristics of the atmosphere by any chemical, physical or biological contaminant such as Particulate Matter (PM), Carbon Monoxide (CO), Ozone, Nitrogen Dioxide (NO_2) and Sulphur Dioxide (SO_2) (WHO, 2011).

Sources of pressures on ambient air quality in Lebanon can be a result of natural phenomena or anthropogenic activities such as transportation (vehicles), energy production (power plants, private generators and gas stations), industrial manufacturing processes, construction, quarries, fireworks, burning tires, open dumping and wars (MoE/UNDP/ECODIT, 2011). The impact on health from urban air pollution in Lebanon is estimated to cost $145 million/year (0.87% of the GDP) (IPT Energy Center, 2016).

The transportation sector is one of the leading sources of air pollution in the country where private cars are excessively used by the Lebanese population for daily commuting. Fuels and lubricants used in vehicles are a major source of Particulate Matter (PM), Sulphur Dioxide (SO_2), Nitrogen Oxides (NO_x), Carbon Monoxide (CO), and carbonyls emissions (Afif et al., 2009; Kouyoumjian and Saliba, 2006; Moussa et al., 2006; Saliba et al., 2006, 2007). Those air pollutants are identified for the risk they represent through long-term or short-term exposure, for their toxicity, or even for their environmental interference.

The recorded concentrations of coarse particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) in the city of Zahle are 40 µg/m^3 annual mean and 33 µg/m^3 annual mean respectively (WHO, 2016). These exceed the recommended annual average of PM_{10} and $PM_{2.5}$ concentrations which are 20 µg/m^3 and 10 µg/m^3 respectively (WHO, 2018). The literature review revealed a lack of ambient air quality data for the Project area. Since the Project area is rural and the Project is located in the villages of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and the lower part of Qabb Elias in proximity to residential areas, the main potential sources of ambient air pollution is mainly due to the presence of solid waste open dumps (especially when waste is open burned) and WWTPs that results in the release of VOCs and other gaseous pollutants such as methane, ammonia, and hydrogen sulfide; in addition to agricultural activities involving the use of pesticides, traffic (knowing that the study area is not congested), and private power generators.

4.2.3 Noise

The literature review revealed a lack of noise data for the Project area. No background noise measurements were taken during the conducted field investigations (as per the contractual agreement).

4.2.4 Biological Environment

4.2.4.1 Flora and Vegetation Cover

The proposed network extension is located between two Key Biodiversity Areas (KBAs) as shown in Figure 4-7; these KBAs comprise Important Bird Areas (IBAs) that are also important receptors. The Sannine-Rihane slopes and heights KBA (which also includes the core zone of the Shouf Biosphere Reserve - SBR) is to the west of the network (Figure 4-8) and the upper Litani KBA is to

the east of the Network. Parts of the proposed networks protrude into these KBAs and IBAs, especially the Sannine-Rihane KBA. In addition, parts of the network in Wadi Ed Delem, Qabb Elias and Mazraat El Mehqane fall within the buffer and the transition zones of the SBR. Another part of the network (Majdel Anjar) is located at the edge of the Upper Litani River KBA. Furthermore, the proposed network reaches a point that is around 80 meters away from the Anjar Hima to the east; the nearest point is also 1.7 km away from the Kfarzabad Hima (Figure 4-9). However, no threatened or endangered plant species were observed in the proposed sites.

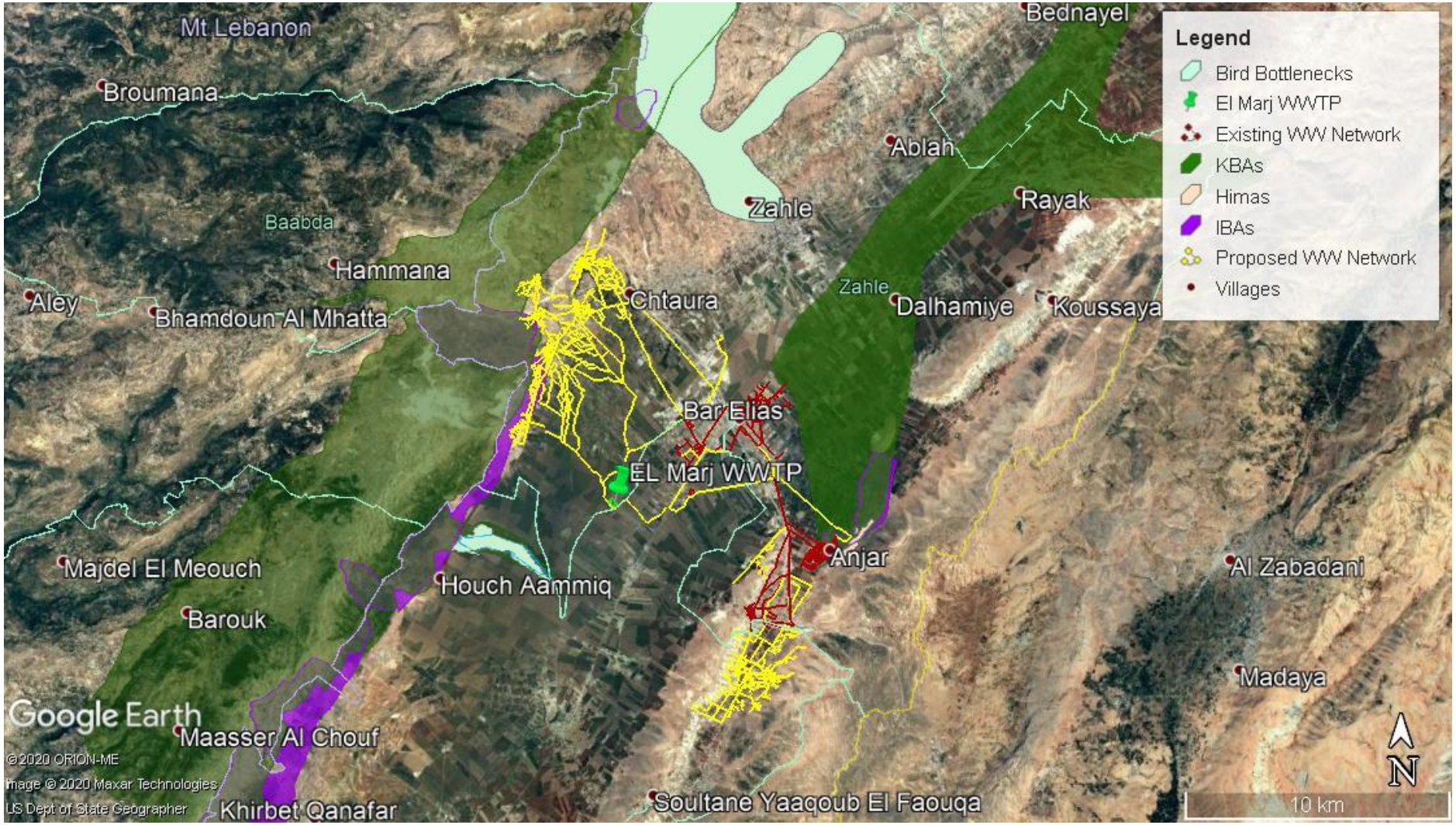


Figure 4-7 Map Showing the Villages where the Network will Pass and the KBAs, IBAs, Bird Bottlenecks Surrounding Them

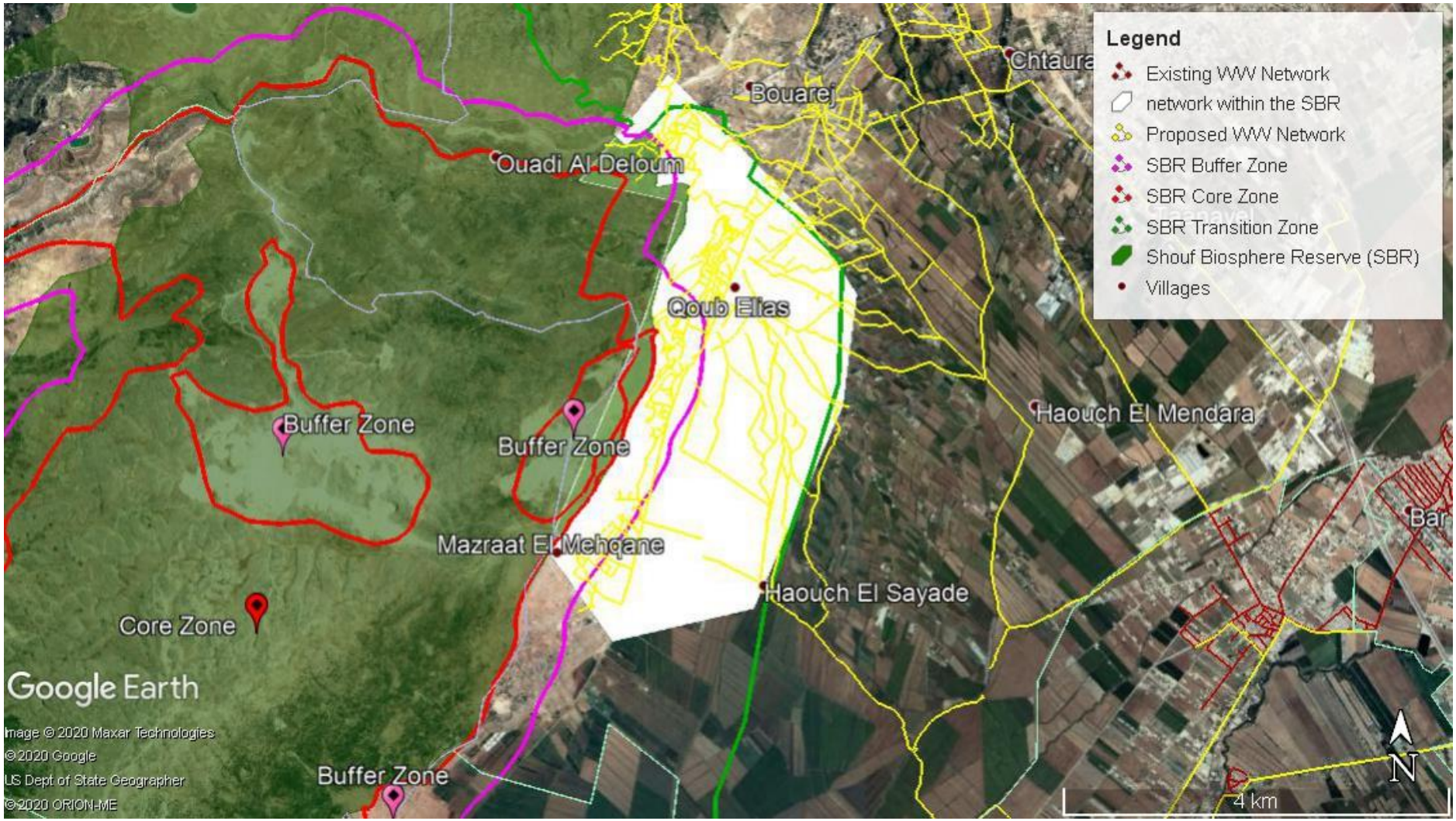


Figure 4-8 Map Showing the Villages where the Network will Pass and the SBR

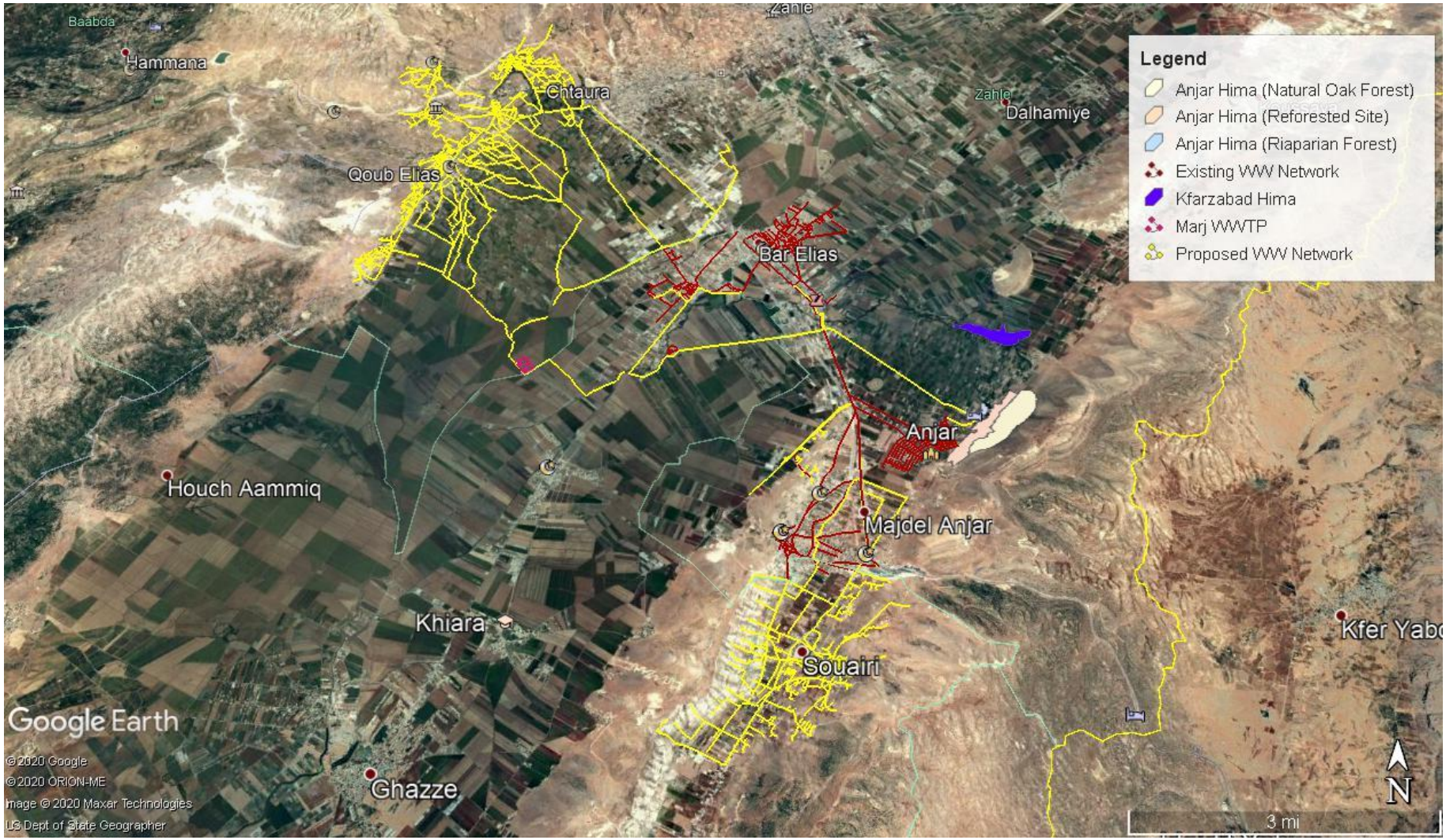


Figure 4-9 Map Showing the Networks and Existing Himas

The proposed locations for the sewer lines consist of the existing road network in all the villages except Saouiri, where no natural environment/landscape exists. Therefore, these sites have no ecological value.

As for the sewer lines in Saouiri village, some of the sites have no or low ecological value in respect to biodiversity since they are abandoned/degraded lands. The lands comprising trees have medium ecological value due to the presence of planted trees, as shown in Table 4-2.

Table 4-2 Land Use, Biodiversity and Ecological Value of Proposed Sites

Plot No.	Existing Land Use	Fixed Assets to be Removed	Ecological value
/506/	Building	None	None
/510/	Building	None	None
/511/	Building	None	None
/512/	House	None	None
/513/	House	Constructed rock wall of 12 m length and 1.2 m height	None
/514/	None	Constructed rock wall of 12 m length and 1.2 m height	None
/560/	None	None	None
/559/	Land with bare apple trees	None	None
/2130/	House shared with plot /558/	None	None
/558/	House shared with plot /2130/, almond tree and other bare trees	None	None
/517/	None	Constructed rock wall of 12 m length and 1.2 m height	None
/518/	None	Constructed rock wall of 16 m length and 1.2 m height	None
/519/	None	Constructed rock wall of 19 m length and 1.2 m height	None
/520/	None	Constructed rock wall of 36 m length and 1.2 m height	None
/521/	None	None	None
/522/	None	None	None
/523/	House/ seasonal plants (water melons)	None	None
/524/	House/ seasonal plants (water melons)	None	None
/527/	None	None	None
/2131/	None	None	None
/2158/	None	None	None
/2159/	None	None	None
/550/	None	None	None

Plot No.	Existing Land Use	Fixed Assets to be Removed	Ecological value
/549/	None	None	None
/548/	None	None	None
/541/	None	None	None
/947/	None	None	None
/954/	Vineyard	None	Low
/2405/	None	None	None
/2404/	None	None	None
/2406/	Private road	Private road that requires expropriation.	None
/1714/	House	Concrete wall	None
/1717/	Land with olive, plum and fig trees	Nine medium sized olive trees One medium sized plum tree One medium sized fig tree	Medium
/1718/	Land with olive, almond and fig trees	Three medium sized olive trees Two medium sized almond trees Two medium sized fig trees	Medium
/1719/	Land with olive, plum and fig trees	One medium sized olive tree One medium sized plum tree Seven medium fig trees	Medium
/1720/	Land with olive, plum and fig trees	Twelve medium sized olive trees Eleven medium sized plum trees	Medium
/1726/	None	None	None
/1725/	Land with olive and pomegranate trees	Six medium sized olive trees Two medium sized pomegranate trees	Medium
/1724/	None	None	None
/1742/	Land with olive, fig and cherry trees	Four medium sized olive trees Seven medium sized fig trees Five medium sized cherry trees	Medium
/2195/	Land with fig and cherry trees	None	Medium
/1739/	None	None	None
/1738/	Land with almond, olive, pomegranate and apple trees	Two medium sized almond trees Eight medium sized pomegranate trees Two medium sized olive trees Three medium sized apple trees	Medium
/1747/	Land with olive and apple trees	Ten medium sized apple trees Nine medium sized olive trees	Medium
/1753/	None	None	None

Plot No.	Existing Land Use	Fixed Assets to be Removed	Ecological value
/1737/	Land with olive and plum trees	Two medium sized olive trees One medium sized plum tree	Medium
/111/	None	None	None
/110/	Land with olive, plum, fig and cherry trees	Eight medium sized olive trees Three medium sized plum trees Four medium sized fig trees Ten medium sized cherry trees	Medium
/109/	None	None	None
/108/	Land with cherry, olive, plum and almond trees	Ten medium sized cherry trees Eleven medium sized olive trees Eight medium sized plum trees Five medium sized almond trees	Medium
/1652/	Land with olive and fig trees	None	Medium
/1656/	Land with cherry trees	None	Medium
/1657/	None	None	None
/2070/	None	None	None
/1672/	None	None	None
/1682/	None	None	None

4.2.4.2 Fauna species

It is difficult to perform a complete faunal survey of the study area. No wild faunal species were observed at the site or along the network sites. However, according to the study entitled "State of Lebanon's Birds and IBAs" published by the MoE and UNDP in 2014, the area is situated in the flight path used by soaring birds migrating through Lebanon during Spring. The nearest bird bottlenecks are located in Aammiq and Qaa El Reem, 3 km and 4 km from the nearest sewer line respectively. However, the proposed wastewater networks protrude into the IBA of the Shouf Cedar Nature Reserve to the west, and slightly into the Hima Anjar - Kfarzabad IBA to the east, although the sites of protrusion are residential and/ or agricultural rather than natural, i.e., they are already disturbed (Figure 4-7).

4.2.5 Archaeology

4.2.5.1 Description of the Environment

The earliest traces of inhabitants in the region of interest date back to prehistoric times. Stone tools and flints found during surveys of the region allowed to identify the sites, and to date them. Remains found on the sites attest of their continuous occupation during the Bronze Age, Iron Age, Roman and Byzantine periods – until nowadays. Many Tells, tombs, ruins and Roman temples are scattered throughout the region.

It is to note that during the 1st century B.C, the capital of the Iturean Kingdom was located in the vicinity of the region of interest. Chalcis sub Libanum was – according to ancient texts – located midway between Beirut and Damascus. The site location of Chalcis has not yet been

established with certainty, but some scholars tend to identify it with Majdel Anjar – or nearby Majdel Anjar and Anjar.

As for the site of Anjar, it is inscribed on the UNESCO World Heritage List since 1984. The city of Anjar was built at the beginning of the 8th c. A.D. It was founded by the Umayyad Caliph Walid I. and comprises ruins of the fortifications, gates, palaces, mosque, hammam and houses.

4.2.5.2 Description of the Study Area

Archaeological remains are identified in some of the villages where the extension of wastewater networks is planned:

Chtaura: The Tell is located near Ain Assaf, to the left of the main road leading to Masnaa, at a distance of 0.20 km from the network. Evidence of occupation during the Late Chalcolithic, Bronze and Iron Age, Hellenistic, Roman, Byzantine, Islamic and Ottoman periods was found on the Tell.

Jdita: A cave near the village was probably occupied during prehistoric times. As for the village itself, it is partly built on a Tell, where remains of ancient occupation are attested. A dedicatory inscription dated to the roman period was found on a square base, among other ruins. Some of the network extensions are located at the south eastern slope of the Tell.

Taalabaya: The Tell of Taalabaya is a small Tell where Early Bronze Age, Roman and Byzantine remains were found above ground, during surveys conducted in 1966. It is at a distance of 1.30 km from the project components.

Taanayel: The Jesuit monastery of Taanayel was built on the Tell. During the construction works, small objects were found. The site is located at a distance of 0.50 km from the project components.

Wadi Ed Delem: Both in the ravine of Wadi Ed Delem and near the source, remains of possible prehistoric occupation were found. A roman relief was also located near the source.

Qabb Elias: Ruins of different periods can be found within the Qabb Elias village and its surrounding. The Tell, located some 0.22 km from the network, was occupied since the Early Bronze Age. A monument, possibly a tomb, cut in a rock wall overlooks the Bekaa Valley. It dates back most probably to the roman period. The remains of Fakhreddine Citadel can also be seen on the road leading to Chtaura.

4.2.6 Geological and Hydrological Setting

4.2.6.1 Topography and Surface Hydrology

Part of the proposed wastewater network in Zahle Caza is located in the northwestern parts of the study area extending over a distance of 8 km starting from Bouarej village (1,325 m asl) in the west, through Mreijat (1,130 m asl), until Marj village (868 m asl) in the Bekaa plain to the east. Topography changes from moderately sloping in the west to flat in the plain as shown in Figure 4-10.

The other part of the project is located in the south-eastern part of the study area (West Bekaa Caza) where the wastewater network will be constructed. The proposed wastewater network extends through Souairi Village. The whole area has a moderate to shallow slope as shown in Figure 4-10.

There is one main river in the study area, the Litani River. Litani River is a perennial river cutting through the study area in the middle of the Bekaa Valley and flowing toward southwest. Seasonal surface water drainages drain from both sides of the Bekaa valley toward the Litani given the whole study area is part of the Litani River Watershed (Figure 4-10).

The proposed El Marj wastewater project with both its Zahle and West Bekaa parts lies within the Litani River Watershed as shown in Figure 4-10.

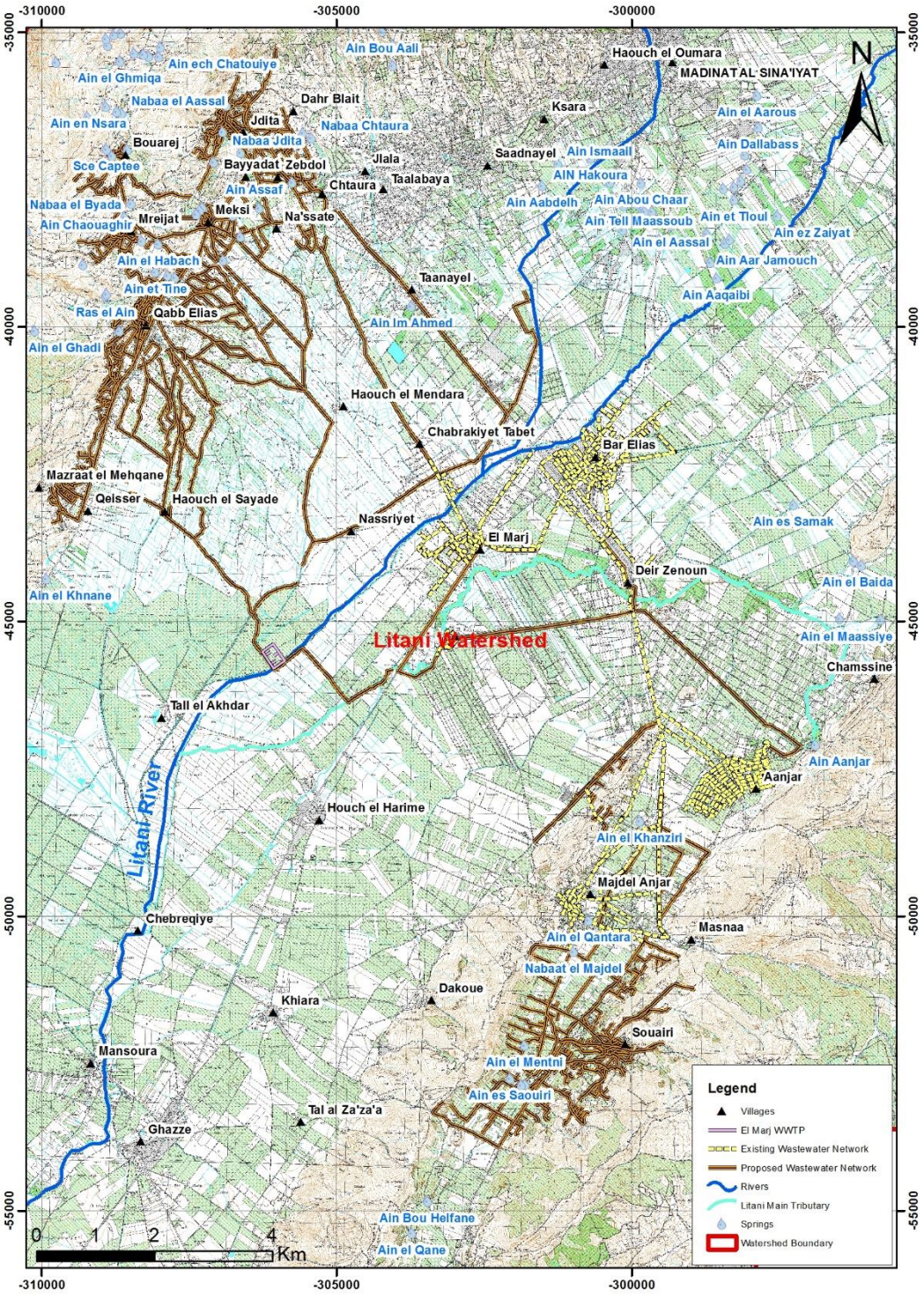


Figure 4-10 Topographic Map of the Proposed site for the El Marj wastewater project

Topographic map of Chtaura, Barr Elias, Ghazze, and Aanjar
1:20,000 Directorate of Geographic affairs (Beirut-Lebanon)

4.2.6.2 *Stratigraphy and Hydrostratigraphy*

There are twelve (12) outcropping geological formations and deposits in the study area; those are (from oldest to recent): the Kesrouane Formation (J4), Chouf Sandstone Formation (C1), Abeih Formation (C2a), Mdairej Formation (C2b), Hammana Formation (C3), Sannine

Formation (C4), Maameltain Formation (C5), Chekka Formation (C6), Lower Eocene Formation (e2a), Upper Eocene Formation (e2b), Middle to Upper Miocene Formation (mcg/mL) and the Quaternary Deposits (Q). The proposed location of the sewer lines lies on the Quaternary Deposits (Q), Chekka Formation (C6), Maameltain Formation (C5), Sannine Formation (C4), Hammana Formation (C3) and Mdairej Formation (C2b) as shown in Figure 4-11.

The lithological and hydrostratigraphic characteristics of the above-mentioned formations are described in the paragraphs below. A summary of the lithostratigraphy and hydrostratigraphy is illustrated in Figure 4-12.

A Geological-Hydrogeological map with groundwater flow direction in the study area is shown in Figure 4-11.

4.2.6.2.1 Quaternary Deposits (Q)

The Quaternary Deposits in the study area consist of screes and landslides including alluvial fans in addition to fluvial deposits of gravel, sand and conglomerates. These deposits cover mainly the central parts of the study area as shown in Figure 4-11. The thickness of these deposits in the area may reportedly exceed 150 m (UNHCR, 2016); accordingly, and because of their porous and permeable nature, these deposits are considered of great importance in terms of bearing water.

The Quaternary deposits (Q) are in hydraulic connection with the Miocene conglomerates (mcg) thus forming a semi-aquifer called the Quaternary-Neogene (Q-mcg) semi-aquifer.

4.2.6.2.2 Miocene Formation (mcg/mL)

Miocene Conglomerates (mcg)

The Miocene conglomerates formation (mcg) outcrops in the northern part of the study area as shown in Figure 4-11. This formation consists of cemented conglomerates often interbedded with clay and is mostly covered by the Quaternary Deposits (Q) in the study area.

The Miocene Conglomerates (mcg) are in hydraulic connection with the Quaternary Deposits (Q) thus forming a semi-aquifer called the Quaternary-Neogene (Q-mcg) semi aquifer.

Miocene Marl (mL)

The Miocene Marl Formation outcrops southwest of the study area and unconformably overlies the underlying Sannine Formation (C4) as shown in Figure 4-11. It is primarily composed of lacustrine marls and marly limestone.

The thickness of the Miocene formation in the study area may reach up to 200 m.

Due to its lithostratigraphic characteristics, this formation forms an aquiclude unit limiting groundwater interaction between the overlying and underlying geological formations.

4.2.6.2.3 Upper Eocene (e2b) Formation

The Upper Eocene formation (e2b) outcrops east-southeast of the study area in an elongated patch trending northeast-southwest along the West Bekaa Caza. This formation is mainly composed of brecciated marly, chalky limestone and fractured cherty limestone with

nummulites. The thickness of the Upper Eocene Formation (e2b) can reach up to 400 m in the study area.

Based on the lithostratigraphic characteristics of the Upper Eocene Formation, it is considered to be a Karstic Aquifer were groundwater tends to flow in fractures and conduits.

4.2.6.2.4 Lower Eocene Formation (e2a)

The lower Eocene formation (e2a) mainly outcrops adjacent to the Upper Eocene Formation (e2b) as an elongated strip in a northeast-southwest direction. This formation is mainly composed of marl and marly chalky limestone with a thickness of around 150 m within the study area.

4.2.6.2.5 Chekka Formation (C6)

The Chekka Formation outcrops in the east and southeast parts of the study area adjacent to the Lower Eocene Formation as shown in Figure 4-11. It is composed of white chalks, marly chalks with phosphate and chert nodules and bands with a thickness reaching around 350 m in the study area.

Due to the lithostratigraphic characteristics, both the e2a and C6 formations act as an aquiclude in study area.

4.2.6.2.6 The Maameltein Formation (C5)

The Maameltein Formation (C5) outcrops in the eastern-southeastern part of the study area adjacent to the overlying Chekka Formation (C6) as shown in Figure 4-11. This formation is composed mainly from massive to thin bedded whitish gray limestone and marly limestone units which is very similar in lithology to the upper Sannine Formation (C4c). The thickness of the Maameltain Formation (C5) in the study area can reach up to 250 m.

Together with the underlying Sannine Formation (C4), the combined Sannine-Maameltain Sequence constitutes one of the most important aquifers in Lebanon – the Sannine-Maameltain (C4-C5) karstic aquifer.

4.2.6.2.7 The Sannine Formation (C4)

The Sannine Formation outcrops in the eastern-southeastern part of the study area covering the mountains and in the northwestern part along the Yammouneh and Qabb Elias faults as shown in Figure 4-11. This formation can be subdivided into three lithostratigraphic units: a lower unit (C4a) and an upper unit (C4c) of relatively similar lithology separated by a more marly limestone with marl interbeds unit (C4b). The lower and upper units consist of fractured thick to massively bedded limestone with whitish to pale gray color, which occasional chert nodules in the upper C4c unit. The middle C4b unit has a thickness of up to 300 m and is predominantly made up of layers of whitish to gray marls and marly limestone. The total thickness of the Sannine Formation in the region likely exceeds 450 m.

This formation is generally considered to constitute one of the major aquifers in Lebanon, given its highly karstified nature and extent that favor a high storage and recharge capacity. Groundwater tends to flow along preferential pathways enhanced by fractures and cavities.

4.2.6.2.8 Hammana Formation (C3)

The Hammana Formation (C3), consists predominantly of brown to green marls with interbedded layers of marly limestone, with a very limited permeability due to the predominant presence of green marls. The formation outcrops near the Yammouneh fault northwest of the study area and its thickness can reach up to 150 m.

Given its lithostratigraphic characteristics, the Hammana Formation (C3) acts as an aquiclude, forming a water barrier.

4.2.6.2.9 Mdairej Formation (C2b)

The Mdairej Formation (C2b) consists of thick massive beds of cliff-forming hard micritic (beige) limestone, when the beds are nearly horizontal. It outcrops adjacent to the overlying Hammana Formation, near the Yammouneh fault and has a thickness of around 150 m in the study area. Together, the Mdairej Formation and the underlying Abeih Formation (C2b-C2a) form a semi aquifer (Figure 4-11) which has a limited thickness and exposure in Lebanon compared to the major aquifers (i.e. Sannine-Maameltain Aquifer). Usually groundwater in this semi aquifer flows in conduits and fractures formed by faults. This semi-aquifer is considered as a karstified aquifer where extensive outcrops allow for significant recharge, which is the case in the study area.

4.2.6.2.10 Abeih Formation (C2a)

The Abeih Formation, which underlies the Mdairej Formation varies in lithology from fine sands, clays, and sandy limestone at its base to medium beds of limestone interbedded with yellow clay at its top. It has a thickness of about 150 m in the study area. This formation outcrops along the Qabb Elias fault northwest of the study area as shown in Figure 4-11.

Together, the Abeih and Mdairej Formations (C2a-C2b) form a semi aquifer (Figure 4-11) which has a limited thickness and exposure in Lebanon compared to the major aquifers (i.e. Sannine-Maameltain Aquifer). Usually groundwater in this semi aquifer flows in conduits and fractures formed by faults. This semi-aquifer is considered as a karstified aquifer where extensive outcrops allow for significant recharge, which is the case in the study area.

4.2.6.2.11 Chouf Sandstone Formation (C1)

The Chouf Sandstone Formation (C1) is of Neocomian age, mainly composed of white to ferruginous fine to course grained quartz sands and sandstones, intercalated with horizons and layers (up to few meters thick) of clay, coal, lignite and basalts. It outcrops in the same area as the overlying Abeih, Mdairej, and Hammana Formations adjacent to the Yammouneh and Qabb Elias Faults. It has a reported thickness of few meters in the area.

The Chouf Sandstone formation (C1) forms a porous medium semi-aquifer, where groundwater flow is generally slow.

Due to its limited thickness and exposure in most of the study area, the Chouf Sandstone formation (C1) has a limited contribution on groundwater resources.

4.2.6.2.12 Jurassic Kesrouane Formation (J4)

The Kesrouane Formation is of the Lower to Upper Jurassic age, consisting mainly of massive, karstified, thick bedded limestone with horizons of dolomitic limestone and some chert nodules. The Jurassic (J4) is exposed in the northwestern part of the study area along the Yammouneh Fault, covering the mountains west of the study area as shown in Figure 4-11. Its thickness may exceed 1,000 m in the area.

This Jurassic Formation (J4) forms one of the main water towers of Lebanon. The J4 aquifer is a highly karstified aquifer with dissolution action mainly concentrated around structural features. Groundwater is stored and transmitted in fractures and conduits. Groundwater in the Kesrouane aquifer tends to flow preferentially along fractures, karstic channels, and structural features (faults). The general groundwater flow in this aquifer in the study area is towards the east and southeast.

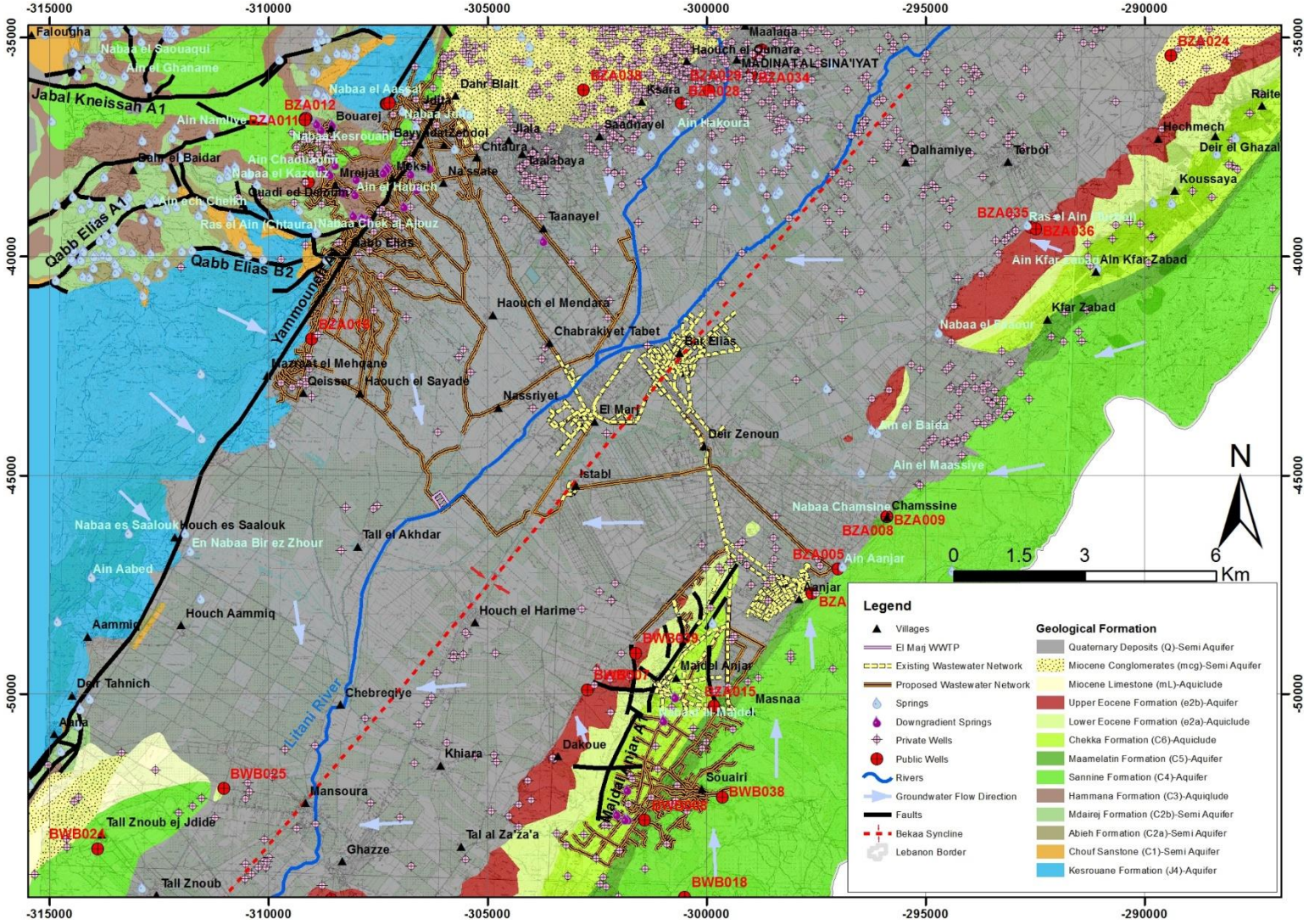
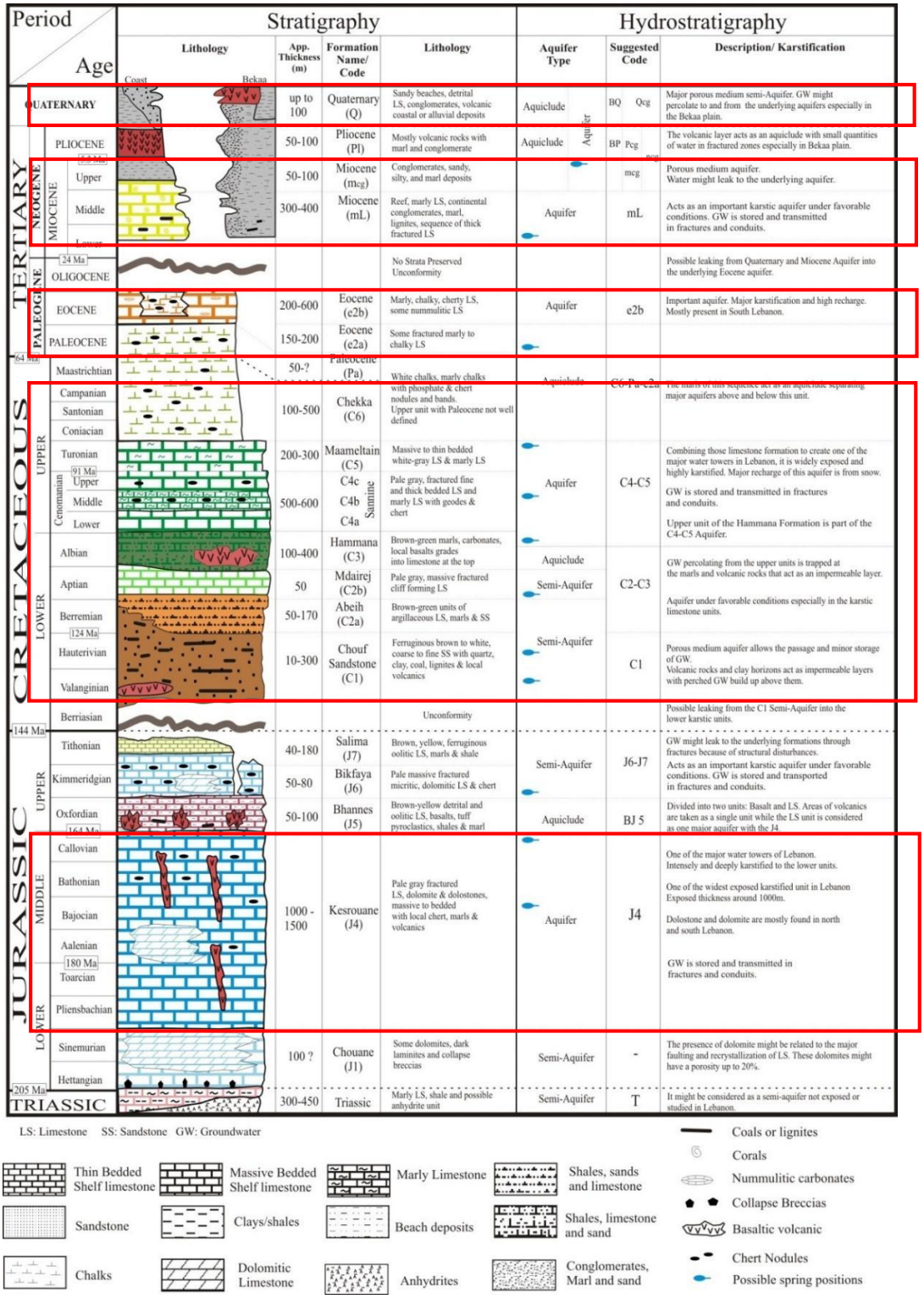


Figure 4-11 Hydrogeological Map of the Study Area including Wells and Springs

Source: Dubertret, 1953



Source: MoE/UNDP, 2014

Figure 4-12 Lithostratigraphy and Hydrostratigraphic Units in Lebanon and in the Study Area (outcropping units outlined in red)

4.2.6.3 *Structural Setting*

4.2.6.3.1 Folding

There are two main folds within the study area: the Bekaa Syncline and the Anti-Lebanon Anticline.

The inland Bekaa Syncline is a broad syncline filled with Quaternary and Neogene deposits that can reach a thickness of more than 1,000 m in the central parts of the Bekaa Plain. Its axis is trending northeast-southwest.

The Anti-Lebanon Anticline is composed of Middle Cretaceous Sannine-Maameltein Formations. It is an inland asymmetrical anticline with its axis positioned close to the border of Lebanon and Syria and parallel to that of the Bekaa Syncline. It is a broad anticline with gently dipping beds on its western limb bordering the Bekaa Syncline. Several overflow springs are located at this contact with the Upper Cretaceous Formations including Chamssine and Aanjar springs as shown in Figure 4-11. The eastern limb is characterized by gently dipping beds located outside Lebanon, within Syria.

4.2.6.3.2 Faulting

According to the geology of Lebanon in general and that of Zahle in particular, the main fault system traversing the study area is the Yammouneh Fault System along with secondary faults, Qabb Elias and Majdel Anjar faults, as shown in Figure 4-11.

The Yammouneh Fault System is a fault zone of 1-2 km wide that is associated with a variety of structural geological features (e.g. folds, shear fractures and breccia) that are indicative of its sinistral strike-slip nature (Hancock & Atiya, 1979). In addition to the 80 km of lateral displacement, a vertical displacement of more than 800 m is well documented.

The Yammouneh Fault System is trending along a northeast-southwest direction and crosses the proposed sewer lines location in the northwestern part of the study area. This fault system has either resulted in fracturing of surrounding formations, thereby enhancing secondary porosity and creating preferential pathways for groundwater or created hydrogeological barriers due to low permeability fault gouge and/or through placing low permeability units against aquiferous ones.

In addition to the Yammouneh Fault System, secondary small-scale faults, namely Qabb Elias A1, B1, B2 and Jabal Kneissah faults, are branching from the Yammouneh Fault and trending along northwest-southeast, northeast-southwest, and east-west directions. All these faults are strike-slip faults that have either enhanced secondary porosity and created preferential pathways for groundwater, or that have created hydrogeological barriers due to low permeability fault gouge and/or through placing low permeability units against aquiferous ones.

The Majdal Anjar secondary faults are located in the southeastern part of the study area and are trending in a northeast-southwest and east-west direction. The Majdel Anjar secondary faults are strike-slip faults crossing the proposed sewer lines location in the southeastern part of the study area as shown in Figure 4-11. Those faults are considered to be non-barrier for groundwater flow.

4.2.6.4 Springs

There are more than seventy (70) reported springs in the study area. Out of the seventy springs, twenty seven springs are considered to be down-gradient from the sewer lines proposed location. Those springs are shown in yellow in Figure 4-11. Information on the down gradient springs is shown in Table 4-3, whereas information on the rest of the springs with sufficient data and relatively decent discharge is summarized in Table 4-4.

Table 4-3 Springs Downgradient to the Proposed Project Location

Name of Spring	X Geographic	Y Geographic	Elevation (m asl)	Emergence (Deposits/Geological Formation)	Average Min. Discharge (l/sec)
Ain el Mentni	33.685994	35.894765	1,030	C6	NA
Not Available	33.680024	35.895131	1,010	C6	NA
Not Available	33.679915	35.894423	1,014	C6	NA
Ain es Saouiri	33.680897	35.892314	1,035	C6	NA
Nabaat el Majdel	33.700585	35.903190	981	C6	0.2
Ain el Qantara	33.705479	35.905801	961	C6	NA
Nabaa el Byada	33.812848	35.817809	1,169	C4	NA
Not Available	33.811531	35.836520	919	Q	NA
Not Available	33.804701	35.835099	908	Q	NA
Ain Barake	33.812779	35.841334	917	Q	1.6
Ain Im Ahmed	33.798568	35.869787	882	Q	NA
Not Available	33.808317	35.838081	911	Q	NA
Ain Chaouaghir	33.812084	35.814565	1,199	C3	NA
Nabaa el Kazouz	33.810779	35.816669	1,150	C3	11
Nabaa Kesrouani	33.820043	35.814072	1,328	C3	8
Sce Captee	33.821097	35.813015	1,395	C3	NA
Not Available	33.821046	35.816788	1,290	C3	NA
Not Available	33.807190	35.820049	1,090	C3	NA
Not Available	33.802075	35.825001	972	C3	NA
Not Available	33.801723	35.826322	944	C3	NA
Ain et Tine	33.802491	35.822706	1,005	C3	NA
Not Available	33.810116	35.823177	1,042	C3	NA
Not Available	33.812624	35.830903	990	C3	NA
Ain es Sikkanye	33.812189	35.830476	984	C3	NA
Not Available	33.811577	35.829852	987	C3	NA
Ain el Habach	33.806829	35.823024	1,034	C3	6
Not Available	33.803311	35.809364	1,138	C2b	NA

Table 4-4 Main Springs within the Study Area that are Cross Gradient or Up Gradient to the Proposed Project Location

Name of Spring	Z (m asl)	Emergence (Deposits/Geological Formation)	Average Min. Discharge (l/sec)
Ain Aanjar	881	Q	970
Nabaa Chamsine	875	Q	110.5
Nabaa el Faaour	880.24	e2b	20.6
Ras el Ain (Terbol)	881.8	Q	17.6
Nabaa Chtaura	929.8	mL	153.5
Nabaa Jdita	970.84	Q	11.6
Nabaa Chek al Ajouz	995	C2a	4.5

4.2.6.5 Wells

A total of nineteen (19) public wells are present in the Study Area with depths ranging between 20 and 350 m BGL. Public wells located in the southern, south-eastern and south-western parts of the study area are tapping either the Sannine-Maameltain Aquifer (C4-C4) or the Upper Eocene Aquifer (e2b), whereas the public wells located on the north-western part of the study area are tapping the Mdairej (C2b) semi-aquifer and the Kesrouane Jurassic Aquifer (J4). Available details on the public wells in the study area are shown in Table 4-5.

In the north-western part of the study area there are no public wells down gradient from the proposed El Marj wastewater project location. In the south-eastern part, there are three public wells considered to be down gradient from the proposed El Marj wastewater project.

It is important to note that in addition to public wells, many private wells (licensed and un-licensed) exist within the study area. Private wells are shown in pink in Figure 4-11. Private wells within the Bekaa valley are tapping the Neogene/Quaternary semi-aquifer, whereas the private wells located on the mountains east and west of the study area are tapping the Sannine-Maameltain (C4-C5) aquifer, Upper Eocene Aquifer (e2b) and the Mdairej (C2b) semi-aquifer. Private wells located in the southeastern and northwestern part of the study area at the same elevation or lower than El Marj wastewater project are considered to be down gradient.

Table 4-5 Summary of Information on Public Wells in the Study Area

Well Code	Town	Elevation (m asl)	Drilling Depth (m BG)	Aquifer Tapped
BZA011	Bouwarej	1,477	110	C2b
BZA012	Bouwarej	1,478	120	C2b
BZA010	Bouwarej	1,477	110	C2b
BZA006	Mrayjat	1,246	271	C2b
BZA036	Terbol	928	210	e2b
BZA035	Terbol	896	110	e2b
BZA016	Qobb Elias	874	130	J4

Well Code	Town	Elevation (m asl)	Drilling Depth (m BG)	Aquifer Tapped
BWB014	Ghazzeh	888	90	e2b
BWB007	Haouch el Harime	905	140	e2b
BWB024	Tell Znoub	910	120	C4-C5
BWB025	Mansoura	879	350	C4-C5
BWB008	Souairi	1,012	NA	C4-C5
BWB018	Manara	1,268	NA	C4-C5
BZA015	Majdel Anjar	996	420	C4-C5
BZA004	Anjar	914	NA	C4-C5
BZA005	Anjar	890	120	C4-C5
BZA007	Chamssine	812	20	C4-C5
BZA008	Chamssine	812	20	C4-C5
BZA009	Chamssine	812	20	C4-C5

NA: Not Available

4.2.6.6 Groundwater Flow Conditions

Given that the El Marj wastewater project extends over a large area as shown in Figure 4-11 and different geological formations, the depth to water will change according to the underlying shallowest aquifer. Within the Bekaa valley, the depth to water is expected to be around 50 m BGL based on the existing private wells in the area.

In the south-eastern part of the study area, the aquifer upon which lies the El Marj wastewater project is the Sannine-Maameltain semi-aquifer; and the depth to water in this aquifer is expected to be around 150 m BGL based on the public wells in the area.

In the north-western part of the study area, the El Marj wastewater project will overlie the Mdairej semi-aquifer where the depth to water is expected to be around 70 m BGL.

The general direction of groundwater flow is toward southeast from the north-western Zahle Caza part, and toward southwest from south-eastern West Bekaa Caza part as indicated by the blue arrows in Figure 4-11.

4.2.6.7 Tectonics and Seismicity

A historical seismicity map and a seismic hazard map of the region are presented in Figure 4-13, and Figure 4-14 respectively. The historical map shows that several earthquakes have occurred within and nearby the project area with their magnitude ranging between 2 and 3.9 from year 1998 till year 2009. This suggests that the project area is prone to earthquakes and safety measures regarding earthquakes must be taken into consideration during the construction and operation phases of the project.

Moreover Figure 4-14 shows that the project area has a 10% probability of exceeding a Peak Ground Acceleration (PGA) value of 0.25 g during a period of 50 years, which is considered relatively high. The implications of this are "that all civil engineering facilities, including buildings and bridges, that are yet to be constructed should be designed using the design and

reinforcement detailing requirements (in reinforced concrete structures) of "high seismic hazard" established in international codes of practice" (Huijer et al., 2011).

Finally, as shown by the hydrogeological map (Figure 4-11) Majdel Anjar Faults and the Yammouneh Fault System cuts within the vicinity of the proposed project location. This also implies that "all civil engineering facilities, including buildings and bridges, that are yet to be constructed should be designed using the design and reinforcement detailing requirements (in reinforced concrete structures) of "high seismic hazard" established in international codes of practice" (Huijer et al., 2011).

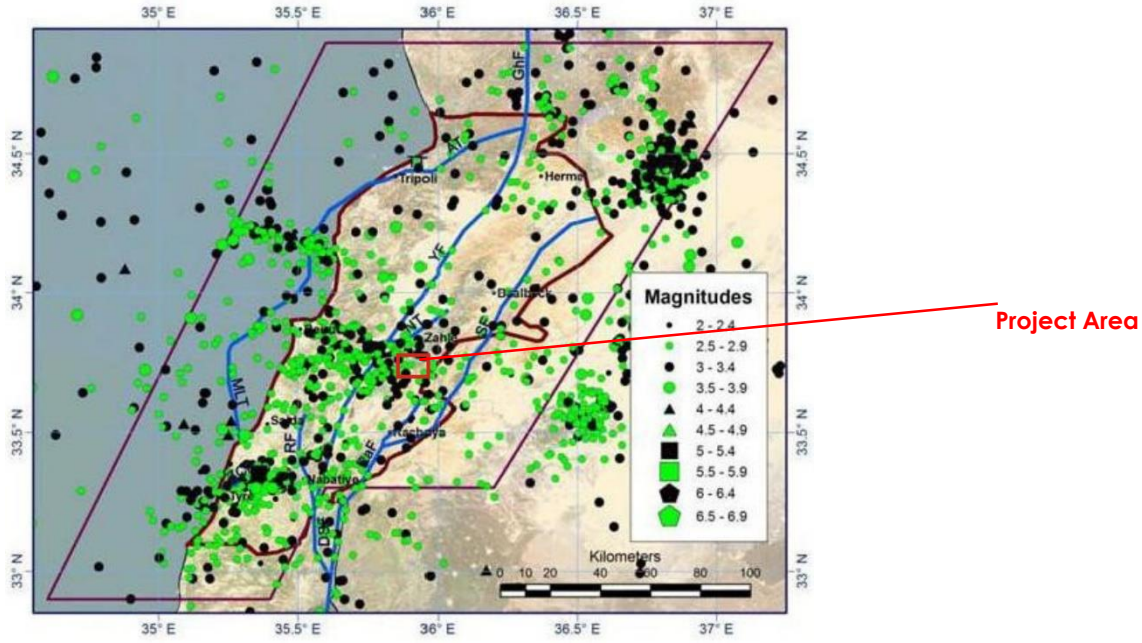


Figure 4-13 Map showing Earthquake Events in and around Lebanon between 1998 and 2009 with Magnitudes ≥ 2 along with the Marj Wastewater Network Project area (Adapted from Huijer *et al.*, 2011)

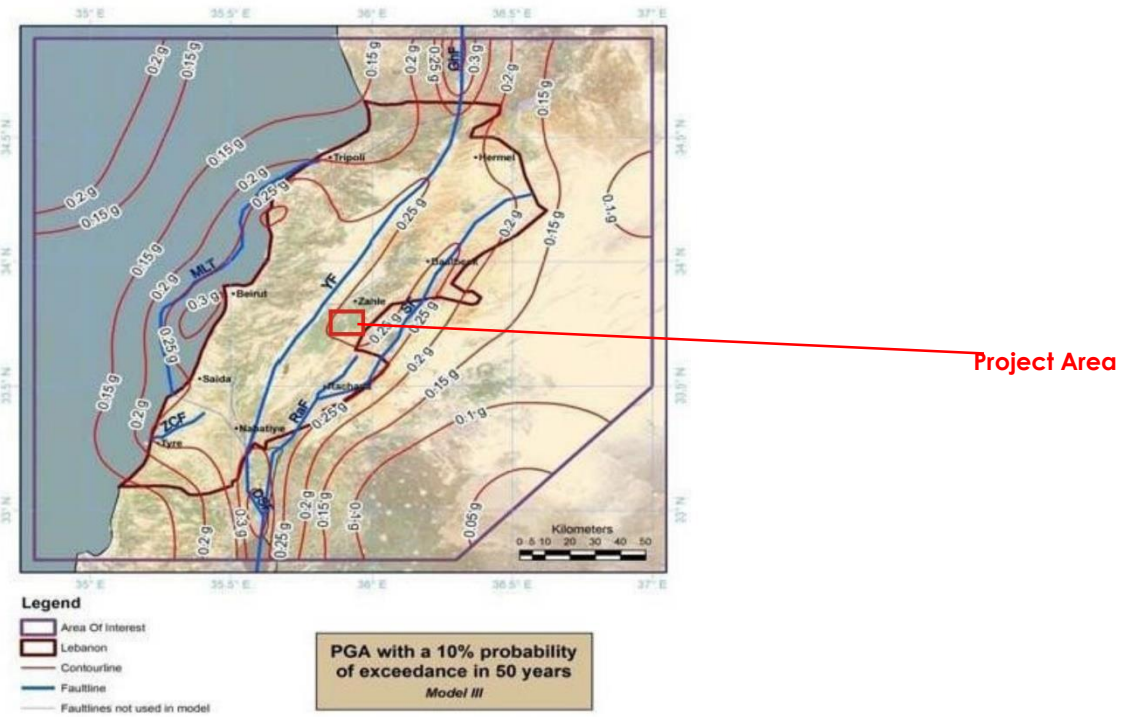


Figure 4-14 Map Showing the Seismic Hazard in Lebanon (contouring of peak ground acceleration with a 10% probability of exceedance in 50 years) along with Marj Wastewater Network Project area (Adapted from Huijer *et al.*, 2011)

4.2.7 Socio-Economic Environment

This section illustrates the Project Area's demographic, social and economic characteristics relevant to the Project and their relevance within the local context. Based on key informant interviews conducted as part of the data collection process with the presidents or members of different municipalities, who either provided their input during the interview or at a later stage depending on time and data availability, with the exception of the Municipality of Qabb Elias and the Municipality of Taalabaya, the following data was identified:

4.2.7.1 Population

Table 4-6 presents the total area of the 12 localities, number of residences, permanent and seasonal residents, and the approximate number of registered Syrian displaced persons as reported by the municipalities.

Table 4-6 Population in the 12 Localities as Reported by the Municipalities

Locality	Total Area (km^2)	Residences	Permanent Residents (A)	Seasonal Residents (B)	Registered Syrians (C)	Total Population (A+B+C)
Bouerij & Zebdol	5	NA	3,000	NA	NA	3,000
Chtaura & upper Jlala	2	300	1,000-1,500	0	500	1,800-2,300
El Mraijet	4.72	650	2,000	2,000	0	4,650
Jdita	6.11	1,400	8,000	4,000	0	12,000
Makse	4.5	800	4,000	1,000	5,000	10,000
Taalabaya & lower Jlala	5	10,000	51,000	9,000	12,000	72,000
Taanayel	NA	NA	NA	NA	NA	-
Saouiri	13	2,000	10,000	0	8,000	18,000
Qabb Elias & Wadi Ed Delem	NA	NA	NA	NA	NA	-
Total reported	**-**	**-**	**-**	**-**	**-**	**121,450-121,950**

BTD conducted a field survey to obtain the population per locality, by recording the number of households and estimating the number of residents per household. Those were later validated with the relevant municipalities. However, differences were noticed between the population reported by the municipalities and the population reported by BTD presented in Table 4-7, based on which the wastewater network design was built (for being more conservative), taking into consideration the population growth until 2045 in order to ensure that the network is designed with sufficient capacity.

Table 4-7 Population in the 12 Localities as Reported by BTD

Locality	Total Population
Bouerij	4,680
Zebdol	1,884
Chtaura & Jlala	5,000

Locality	Total Population
El Mraijet	4,770
Jdita	10,000
Makse	5,500
Taalabaya	40,000
Taanayel	5,000
Saouiri	12,000
Qabb Elias & Wadi Ed Delem	43,500
Total	**132,334**

4.2.7.2 Education and Employment

The following education and employment data was identified:

- Bouerij and Zebdol have one (1) school that offers intermediary education;
- Chtaura and upper Jlala have no educational institutions;
- El Mraijet has one (1) school that can accommodate 1,500 students;
- Jdita has three (3) universities and vocational schools, and four (4) schools that offer pre-school, elementary and intermediary education;
- Makse has one (1) public school that offers elementary and intermediary education;
- Taalabaya and lower Jlala have one (1) university, and two (2) schools that offer elementary, intermediary and secondary education; and
- Saouiri has four (4) schools, 3 public and one private, that offer intermediary and secondary education.

4.2.7.3 Commercial Establishments

Table 4-8 presents the types of commercial activities in the 12 localities.

Table 4-8 Type of Activities in the 12 Localities

Activity	Details
Bouerij & Zebdol	
Farming	1 goat and sheep rearing farm
Gas Stations and Car Repair	1 gas station, 1 car repair shop, and 1 car washing station
Industrial	1 dairy and cheese production industry
Chtaura & upper Jlala	
Gas Stations and Car Repair	3 gas stations
El Mraijet	

Farming	1 poultry rearing farm, and 1 cattle rearing farm
Gas Stations and Car Repair	3 gas stations, 8 car repair shops, and 4 car washing stations
Industrial	1 pickles industry and 3 cheese production industries
Jdita	
Farming	1 poultry rearing farm
Gas Stations and Car Repair	4 gas stations, and 6 car washing stations
Industrial	1 dairy and cheese production industry, and 1 winery
Makse	
Farming	1 poultry farm, and 2 cattle rearing farms
Gas Stations and Car Repair	1 gas station, 25 car repair shops, and 5 washing stations
Industrial	1 beverages industry, 1 canned food industry, and 1 block-cutting facility
Taalabaya & lower Jlala	
Farming	1 poultry rearing farm, and 2 cattle rearing farms
Gas Stations and Car Repair	8 gas stations
Industrial	10 concrete blocks production facilities and 1 block-cutting facilities
Saouiri	
Farming	20 cattle rearing farms, and 3 goat and sheep rearing farms
Gas Stations and Car Repair	4 gas stations, 15 car repair shops, and 5 car washing stations
Industrial	5 carpentries, 2 aluminum industries, 1 metal industry, 1 furniture workshop, and 1 concrete and marble industry

4.2.7.4 Key Prominent Features along the Road Corridor

Table 4-9 shows the pipework lengths per road type in the different network systems. Additionally Appendix E shows the key prominent features along the road corridor that might be affected by the construction activities due to their proximity to the proposed wastewater network. These key prominent features mainly consist of industrial facilities, academic institutions, places of worship, farmlands, refugee camps, commercial establishments, and public institutions.

Table 4-9 Pipework Length per Road Type in the different Network Systems

Network System	Total Pipework Length(in m)	Pipework Lengths per Road Type	
		Classified Road Network (Length in m)	Local Road Network (Length in m)
Main lines	37,460	9,390	28,070
Saouiri	55,400	4,781	50,619
Mraijet 1	1,550	0	1,550
Bouerij 1	5,490	0	5,490
Bouerij 2 and Mraijet 2	8,680	292	8,388
Makse 1	4,650	800	3,850
Makse 2	10,810	620	10,190
Qabb Elias 2[5]	1,440	0	1,440
Taalabaya[6]	32,280	2,180	30,100
Zebdol	5,500	1,930	3,570
Jdita	19,770	55	19,715
Chtaura[7]	5,070	1,340	3,730

[5] Wadi Ed Delem is included in Qabb Elias 2 system
[6] Taanayel is included in Taalabaya system
[7] Jlala is included in Chtaura system

4.2.7.5 Healthcare Facilities

According to local authorities, there is one (1) dispensary for Bouerij and Zebdol with a total of three (3) clinics. There are two (2) hospitals in Chtarura and upper Jlala that can accommodate more than 100 beds each. Neither El Mraijet nor Makse have hospitals or dispensaries, however a dispensary has been already established in Makse and is awaiting the issuance of the operational license in order to operate. Jdita, on the other hand, has one dispensary, whereas Taalabaya and lower Jlala have one (1) hospital and three (3) dispensaries with around 30 clinics. Furthermore, one (1) dispensary exists in Saouiri with a total of three (3) clinics.

4.2.7.6 Water Supply

No data on water supply was provided by the Municipality of Bouerij and Zebdol. Chtaura and upper Jlala on the other hand, greatly rely on Jdita's public well and very few private wells that do not exceed 10 wells, to supply the village with its water needs. El Mraijet has a spring and a public well, both of which are exploited to supply the village with water. According to the records of Jdita municipality, although Jdita has one spring, it is not exploited. Jdita relies on its public well, which is operated by the Bekaa Water Establishment, to provide the village residents with water. As per the municipality records, Makse village has four (4) small springs, however those are not exploited and usually become dry during the summer season. Makse receives its water supply from Jdita's public well and several private wells. Taalabaya and lower Jlala do not have any public or private wells, so they receive their water needs from three public wells located in Mount Lebanon and operated by the Bekaa Water Establishment. Saouiri on the other hand has two springs and 4 public wells; however, the springs are all dry and only one out of the 4 public wells is operational.

4.2.7.7 Wastewater Management

As mentioned earlier in this report, although all the villages, with the exception of Saouiri, are connected to the municipal wastewater network, they are not fully serviced by the existing network. The existing network only covers between 40% and 90% of the units. In Bouerij, the collected wastewater is conveyed towards El Mraijet, from which it is discharged into Makse river. The wastewater collected from Chtaura and Jlala is conveyed towards Chtaura river, where it is discharged through two outfalls. Jdita's wastewater is also conveyed towards Chtaura river. In Makse, the collected wastewater is conveyed by gravity toward Nahr Makse, where it is discharged through three outfalls. In Taalabaya, the collected wastewater is conveyed towards Berdaouni river. All these villages use either cesspools or septic tanks to compensate for incomplete wastewater networks. Saouiri, on the other hand, relies completely on cesspools.

Most villages are not fully serviced by the existing wastewater network, mainly because of the recent residential expansions that took place after the network design and construction, and of possible deteriorations in parts of the network. Construction of the additional sewer lines is expected to secure full service coverage of wastewater collection and conveyance.

4.2.7.8 Solid Waste Management

Data on solid waste management was not reported by Boueirj and Zebdol municipality. Chtaura and upper Jlala, El Mraijet, Jdita, Makse, and Taalbaya and lower Jlala dispose of their municipal waste at Zahle sanitary landfill, only after the recyclables are removed at Zahle sorting facility operated by the Municipality of Zahle. Saouiri village on the other hand, has its own sorting facility, however it uses manual sorting techniques. Remaining municipal waste is disposed in designated dumpsites.

5. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

This section identifies the main potential impacts that could arise from the construction and operation of El Marj Wastewater System in the villages of Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri, and the lower part of Qabb Elias, analyzes these impacts, and assesses their significance so that any potentially significant impact can be properly mitigated.

Based on previous relevant and similar environmental studies and on concerns identified by the technical experts, the following environmental and socio-economic aspects and impact categories were selected by the study team to be further investigated as part of the ESMP study:

- Impacts on ambient air quality;
- Impacts on noise;
- Impacts on soil and groundwater resources;
- Impacts on biological environment;
- Impacts on traffic;
- Impacts on resource use (water, energy);
- Impacts on waste generation;
- Impacts on archaeology and cultural heritage;
- Impacts on socio-economy; and
- Impacts on occupational and public health and safety.

Potential impacts are identified and assessed for the construction and operation phases of the Project, based on the methodology described in the following sub-sections.

5.1 IMPACT IDENTIFICATION AND ASSESSMENT METHODOLOGY

5.1.1 Impact Identification

The identification and analysis of impacts consists of appraising the information submitted by the Project Proponent in conjunction with the baseline information of the site. Impacts from similar projects, as cited by literature and as documented by ELARD for other similar projects conducted elsewhere, were also examined so as to identify potentially significant impacts on the environment and surrounding communities. After identifying the Project impacts, the ESMP study evaluates their significance and determines mitigation measures to eliminate/minimize them.

A matrix was developed to summarize all identified potential impacts during the construction and operation phases of the Project (Table 5-1). The matrix describes the potential impacts through identifying the sources/activities and the pathway (media of transportation such as air, water) through which these impacts reach their receptors (environment/human). This section further explains the proposed methods of assessment.

Table 5-1 Impact Identification Matrix for Construction and Operation Phases of the Proposed Project

Environmental Aspect / Activity	Ambient Air Quality	Noise	Soil and Groundwater Resources	Water Resources Consumption	Energy Resources	Biological Environment	Traffic	Socio-economy	Health and Safety	Archaeology and Cultural Heritage
Construction Phase										
Operation of machinery, equipment and generators	X	X	X	-	X	X	X	X	X	X
Excavation, trenching, backfilling, and compaction works for pipelines on public roads	X	X	X	X	X	X	X	X	X	X
Storage of fuels, chemicals, and stockpiling of construction materials on site	-	-	X	-	-	X	-	-	X	-
Accidental spills (fuels/chemicals) and material wash-off	X	-	X	-	-	X	-	-	X	-
Waste generation and disposal (solid and liquid)	X	-	X	-	-	X	X	X	X	-
Operation Phase										
Maintenance of sewage network	X	X	X	-	X	-	-	-	X	-
Malfunctioning, accidental downtime of sewage network	X	-	X	-	-	X	-	X	X	-

Environmental Aspect / Activity	Ambient Air Quality	Noise	Soil and Groundwater Resources	Water Resources Consumption	Energy Resources	Biological Environment	Traffic	Socio-economy	Health and Safety	Archaeology and Cultural Heritage
resulting in raw wastewater overflow										

5.1.2 Environmental Impact Screening and Assessment

Impact screening involves the examination and evaluation of the change inflicted on the baseline environment as a result of construction and operation activities associated with the Project implementation.

The predicted environmental and social impacts will be assigned a level of **significance** (Low, Medium or High) based on the **likelihood** (Low, Moderate or High) of the impact occurrence and the **consequence** (Negligible, Minor, Moderate, Major, Critical, or Beneficial) of that impact. A number of considerations are built into the Impact Consequence Criteria including the nature, direction, magnitude, geographic extent, timing, duration, and reversibility of the impact, as per the MoE Decision 261/1 dated 2015 (Review process for EIA reports). Some basic questions, which can be used to address the above considerations, are outlined in Table 5-2.

Table 5-2 Questions for Addressing Considerations under Impact Consequence Criteria

Issue	Question	Criterion	
Nature of Impact	What is the nature of the impact?	P: Positive N: Negative	D: Direct I: Indirect
Magnitude of the Impact	The magnitude will be assessed for each impact category separately	L: Low M: Medium H: High	
Extent of the impact (geographical scale of the impact)	Is the extent of the impact localized or confined to a designated area around the project site, or does it extend regionally/ nationally/ globally?	L: Local - Change or effect only within the project site or extends to areas immediately outside G: Global - Regional, national, or international changes or effects.	
Timing of the impact	Is the impact likely to persist for a long or short term?	S: Short term M: Medium term L: Long term	
Duration of the impact	Are the consequences likely to be limited to the construction or operation phase?	C: During construction O: During operation	
Reversibility of the impacted condition (impacted condition can be changed or reversed)	Are the consequences likely to be reversible or irreversible?	R: Reversible I: Irreversible.	

5.1.3 Impact Assessment Criteria

The consequence assessment criteria table to be included under each environmental aspect is illustrated below Table 5-3

Table 5-3 Consequence Assessment Criteria Template Table

Impact/Source	Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating

The consequence rating criteria are ranked into six levels of significance, the last being the beneficial impact, as listed in Table 5-4. The likelihood of the occurrence of the impact is then rated according to the criteria outlined in Table 5-5. Based on the level of significance and likelihood of occurrence, the significant risks (impact severities) are identified.

Table 5-4 Consequence Assessment Rating Criteria

Criteria	Consequence Rating
Nature: Negative Magnitude: High Extent: Global (large area of effect that supports sensitive receptors) Timing: Short, medium or long-term Reversibility: Irreversible	5. Critical
Nature: Negative Magnitude: High Extent: Local (area supports a significant proportion of sensitive receptors) Timing: Short, medium or long term. Reversibility: Reversible or irreversible	4. Major
Nature: Negative Magnitude: Medium Extent: Local (area of effect encompasses an area that supports either a moderate or minor proportion of sensitive receptors) or global Timing: Short, medium or long term Reversibility: Reversible	3. Moderate
Nature: Negative Magnitude: Low Extent: Local (sensitive receptors located in the immediate vicinity of the source or areas immediately outside) Timing: Medium or long-term (1 – 5 years or > 5 years) Reversibility: Reversible	2. Minor
Nature: Negative Magnitude: Low – unlikely to be noticeable Extent: Local (absence or presence of sensitive receptors located in the immediate vicinity of the source) Timing: Short-term Reversibility: Reversible	1. Negligible
Changes that result in a positive impact to an ecosystem, environment or population.	B. Beneficial

Table 5-5 Likelihood Evaluation Criteria and Ranking Impacts

Score	Category	Definition
H=3	High	The impact will occur under normal operational conditions
M=2	Moderate	The impact may occur at some time under normal operating conditions
L=1	Low	The impact is very unlikely to occur under normal operating conditions but may occur in exceptional circumstances

The impact significance level will be assigned according to the Likelihood of Occurrence cross-tabulated with the Consequence Rating Criteria, as shown in Table 5-6.

Table 5-6 Impact Significance Levels

		Consequence Rating					
		Negligible 1	**Minor 2**	**Moderate 3**	**Major 4**	**Critical 5**	**Beneficial B**
Likelihood Rating	**Low (L=1)**	1	2	3	4	5	+
	Moderate (M=2)	2	4	6	8	10	++
	High (H=3)	3	6	9	12	15	+++

Legend

Consequence Rating	**Likelihood**	**Significance**	
1- Negligible	L- Low (1)	+ to +++	Beneficial
2- Minor	M- Moderate (2)	1 to 3	Low
3- Moderate	H- High (3)	4 to 9	Medium
4- Major		10 to 15	High
5- Critical			
B- Beneficial			

5.2 PRE-SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND PATHWAYS

Based on the methodology described above, the various impacts of the project were pre-screened according to the phase of the Project activity as well as the pathway of the impact. The preliminary findings are representative of the potential adverse and beneficial environmental and socio-economic impacts that could result from the Project. The results of the pre-screening process are summarized in Table 5-7.

Table 5-7 Pre-Screened Potential Environmental and Socio-Economic Impacts

Environmental Aspect/Receptor	Phase	Potential Impact
Ambient Air Quality	Construction	• Exhaust emissions from fuel-fired equipment, vehicles and on-site generators • Dust emissions from land clearance, excavation, backfilling, grading, and compaction activities,

Environmental Aspect/Receptor	Phase	Potential Impact
		movement of heavy machinery and vehicles on unpaved roads, and construction activities
	Operation	• Foul odor emissions from leaking or overflowing of raw wastewater at the level of the network (septicity of wastewater due to aging and stagnancy)
Noise	Construction	• Operation of equipment and on-site generators • Site clearance, excavation, backfilling, grading, and compaction activities • Heavy machinery and vehicle movement for the transportation of labor and materials
	Operation	• Maintenance activities
Soil and Groundwater resources	Construction	• Site clearance, trenching, excavation, backfilling, and compaction activities • Accidental spills or leaks of fuel and oil from machinery, generators and vehicles during construction and maintenance • Inadequate solid waste management • Inadequate wastewater management
	Operation	• Potential contamination due to leakages from the wastewater network
Biological Environment	Construction	• Site clearance, excavation and construction activities • Elevated noise levels from works, machines and traffic • Transportation of construction material and equipment, as well as construction waste • Inadequate disposal of solid wastes and wastewater discharges • Potential spills of oil and fuel
	Operation	• Leakage of wastewater
Traffic	Construction	• Increase in traffic from material/ waste haulage vehicles and machinery onsite and along roads leading to construction sites
	Operation	• Increase in traffic during maintenance works of sewage network
Water Resources	Construction	• Increase in water consumption for construction activities, hydro-testing of sewer lines, and domestic use (site labor)
	Operation	• None
Energy Resources	Construction	• Energy consumption during construction activities (machinery, vehicles, generators)
	Operation	• None
Waste Generation	Construction	• Construction-related solid and liquid wastes generation, in addition to construction and demolition waste (CDW) generation
	Operation	• Maintenance-related solid and liquid wastes generation (wastewater, sludge)
Archaeology and Cultural Heritage	Construction	• Excavation works
	Operation	• None

Environmental Aspect/Receptor	Phase	Potential Impact
Socio-economy	Construction	• Creation of new job opportunities for foreign labors, especially for Syrian refugees living in the Bekaa, who work as laborers • Potential damage to the existing infrastructure • Disturbances from noise and dust generation and traffic • Increased load on existing infrastructure (solid waste and wastewater generation) • Land acquisition (expropriation)
	Operation	• Beneficial Impact on public health and the environment of providing new sewer networks
Occupational and Public Health and Safety	Construction	• Potential risks to general health and safety of the workers, nearby residents and pedestrians
	Operation	• Potential risks to general health and safety of the workers during maintenance activities and to nearby residents from potential failures/ overflow of networks

5.3 SOURCES OF CUMULATIVE IMPACTS

Potential cumulative sources of impacts within the Project Area include the following:

- Existing traffic and related vehicular ambient air and noise emissions along adjacent roads;
- Air pollutant emissions from existing private power generators and solid waste open dumps in the area;
- Dust and air pollutants emissions from existing nearby construction sites;
- Continuous and cumulative resource use of water and energy from residences, trade, commercial, agricultural, educational, healthcare, and construction activities; and
- Surface water and groundwater pollution due to point source discharges of untreated sewage, industrial wastewater, agricultural activities, spills from generators' operation and maintenance and from gas stations in the study area, etc.

Whenever applicable, the effect of these potential cumulative impacts on the different receptors will be taken into consideration as part of the subsequent assessment of Project related impacts.

5.4 POTENTIAL IMPACTS ON AMBIENT AIR QUALITY

5.4.1 Sources of Potential Impacts

The primary sources of air pollutants from the various Project activities are listed in Table 5-8.

Table 5-8 Potential Impacts on Ambient Air Quality

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction • Exhaust emissions from fuel-fired equipment, vehicles and on-site generators	Exhaust emissions from vehicles passing nearby, and existing power generators, uncontrolled MSW disposal and open burning, and nearby construction activities

Source of Change (Project Activities)	Cumulative Sources of Impact
• Dust emissions from site clearance, land excavation, backfilling, grading and compaction activities, movement of heavy machinery and vehicles on unpaved roads, and other general construction activities **Operation** • Foul odor emissions from leaking or overflowing of raw wastewater at the level of the network (septicity of wastewater due to aging and stagnancy)	

5.4.2 Impacts during Construction

Table 5-9 below provides the rating of potential ambient air quality impacts during the construction phase before and after applying mitigation measures, respectively.

Table 5-9 Consequence Assessment of Ambient Air Quality Impacts during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Combustion and exhaust emissions	Before Mitigation	N/D	M	L	S	C	R	3. Moderate
	After Mitigation	N/D	L	L	S	C	R	2. Minor
Dust emissions	Before Mitigation	N/D	M	L	S	C	R	3. Moderate
	After Mitigation	N/D	L	L	S	C	R	2. Minor

5.4.2.1 Combustion and Exhaust Emissions

Construction activities will require considerable vehicle and heavy machinery movement, especially during the mobilization stage, which together with the diesel operated construction machinery and on-site generators, will generate exhaust emissions from the employed fuel-fired systems. According to the USEPA (2002), diesel emissions count about 40 hazardous air pollutants (HAP). The main air pollutants most likely to be associated with the emission sources mentioned above include: Oxides of Nitrogen (NO_x), Sulfur Dioxide (SO_2), Carbon Dioxide (CO_2), Carbon Monoxide (CO), and Particulate Matter (PM), all of which lead to adverse respiratory impacts. Carbon monoxide also acts as a poison by reducing the amount of O_2 that can combine with hemoglobin in receptors' bloodstreams.

The main concern is not to completely eliminate exhaust emissions, as it is technically impossible and inevitable during normal operation of machinery and vehicles, but to reduce and control them as much as possible.

The lack of equipment/machinery maintenance, poor fuel quality (ex: high sulfur content), unnecessary idling periods, long operation periods, and absence of exhaust emission control systems will result in the increase of pollutant emissions to ambient air.

Combustion and exhaust emissions associated with site equipment, vehicles and generators operations will be of a **Moderate Consequence (3)** and a **High Likelihood (3)**, resulting in a **Medium Significance (3H=9)** on the overall ambient air quality within the Project Area.

In order to reduce the impact of combustion and exhaust emissions on ambient air, the following mitigation measures are recommended to be adopted and implemented by the awarded Contractor:

- Ensure well designed, maintained, and operated equipment/vehicles. Precautionary control measures for emissions reduction could include proper engine fuel mixtures, regularly serviced exhaust emission systems, suitable engine tuning, and use of low sulfur content diesel, whenever available;
- Use environmentally friendly equipment whenever possible (machinery with higher fuel efficiency or equipped with air pollution control devices to minimize exhaust emissions);
- Keep a record of maintenance for all machinery, vehicles, and generators on site;
- Report and monitor monthly fuel consumption records to keep track of consumption levels and identify overuse;
- Avoid unnecessary idling of vehicles and equipment engines; and
- Ensure that an effective Maintenance Plan and Schedule is in place for employed site machinery, vehicles, and power generators.

By applying the above mitigation measures, the impacts from exhaust and combustion emissions will be reduced to **Minor Consequence (2)** with **High Likelihood (3)**, resulting in a **Medium Significance (2H=6)** on the overall air quality within the Project Area.

5.4.2.2 Dust Emissions

The sources of airborne particulates during the construction phase include the following:

- Site clearance, trenching, excavation, backfilling, grading, and compaction works;
- Handling of construction materials and other general construction activities;
- Operation of heavy machinery, equipment, and power generators; and
- Transportation of site labor and construction materials/wastes from and to the Project location.

Dust emissions would vary on a daily basis depending on the level of activity and the prevailing weather conditions. Under normal meteorological conditions, dust impacts will be limited within several tens to hundred meters from the disturbance area, i.e. construction site. The main environmental and health concerns associated with dust generation include:

- Potential nuisance impacts on nearby stationary receptors (residential, commercial, religious buildings, agricultural lands), and mobile receptors (pedestrians and motorists on nearby streets); and
- Occupational health risks to construction workers from inhaling dust-laden air that might irritate respiratory pathways.

The duration of main earth disturbance activities (i.e., land clearance, excavation, backfilling, grading, and compaction works) is limited to several months overall and the surrounding roads

that lead to the sites are not all paved, which increases the potential for dust emissions and is expected to impact the nearby receptors if not mitigated properly.

Dust emissions from construction activities are expected to have a **Moderate Consequence (3)** of a **High Likelihood (3)**. Accordingly, with no mitigation measures in place, dust emissions are likely to have **Medium Significance (3H=9)**.

Minimization of dust dispersion can be accomplished through dust control/suppression measures, including the following:

- Set physical barriers at site boundaries;
- Ensure site roads are kept regularly damped down and compacted to minimize dust emissions;
- Schedule deliveries of raw materials efficiently;
- Wheel-washing of vehicles before departure from construction site;
- Cover incoming and outgoing trucks with proper canopies;
- Limit vehicular speed onsite to 20 km/h;
- Maintain material stockpiles at minimum heights and adequate slopes and ensure that they are covered;
- Surround the construction areas with scaffolding nets to control debris and dust from dispersing beyond the construction sites; and
- Inform sensitive receptors of the scheduled construction works, ahead of time in conjunction with the concerned municipalities, especially for dust-generating activities.

With the above recommendations, the potential impacts from dust generation during construction activities of the additional sewer lines are expected to have **Minor Consequence (2)** and a **Moderate Likelihood (2)** resulting in a **Medium Significance (2M=4).**

5.4.3 Impacts during Operation

Table 5-10 below provides rating of potential ambient air quality impacts during the operation phase before and after applying mitigation measures, respectively.

Table 5-10 Consequence Assessment of Ambient Air Quality Impacts during Operation Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Foul odor emissions from leaking or overflowing of raw wastewater at the level of the network	Before Mitigation	N/D	L	L	L	O	R	2. Minor
	After Mitigation	N/D	L	L	M	O	R	2. Minor

5.4.3.1 Foul Odor Emissions

Normal operating and maintenance conditions of the sewage network are not expected to result in considerable odiferous emissions. Nevertheless, due to improper operating and maintenance practices, or due to sudden or accidental malfunctioning, incoming raw wastewater might overflow.

The impacts of odor emissions are expected to be of **Minor Consequence (2)** and **Moderate Likelihood (2)**, resulting in an overall **Medium Significance (2M=4)** on ambient air quality.

To reduce odor emissions, the following can be implemented:

- Ensure proper construction of the sewage network;
- Ensure that a regular inspection and maintenance schedule is in place for the sewage network to avoid blocked, broken or cracked pipes; and
- Establish an odor complaint grievance mechanism as a measure to allow implementation of timely and effective actions to minimize impacts from odors on downwind receptors.

With the above mitigation measures in place, odor emissions will be reduced, resulting in **Minor Consequences (2)** and **Low Likelihood (1)**, having **Low Significance (2L=2)** on ambient air quality.

5.5 POTENTIAL IMPACTS OF NOISE

5.5.1 Sources of Potential Impacts

The primary sources of noise from the various Project activities are listed in Table 5-11 below.

Table 5-11 Potential Impacts of Noise Levels

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction • Operation of heavy machinery, equipment, vehicles, and on-site generators • Site clearance, trenching, excavation, backfilling, grading, and compaction activities • Heavy machinery and vehicle movement for the transportation of labor, materials and waste **Operation** • Maintenance activities	Noise from nearby traffic, existing private power generators, and surrounding construction sites and industrial/ classified establishments or zones

5.5.2 Impacts during Construction

Table 5-12 below provides rating of potential noise impacts during the construction phase before and after applying mitigation measures, respectively.

Table 5-12 Consequence Assessment of Noise Impacts during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Noise associated with site preparation, construction activities and operation of on-site generators, heavy machinery, equipment and vehicles	Before Mitigation	N/D	M	L	M	C	R	3. Moderate
	After Mitigation	N/D	L	L	M	C	R	2. Minor

Noise impacts during the construction phase are considered temporary in nature. Potential sources comprise of activities caused by the operation of earth moving heavy machinery and equipment (excavators, bulldozers…) during site preparation, general construction activities, and transportation of equipment, materials, waste, and site labor, and the employment of site power generators. Typical sound level pressures recorded from the equipment anticipated to be used at the construction sites are illustrated in Table 5-13 for indicative purposes.

Table 5-13 Typical Sound Pressure Levels Reported from Construction (BS 5228-1 2009)

Equipment/Machinery	Noise Level (dB(A), LA_{eq} at 10 m)
Air compressor	95
Asphalt spreader/paver	75
Backhoe loader	67
Bench Saw	85
Bulldozer	86
Circular Saw	85
Compressor	65
Concrete mixer truck	80
Concrete Pump	67
Drill	85
Dump truck	79
Excavator Truck (Poclain)	82-83
Fuel tanker	79
Grinder	80
Ground excavation dozer	92
Hole Cutter	85
Jack hammer	90
Leveling ground grader	76-84
Mobile Concrete pump	75-80
Mobile Crane	67-70
Pick Up	78

Equipment/Machinery	Noise Level (dB(A), LA_{eq} at 10 m)
Plate compactor	63
Pneumatic breaker (Breaking hard ground)	87
Rock Breaker (Jack Hammer)	83
Roller compactor	84
Shovel Truck	83-91
Tower Crane	76-77
Water tanker	79
Welding machine	73

Noise levels of a range of 63 to 95 dB(A) are expected close to the main activity areas. Nevertheless, these levels would be reduced as the distance from the point source of noise increases. Noise levels will only affect potential receptors (the closest residences) for a relatively short period of time and intermittently. Noise insulation at a typical residential dwelling can result in 25-35 dB(A) noise reduction (BS 8233: 1999), only in the case where all windows are closed. If a window is left partially open, noise will be reduced by 10-15 dB(A) (BS 8233: 1999). As such, noise will be less audible to the local residents when indoor.

Therefore, noise emissions during the construction phase will have **Moderate consequences (3)** and **High likelihood (3)**, resulting in **Medium Significance (3H=9).**

Mitigation measures to reduce works-associated noise levels include:

- Fit all machinery, equipment, and vehicles with exhaust silencers where possible;
- Ensure proper inspection and maintenance of machinery, vehicles and generators;
- Avoid idling and switch off engines when not in use;
- Place noisy equipment away from sensitive receptors, behind stockpiles to provide acoustic barriers;
- Control speed limits of vehicle movement on site and in the surrounding area;
- Plan deliveries to and from the site during day time hours;
- Respect scheduled working hours (7:00 am- 6:00pm) and avoid night-time work;
- Avoid construction works on Sundays and public holidays;
- Inform site staff and workers on the impact of noise and the applicable regulatory requirements;
- Provide workers with noise protection equipment and enforce their use;
- Conduct regular noise monitoring to ensure that noise emissions are compliant with national standards (Decision 52/1, provided in Appendix D);
- Notify the residents of the plans and expected duration prior to initiating the works, in conjunction with concerned municipalities; and
- Establish a noise complaint grievance mechanism as a measure to allow implementation of timely and effective actions to minimize noise impacts on downwind receptors.

Implementing the aforementioned mitigation measures will result in **Minor Consequences (2)**, of a **High Likelihood (3),** giving **Medium Significance** (**2H=6**).

5.5.3 Impacts during Operation

Table 5-14 below provides rating of potential noise impacts during the operation phase before and after applying mitigation measures, respectively.

Table 5-14 Consequence Assessment of Noise Impacts during Operation Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Noise from the normal operation and maintenance of the sewage networks	Before Mitigation	N/D	L	L	L	O	R	2. Minor
	After Mitigation	N/D	L	L	L	O	R	1. Negligible

5.5.3.1 Noise from Normal Operation and Maintenance of the Sewage Networks

Noise is expected to arise from the usage of equipment during the maintenance period of the wastewater network.

Noise impact will be of **Minor Consequence (2)** and **Low Likelihood (1)**, resulting in **Low Significance (2L=2).**

The following mitigation measures should be adapted to minimize the impacts:

- Notify nearby residents of the networks maintenance plans and the expected duration prior to initiating the works, in conjunction with the concerned municipalities;
- Avoid idling of equipment and the generator when not in use; and
- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers.

Noise impact will be of **Negligible Consequence (1)** and **Low Likelihood (1)**, resulting in **Low Significance (1L=1).**

5.6 POTENTIAL IMPACTS ON SOIL AND GROUND WATER

5.6.1 Sources of Potential Impacts

The primary sources of impacts on soil and groundwater from the various Project activities are listed in below Table 5-15.

Table 5-15 Potential Impacts on Soil and Groundwater

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction • Site clearance, trenching, excavation, backfilling, grading, and compaction activities • Accidental spills or leaks of fuel and oil from machinery, generators and vehicles during construction and maintenance	Groundwater pollution due to prolonged disposal of untreated sewage into septic tanks/ cesspools in additional to deteriorated wastewater networks causing leakages of raw sewage, as well as industrial

Source of Change (Project Activities)	Cumulative Sources of Impact
• Inadequate solid waste management • Inadequate wastewater management **Operation** • Accidental spills or leaks of fuel from onsite fuel storage and operation and maintenance activities • Potential contamination of soil and groundwater resources from wastewater overflows and/or leakages	and agricultural wastewater sources, spills, etc. in the project surroundings

5.6.2 Impacts during Construction

Table 5-16 below provides rating of potential impacts on soil and groundwater during the construction phase before and after applying mitigation measures respectively.

Table 5-16 Consequence Assessment of Soil and Ground Water during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Temporary or permanent change in topography, soil erosion and collapse from grading, trenching, or excavation works	Before Mitigation	N/I	H	L	L	C	I	4. Major
	After Mitigation	N/I	M	L	L	C	I	3. Moderate
Accidental spills of fuel, oil and chemicals	Before Mitigation	N/D	H	G	L	C	I	5. Critical
	After Mitigation	N/D	L	L	M	C	I	3. Moderate
Inadequate solid waste management	Before Mitigation	N/D	H	L	L	C	R	4. Major
	After Mitigation	N/D	M	L	L	C	R	3. Moderate
Inadequate wastewater management	Before Mitigation	N/D	M	L	M	C	R	3. Moderate
	After Mitigation	N/D	L	L	S	C	R	1. Negligible

5.6.2.1 Temporary or Permanent Change in Topography, Soil Erosion and Collapse from Grading, Trenching, or Excavation

Potential impacts from physical disturbance of underlying soils at work sites include physical compaction, erosion, and reduction in porosity and loss of permeability.

Trenching works for the additional sewer lines will result in direct disturbance of soil including localized alteration of the soil profile within the excavation/trench footprint, and soil compaction in the immediate vicinity as a result of vehicle and construction equipment operations.

Soil compaction is also a vital part of the construction process. It is used for support of the building foundation, roadways, walkways, and retaining walls. The compaction process

consists of mechanically densifying a soil by pressing the soil particles together into a close state of contact with air being expelled from the soil mass in the process. When soil particles are forced together by compaction, both the number of voids contained in the soil mass and the size of the individual void spaces are reduced. This change in voids has an obvious effect on the movement of water through the soil. One effect is to reduce the permeability, thus reducing the seepage of water.

Given the impact on soil is long-term and irreversible, the impact is classified as having **Major Consequence (4)** and **High Likelihood (3)** of occurrence; this results in a **High Significance (4H=12)**.

Mitigation measures should be adopted by the site Contractor to reduce the significance of potential impacts; these include:

- Ensure international standards (i.e. ASTM Soil Compaction Standards) are met during any excavation works, compaction and grading activities, in order to minimize expected disturbance during the construction phase;
- Manage fixed routes for equipment movement and avoid multiple routes; and
- Re-use excavated/cut materials as general fill where considered suitable.

If the above mitigation measures are taken into consideration, the potential impacts from excavation and soil compaction would be reduced to **Moderate Consequence (3)** rating with **Moderate Likelihood (2)**, as such the significance level will then be a **Medium Significance (3M=6)**.

5.6.2.2 Impacts from Accidental Spills of Fuel, Oil and Chemicals

The major potential sources of accidental spills that might be incurred from the construction of the proposed Project include chemicals, diesel supplies, lubricating oils, among others, as part of routine equipment and generators operations and maintenance during the construction phase.

These spills might contain compounds such as benzene, toluene, ethyl-benzene and xylene (BTEX), or compounds of methyl tertiary butyl ether (MTBE). These aromatic hydrocarbons tend to readily evaporate from surface spills and biodegrade under aerobic and anaerobic conditions given their relatively good solubility and volatility, particularly MTBE and benzene. Spills consisting of BTEX; Poly Aromatic Hydrocarbons (PAHs), chlorinated hydrocarbons (CHs), as well as heavy metals such as Nickel, Copper, Chromium and Zinc persist in the receiving environment, and when mixed with soil, they tend to adhere and accumulate due to their low evaporation and biodegradability.

Since excavation will not be close to the groundwater level that is not shallow within the study area, the groundwater will be at moderate levels of risk in case of any spill.

The impact of potential spills will be long-term, with a **Critical Consequence (5)** and **Low Likelihood (1)** of occurrence, thus resulting in a **Medium Significance (5L=5).**

There are several mitigation measures that should be incorporated during the construction stage to minimize impacts from potential spills and leaks, and even prevent them from occurring. Below is a minimum list of required mitigation measures:

- Good housekeeping practices through handling and storage of chemicals, oil, fuels and lubricants within containment facilities (e.g., bunded areas, leak-proof trays) designed to prevent the release of spills/leaks to the soil and groundwater environment;
- Maintenance schedule should be in place as part of the inspection procedures of all equipment/ generators/ machinery for risk minimization;
- Maintenance of machines and equipment should take place off-site or onsite in a well-contained area with impermeable concrete pavement and drainage for vehicle washing and maintenance;
- Oil spill response kits should be available wherever oils are being used/stored;
- Promote awareness among workers on how to handle oil/lubricants;
- Train workers how to clean up small-scale spills;
- Ensure drip trays are present when re-fuelling;
- Prepare a Spill Emergency Plan specific for the Project; and
- In case of spill:
  - Immediately report incidents to the concerned authorities;
  - Contain the source of spill (close valve, seal pipe, seal hole or as appropriate);
  - Check for hazardous flammable materials on site;
  - Prompt clean-up of the spill by removing affected top soil layer by trained employees who should be equipped with appropriate tools and Personal Protective Equipment (PPE);
  - Treat and contain the removed soil as hazardous waste; and
  - Adopt, to the extent possible, dry cleaning techniques to decrease resulting wastewater, and to avoid flushing of spills to deeper soil layers.

Once the above is applied, the impacts of leaks/spills will become of **Moderate consequence (3)** and **Low Likelihood (1)** of occurrence; resulting in a **Low Significance** (**3L=3**).

5.6.2.3 Impacts from Inadequate Solid Waste Management

As mentioned in previous sections, construction activities are likely to generate considerable volumes of solid wastes of various types. Inappropriate waste handling and disposal practices may potentially result in soil and groundwater contamination due to leaching and runoffs.

Poor Waste Management will have a **Major consequence (4)** with **Moderate Likelihood (2)** if no mitigation measures are in place, resulting in a **Medium Significance (4M=8).**

The potential impact resulting from poor waste management should be reduced by implementing the following measures:

- Segregate at source domestic-like wastes and construction wastes that can be reused onsite from those that need to be transferred for treatment or disposal;
- Sort excavation waste resulting from construction activities into different types (bulky aggregates, fine aggregates, etc.);
- Reuse part of the excavation waste in backfilling; and dispose of the rest (if any) in an adopted/authorized construction and demolition waste dump;

- Material stockpiles should be of certain heights, slopes and be well covered and contained;
- Schedule the works during dry season, when possible;
- Progressively carry out rehabilitation of disturbed areas following completion of works at all construction sites (rehabilitation will include reinstatement of soil, surface leveling, re-vegetation and mulching, where applicable); and
- Ensure that standards of "good housekeeping" are maintained (i.e., avoid littering, prevent storage of combustible waste for more than 24 hours to prevent attraction of pests and flies).

Once the above are applied, the impact will be reduced to **Moderate Consequence (3)** with **Low likelihood (1)** resulting in a **Low Significance (3L=3).**

5.6.2.4 Impacts from Inadequate Wastewater Management

If inappropriate sanitary facilities for construction site labor are not provided and no strict rules of sanitation are maintained, domestic wastewater may find its way into the underlying soils and eventually, groundwater. If septic tanks used for sanitary facilities are not leak-proof, leakages may result in gradual pollution of groundwater resources given the Project area is found to be partially on a karstic aquifer (C4-C5 geological formation).

Based on the above, the impact from inadequate storage and disposal of wastewater during construction is considered to have a **Moderate consequence** with **High likelihood,** resulting in a **Medium Significance (3M=9)**.

To ensure that no groundwater contamination results from poor wastewater management, the below should be taken into consideration by the awarded Contractor:

- Ensure all connections are inspected and are not leaking through the regular inspection of septic/ holding tanks (if any) and connections to the wastewater sewage network;
- Obtain a permit from the Municipality or the relevant Water Establishment to transport and discharge the domestic wastewater to an operating treatment facility; and
- Restrict vehicle washing to contained maintenance areas offsite or onsite with impermeable concrete pavement and proper drainage.

With the above measures being implemented, the impact will become of **Negligible Consequence (1)** with **Low Likelihood (1),** resulting in a **Low Significance (1L=1).**

5.6.3 Impacts during Operation

Table 5-17 below provides rating of potential impacts on soil and groundwater during the operation phase before and after applying mitigation measures respectively.

Table 5-17 Consequence Assessment of Soil and Groundwater during Operation Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Potential contamination from wastewater overflows and/or leakages	Before Mitigation	N/D	M	L	M	O	R	3. Moderate
	After Mitigation	N/D	L	L	M	O	R	2. Minor

5.6.3.1 Potential Contamination from Wastewater Overflows and/or Leakages

During the operation phase of the wastewater networks, sudden malfunctioning or obstruction might take place, although the likelihood is low due to the diameter of the pipes, which ranges between 150 mm and 1,000 mm. Improper operation and maintenance of networks might lead to a relatively higher frequency of malfunctions. These all result in possible overflows of raw wastewater and/or leakages from the networks into underlying soils and eventually, groundwater.

Based on the above, the impact from inadequate storage and disposal of wastewater during operation is considered to have a **Moderate consequence (3)** with **Moderate likelihood (2),** resulting in a **Medium Significance (3M=6)**.

Measures should be adopted to eliminate and/or reduce soil, groundwater and indirect impacts on water resources from sudden overflows or leakages of raw wastewater due to malfunction or obstruction. These include:

- Proper operation and maintenance procedures of the sewage network including replacing network portions with an expired design life;
- Continuous monitoring of any signs of overflows;
- Ensure sewage network manholes are closed with proper lids to prevent blockages from fallen bulky objects.
    - Prepare an Emergency Response Plan in case of sewer overflows due to clogs in sewer lines or ground subsidence. The Emergency Response Plan will most consist of diverting the existing sewage flow to ensure uninterrupted service during maintenance activities, by installing a temporary bypass using flexible pipes, and a sump pump. The lump sum cost of this measure is USD 100,000, and this is part of the operation and maintenance activities cost of the WWTP and the network. An Emergency Response team assigned by BWE (operator) must follow the established Emergency Response Plan, and must have access to all sewer facilities, in order to repair any component due to contingencies related to sewer overflows. In case of overflow: Clean the sewer line to remove grease, grit, and other debris that may lead to sewer overflow (in case of overflow due to clogging); *or*
    - Replace sewer line and backfill around the manhole evenly to prevent tipping, and compact the fill (in case of ground subsidence).

If proper implementation of the above measures is ensured, the predicted impacts will become a **Minor Consequence (2)** with a **Low Likelihood (2),** resulting in a **Medium Significance (2L=2)**.

5.7 POTENTIAL IMPACTS ON BIOLOGICAL ENVIRONMENT

5.7.1 Sources of Potential Impacts

The primary sources of impacts on the biological environment from the various Project activities are listed in Table 5-18 below.

Table 5-18 Potential Impacts on the Biological Environment

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction Damage to biological environment from: • Site clearance, excavation and construction activities • Elevated noise levels from works and employed machinery and equipment • Increased traffic • Transportation of building material, equipment and waste • Inadequate disposal of solid waste and wastewater **Operation** Damage to biological environment from: • Leakage of wastewater	Inadequate disposal of solid waste (open dumps) and untreated wastewater in the surrounding area

5.7.2 Impacts during Construction

Table 5-19 below provides rating of potential impacts on the biological environment during the construction phase before and after applying mitigation measures respectively.

Table 5-19 Consequence Assessment of Impacts on the Biological Environment during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Excavation and construction activities and associated traffic and waste disposal	Before mitigation	N/D	M	L	M	C	R	3. Moderate
	After mitigation	N/D	L	L	S	C	R	1. Negligible

Potential negative impacts on biodiversity during plant construction are summarized in Table 5-20.

Table 5-20 Potential Negative Impacts on Biodiversity

Impact	Cause
Loss or destruction of trees and plants	Construction works
Altered abiotic/site factors	Soil compaction, erosion

Impact	Cause
Mortality of individuals	Destruction of vegetation
Disturbance to wildlife	Construction noise, traffic, or presence of people, and disposal of waste

Based on the description of the biological environment, the anticipated project will not lead to significant negative impacts on biodiversity except for the potential pollution of the water body of the Anjar – Kfarzabad Hima and the removal of some trees. The main construction activities having negative results on biodiversity are earth-moving activities, generation and inadequate disposal of domestic and construction waste material and wastewater effluent discharges.

The proposed project will not have a direct impact on the KBAs or the SBR since the construction works are taking place along the road right of way in residential areas. On the contrary, the project will help combat the pollution caused by untreated wastewater disposal, and it is worth mentioning that the SBR management plan does not prohibit minor construction activities within the buffer and transition zones. However, the transportation of equipment and materials to and from the project's sites might negatively affect biodiversity within the KBAs if the roads used are within or in close proximity to the KBAs borders that coincide with the core zone of the SBR, especially in the villages of Qabb Elias, Mraijet and Bouerij.

A total of 170 existing trees have been identified to require potential removal from the surveyed proposed plots. These are of the following species:

- 67 olive trees;
- 25 plum trees;
- 21 fig trees;
- 9 almond trees;
- 10 pomegranate trees;
- 25 cherry trees; and
- 13 apple trees.

However, these are abandoned and the plot owners do not pick their fruits or gain livelihoods from their exploitation.

The potential impact of construction activities on biodiversity is considered to have **Moderate Consequence (3)** and **High Likelihood (3),** resulting in **Medium Significance (3H=9)**.

Recommended mitigation measures to minimize or eliminate construction impacts on biodiversity at the proposed location include:

- Minimize disturbance of natural land by excavating and constructing necessary areas of land only;
- Stay away from the KBAs, himas, and the SBR while transporting materials and equipment to and from the project's sites, i.e., use roads that are far away from their boundaries to minimize negative impacts on these areas (Figure 4-7 and Figure 4-8 above show the villages where the network will pass, the KBAs surrounding them and the Anjar and Kfarzabad himas that are closest to them);

- Prohibit unnecessary cutting or damaging of wild plants and trees, specifically the wild species;
- Trees that will not be cleared should be separated from the construction area by a barrier placed at an appropriate distance from the tree trunk. It is generally recommended that the barrier is placed at a distance equal to the branch spread of the tree or half its height, whichever is greater. When branches are in the way, they should be pruned rather than removing the whole tree;
- Olive and fig trees are sturdy, and usually respond well to transplanting, especially in the fall season, when soil and air temperatures are still warm and thus the roots can become established. Thus, it is recommended to transplant all trees of these two species (67 olive trees and 21 fig trees; other tree species' survival chances following translocation are low) once they are cleared from the affected plots. For higher chances of successful transplantation of olive and fig trees, the following method is suggested:
    - Tree leaves should be removed off the top branches;
    - Dig a hole around the trunk (radius of 50 cm or greater depending on tree age and circumference) as deep as possible to expose the main roots of the tree. Trees could be removed with the help of a JCB Backhoe, while keeping as much of the soil intact as possible.
    - Trees should be removed with their soil and each gently put in a big pot. Some humus or peat moss should be added at the bottom of each pot before placing the dug tree in it. The top of the pot should also be covered with a layer of humus soil or peat moss. The trees should be delivered to the Municipality and watered regularly.
- Coordinate with the Municipality of Saouiri, before initiating construction works to ensure translocation of all olive and fig trees (total of 88 trees) upon their clearance within the shortest period of time to increase their chances of survival;
- Avoid construction works during the bird migration seasons within plots of Medium ecological value in Saouiri (shown in Figure 5-1), in the area within 500 m from Hima Anjar-Kfarzabad, and in the section that falls within the buffer and transition zones of the SBR, because these areas fall on the migratory route of birds for both seasons. The peak spring migration season is from March to mid-May, whereas the fall one is during September and October;
- Proper disposal of domestic and construction waste at designated sites;
- Enclosing all fine earth materials during transportation to and from the site to prevent spillage and dusting;
- Proper storage and prompt transportation of construction material to prevent them from being washed away during rainfall or carried by wind; and

- Storage of wastewater from the construction phase in tight septic tanks that shall be regularly emptied and transported for discharge into an operating wastewater treatment facility.

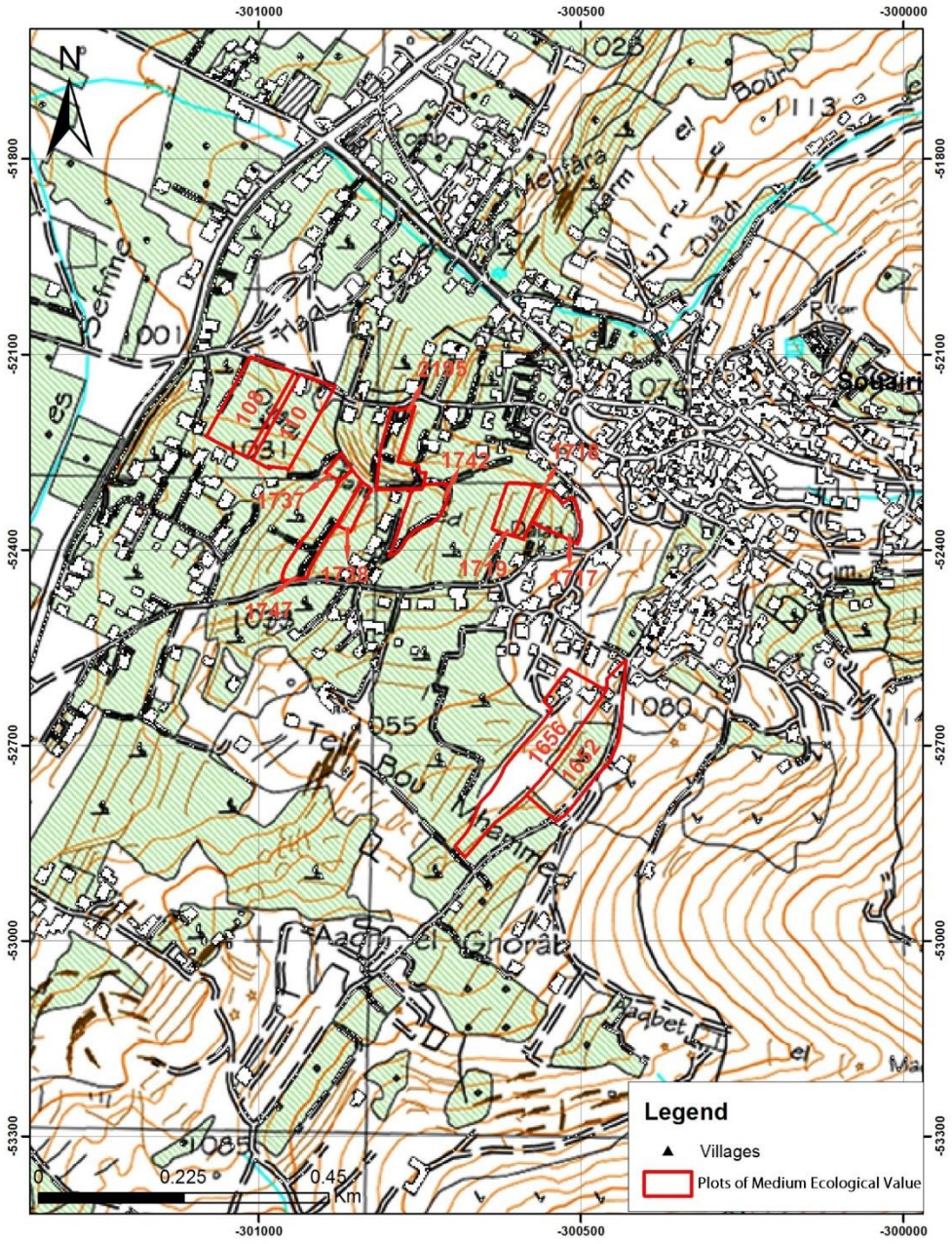


Figure 5-1 Plots of Medium Ecological Value in Saouiri

With these mitigation measures in place, the potential impact of construction activities on biodiversity becomes **Negligible (1)** with **Low Likelihood (1)**, leading to an overall **Low Significance (1)**.

5.7.3 Impacts during Operation

Table 5-21 below provides rating of potential impacts on the biological environment during the operation phase before and after applying mitigation measures respectively.

Table 5-21 Consequence Assessment of the Biological Environment during Operation Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Normal operation of networks	Before mitigation	N/D	L	L	L	O	R	2. Minor
	After mitigation	P/I	-	-	-	-	-	Beneficial

The main impacts during operation are summarized in Table 5-22.

Table 5-22 Potential Negative Impacts on Biodiversity

Impact	Cause
Increased human intervention	Operation and maintenance works
Air and Soil pollution	Improper disposal of liquid and solid waste
Water pollution	Leakage of wastewater
Disturbance to fauna	Maintenance noise, traffic, or presence of people

The project will ensure the proper treatment and disposal of domestic wastewater generated in the project area, thus alleviating pollution of surface and groundwater bodies with untreated sewage discharges, and consequently protecting biodiversity. The main potential impacts from network operation would result from maintenance activities, as discussed in Section5.6.3.1).

The potential impact of the proposed project's operation is considered of **Minor Consequence (2)** and **Low Likelihood (1)**, resulting in a **Low Significance (2L=2).**

Recommended mitigation measures to minimize the impacts on biodiversity at the proposed locations include:

- Proper management of liquid and solid waste generated by maintenance activities;
- Prevention of littering in the area;
- Control hunting within the project area.

With these mitigation measures in place, the potential impact of project operation on biodiversity becomes of **Beneficial Consequence (+)** with **Moderate Likelihood (2),** leading to an overall **Beneficial Significance (B++),** especially at the level of the Litani River and Qaraoun Lake that will be protected from wastewater pollution, thus reducing impacts on their living environment and species.

5.8 POTENTIAL IMPACTS ON TRAFFIC

5.8.1 Sources of Potential Impacts

The primary sources of traffic impacts from the Project activities are listed in Table 5-23.

Table 5-23 Potential Impacts on Traffic

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction Increase in traffic during construction (mainly at the level of sewage networks adjacent to the public roads) for the transport of materials and waste to the sites **Operation** Increase in traffic during maintenance works (mainly at the level of sewage networks adjacent to the public roads)	Existing traffic

5.8.2 Impacts during Construction

Table 5-24 below provides rating of potential traffic impacts during the construction phase before and after applying mitigation measures, respectively.

Table 5-24 Consequence Assessment of Traffic during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Increase in traffic during construction (mainly at the level of sewage networks adjacent to the public roads)	Before Mitigation	N/D	M	L	M	C	R	3. Moderate
	After Mitigation	N/D	L	L	M	C	R	2. Minor

The construction phase requires the transport of heavy machinery and equipment, construction materials and wastes, in addition to the workforce. Vehicles transporting materials and wastes may need several trips to the construction sites per day, which may increase the traffic volume on the roads leading to these sites, namely during peak hours. Areas in the direct vicinity of the Project construction sites will experience an increase in traffic volume due to the deployment of construction vehicles, transport vehicles and equipment. All roads adjacent to the additional sewer pipelines installation works will be subject to partial or total closure for the duration of the construction period and may cause increased travel times for commuters traveling through the Project area because of lengthy detours or diversions. The main receptors that will be subject to such effects were presented in Section 4.2.7.4.

The impact on traffic during the construction phase is considered to be of **Moderate Consequence (3)** and **High Likelihood (3)**, resulting in a **Medium Significance (3H=9).**

Recommended mitigation measures to be taken by the awarded Contractor to reduce impacts on traffic include:

- Limit speed on the construction sites to 20 km/h unless otherwise advised, and adopt careful logistical and route planning;

- Position any necessary traffic diversion signs and devices correctly. Signs and devices should be clearly displayed in the Arabic and English languages. Temporary traffic signals and signs should be employed to warn of hazards and provide directions, especially on narrow one-lane roads;
- Coordinate with the concerned municipalities with respect to the planned road blockages, detours or diversion, and the scheduling of the construction works including material delivery, waste transfer, truck movement and other machinery operations in order to limit the disruption to the neighborhood from traffic inconveniences and traffic flow and to minimize noise and dust generation;
- Follow a specific schedule for transport to avoid interference with peak traffic hours and minimize disturbance/delay to commuters at rush hours on the roads leading to the Project construction sites;
- Fill up all holes and trenches, and level all mounds and heaps of earth, and exposed surface reinstatement, which have been excavated or made in connection with the works immediately upon completion of any part of the works; and
- Provide/display adequate warning signs to prevent accidental falling into open areas; and
- Assemble a fence/ barrier along the construction work areas.

Once the above recommendations are in place, the impact will become of **Minor Consequence (2)** and **Moderate Likelihood (1),** resulting in a **Medium Significance (2M=4)**.

5.8.3 Impacts during Operation

Table 5-25 below provides rating of potential traffic impacts during the operation phase before and after applying mitigation measures, respectively.

Table 5-25 Consequence Assessment of Traffic during Operation Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Increase in traffic during maintenance works (mainly at the level of sewage networks adjacent to the public roads)	Before Mitigation	N/D	L	L	S	O	R	1. Negligible
	After Mitigation	N/D	L	L	S	O	R	1. Negligible

During the operation phase, malfunctioning/failures of the sewage networks, in addition to sudden breakages and overflows, are expected. Maintenance activities at the level of the sewage networks are likely to generate traffic disturbances from the road blockages and the development of temporary detours and deviations along public roads.

According to the above, the impact on traffic during operation is considered to be of **Negligible Consequence (1)** and **Moderate Likelihood (2)**, resulting in a **Low Significance (1M=2).**

To ensure that the maintenance activities do not lead to road congestion in the areas of works, the following is suggested to be implemented by the awarded Contractor:

- Avoid maintenance works during peak traffic hours;
- Display temporary traffic signals and signs to warn of hazards and provide directions, especially on narrow one-lane roads; and
- Coordinate with municipal police in case of need for road closure and rerouting to be able to carry out specific maintenance activities, preferably ahead of time.

With the above measures in place, the impact on traffic during operation will become of **Negligible Consequence (1)** and **Low Likelihood (1)**, resulting in a **Low Significance (1L=1).**

5.9 POTENTIAL IMPACTS ON WATER RESOURCES CONSUMPTION

5.9.1 Sources of Potential Impacts

The primary sources of impacts on water resources from the various Project activities are listed in Table 5-26 below.

Table 5-26 Potential Impacts on Water Resources Consumption

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction Water for construction activities and workforce uses **Operation** None	Water consumption from nearby facilities and daily socio-economic activities (residential, commercial, agricultural, industrial, etc.)

5.9.2 Impacts during Construction

Table 5-27 below provides rating of potential impacts on water resources consumption during the construction phase before and after applying mitigation measures, respectively.

Table 5-27 Consequence Assessment on Water Resources Consumption during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Water for construction activities and domestic use	Before Mitigation	N/D	L	L	S	C	R	1. Negligible
	After Mitigation	N/D	L	L	S	C	R	1. Negligible

In general, water consumption is inevitable at any project site. Generally, water is used for concrete mixing (in case of an onsite mixing), dust suppression using wet techniques, hydro-testing for installed pipelines, and for site labor domestic activities. Particular to concrete mixing, ready-mix concrete will be outsourced from a nearby batching plant and will not take place at the construction sites. Estimations of water demand for construction-related activities are not available at this stage. As for water demand for site workforce, an average of 53

L/capita/d will be needed, assuming no site lodging, compared to the national daily domestic water consumption rate in Lebanon that is around 160 L/capita/d (MoEW, 2010). Nevertheless, as mentioned earlier, there is currently no labor forecast for the construction phase of the proposed Project.

Therefore, the impact on water resources consumption during the construction phase will have **Negligible Consequences (1)** and **High Likelihood (3)**, resulting in a **Low Significance (1H=3).**

To further limit these impacts during construction, the awarded Contractor should adopt a water saving plan during the construction phase and limit the amount of water used for workforce daily uses.

As such, the impact on water resources consumption during the construction phase will have **Negligible Consequence (1)** and **Moderate likelihood (2)**, resulting in a **Low Significance (1M=2).**

5.9.3 Impacts during Operation

No potential impacts on water resources consumption are anticipated during the project's operation phase, since no water consumption is expected to be needed for the operation of the wastewater networks, unless occasionally when needed during maintenance works, namely for hydro-testing of newly-replaced pipelines. Thus, water consumption during operation is negligible.

5.10 POTENTIAL IMPACTS ON ENERGY RESOURCES

5.10.1 Sources of Potential Impacts

The primary sources of impacts on energy resources from the various Project activities are listed in Table 5-28 below.

Table 5-28 Potential Impacts on Energy Resources

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction Energy consumption during construction activities (fuel for generators, equipment and vehicles) **Operation** Energy consumption during maintenance activities (fuel for generator)	Energy consumption from nearby facilities and ongoing daily socio-economic activities (residential, commercial, industrial, etc.)

5.10.2 Impacts during Construction

Table 5-29 below provides rating of potential impacts on energy resources during the construction phase before and after applying mitigation measures respectively.

Table 5-29 Consequence Assessment of Energy Resources Use during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Energy (fuel) consumption during construction activities	Before Mitigation	N/D	M	L	M	C	R	3. Moderate
	After Mitigation	N/D	L	L	M	C	R	2. Minor

The electricity needed during the construction phase will be supplied by EDL public grid (if possible) and will be backed up by onsite power generators, provided by the Contractor, during grid outages. Fuel-fired generators will be equipped with an onsite temporary fuel storage tank. In addition, fuel will be needed to operate machinery, equipment and vehicles that will be operated during the construction stage. Estimations on energy demand in the form of electricity (if electricity from EDL was supplied) and/or fuel are not available at this stage.

The impact on energy resources during construction is expected to be of **Moderate Consequence (3)** and **High Likelihood (3)**, resulting in a **Medium Significance (3M=9)**.

The awarded Contractor should implement an energy saving plan at each work site that includes:

- Use equipment with higher fuel efficiency
- Adopt a periodic inspection and maintenance schedule for power generators and equipment engines, as per manufacturer specifications, and maintain maintenance logs;
- Report and monitor monthly fuel and energy consumption records to keep track of consumption levels and identify overuse;
- Avoid unnecessary idling of vehicles and equipment engines.

With the above measures in place, the impact on energy resources will become of **Minor Consequence (2)** and **High Likelihood (3)**, resulting in a **Medium Significance (2H=6).**

5.10.3 Impacts during Operation

Table 5-30 below provides rating of potential impacts on energy resources during the operation phase before and after applying mitigation measures, respectively.

Table 5-30 Consequence Assessment of Energy Resources Use during Operation Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Energy consumption during maintenance activities	Before Mitigation	N/D	L	L	S	O	R	1. Negligible
	After Mitigation	N/D	L	L	S	O	R	1. Negligible

The electricity needed for maintenance activities of the sewage network will be supplied by a private generator – if needed – during the operation phase.

The impact on energy resources consumption during operation is considered to be of **Negligible Consequence (1),** with **Moderate Likelihood (2)**, resulting in a **Low Significance (1M=2).**

To reduce impacts on energy resources, the following mitigation measures can be applied:

- Adopt a periodic maintenance schedule of power generators, as per manufacturer specifications, and maintain maintenance logs;
- Upgrade machines/equipment used for maintenance activities to more energy efficient technology for the purpose of reducing consumption ; and
- Switch off all machines/ equipment or any other energy consuming appliances when not in use.

The impact on energy resources during operation following the implementation of mitigation measures is considered to be of **Negligible Consequence (1)** and **Low Likelihood (1)**, resulting in a **Low Significance (1L=1).**

5.11 POTENTIAL IMPACTS OF WASTE GENERATION

5.11.1 Sources of Potential Impacts

The primary sources of impacts of waste generation from the various Project activities are listed in Table 5-31 below.

Table 5-31 Potential Impacts from Waste Generation

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction Construction-related solid and liquid wastes generation **Operation** Operation- and maintenance-related solid and liquid wastes generation	Inadequate solid waste and wastewater management in the Project area, in addition to unlicensed CDW dumpsites

5.11.2 Impacts during Construction

Table 5-32 below provides rating of potential impacts of waste generation during the construction phase before and after applying mitigation measures respectively.

Table 5-32 Consequence Assessment of Waste Generation during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Construction-related solid and liquid wastes generation	Before Mitigation	N/D	M	L	M	C	R	3. Moderate
	After Mitigation	N/D	L	L	M	C	R	2. Minor

Potential sources of solid and liquid wastes during construction are:

- Construction waste and spoil;
- Surplus materials;
- Machinery, generator and vehicle mechanical spare parts;
- Empty containers;
- Domestic-like solid waste;
- Domestic-like wastewater from site laborers;
- Hydro-test water; and
- Concrete wash-off (cleaning of ready-mix concrete trucks).

The quantity of solid waste and wastewater that will be generated from workers is not known at this stage, until a contractor is selected. Since workers will probably be hired from the area and there is no need for a labor camp, average solid waste generation for workers working over a shift of 8 hours per day is around 0.3 kg/capita/ day; and average wastewater generation is around 40 L/capita/day. As described previously in sections 3.3.7 and 3.3.8, wastewater will be either collected and discharged at the nearest existing manhole connected to the sewage network, or collected into an onsite temporary septic tank that will be regularly emptied by service providers in the area, while every solid waste stream will be collected and handled separately.

The impact on waste generation during construction is considered to be of **Moderate Consequence (3),** with **High Likelihood (3)**, resulting in a **Medium Significance (3H=9).**

The potential impacts could be minimized by the following mitigation measures:

- All construction workers and personnel should be responsible for ensuring that standards of "good housekeeping" are maintained. This will include:
  - Clear all rubbish and work associated debris;
  - Sort domestic and general waste into combustible (paper, food, cardboard, and wood) and non-combustible waste (metals, glass, rubble) streams at source by means of

suitably labeled containers for safe collection, segregation and handling of all waste streams generated; and

- Avoid storage of combustible waste for more than 24 hours to prevent attraction of pests and flies.

- Regularly inspect garbage bins;
- Sort and collect hazardous wastes separately from domestic waste. All hazardous waste bags should be properly labeled and stored so as to prevent occupational health hazards;
- Compile log sheets of hazardous wastes, including type, amount and disposal method, to track final destinations and identify opportunities for improvement;
- Transport excavation and construction wastes in covered/closed trucks for disposal in currently available dumpsite locations until a permitted sanitary landfill is made available by the government; the disposal location shall be approved by the concerned municipality, CDR and MoE;
- Regularly inspect and maintain septic tanks (if any) to detect and prevent leaks;
- Ensure that the quality of the hydro-test water is compliant with decision 8/1 for the discharge of wastewater into sewage network or surface water bodies; and
- Collect the concrete wash water in a designated tank and allow for water to evaporate and the concrete to harden to dispose it off with construction waste.

With the suggested mitigation measures, the impact on waste generation during construction is considered to become of **Minor Consequence (2),** with **High Likelihood (3)**, resulting in a **Medium Significance (2H=6).**

5.11.3 Impacts during Operation

Table 5-33 below provides rating of potential impacts of waste generation during the operation phase before and after applying mitigation measures respectively.

Table 5-33 Consequence Assessment of Waste Generation during Operation Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Operation-and maintenance-related solid and liquid wastes generation	Before Mitigation	N/D	M	L	L	O	R	3. Moderate
	After Mitigation	N/D	L	L	L	O	R	2. Minor

Potential sources of solid and liquid wastes during Operation are:

- Solid wastes from the maintenance of networks;

The impact on waste generation during operation is considered to be of **Moderate Consequence (3),** with **Moderate Likelihood (2)**, resulting in a **Medium Significance (3M=6).**

To reduce the impact of waste generation, the following mitigation measures should be implemented:

- Implement the measures suggested in section 5.6.3.1 during maintenance activities; and
- Provide low toxic or environment-friendly (biodegradable) detergents for general cleaning purposes.

After implementing the suggested mitigation measures, the impact on waste generation during operation is considered to become of **Minor Consequence (2)** and **Low Likelihood (1)**, resulting in a **Low Significance (2L=2).**

5.12 POTENTIAL IMPACTS ON ARCHAEOLOGY

5.12.1 Sources of Potential Impacts

The primary sources of impacts on archaeology from the various Project activities are listed in Table 5-34 below.

Table 5-34 Potential Impacts on Archaeology

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction Excavation works. **Operation** None	• Uncovered archaeological features in the area. • Unearthed Prehistorical occupation evidence

5.12.2 Impacts during Construction

Table 5-35 below provides rating of potential impacts on archaeology during the construction phase before and after applying mitigation measures respectively.

Table 5-35 Consequence Assessment of Archaeology during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Potential damage to undiscovered archaeological features during excavation	Before Mitigation	N/D	H	L	M	C	I	4. Major
	After Mitigation	N/D	L	L	M	C	I	2. Minor

The main potential impacts to uncovered Prehistorical occupation and archaeological features will be through potential physical disturbance. Those impacts are considered to be permanent and irreversible.

Assuming no mitigation measures are taken, the impact will have a **Major Consequence (4)** and **High Likelihood (3)** of occurrence, resulting in **High Significance (4H=12)**.

The different components of the Project being located in an area where before present occupation has been identified and that is of a high interest, and since archaeological features of other periods, especially the Byzantine one, might be encountered, it is highly recommended to apply the below mitigation measures in order to reduce impacts on prehistory, archaeology and culture:

- Coordinate with DGA for a survey to be conducted prior to the initiation of works, allowing to identify any possible prehistorical and archaeological remains on the different locations of the Project; and

- Ensure that all crew members and site engineers are made aware of the laws and regulations related to archaeological findings and are capable of identifying any if encountered.

If any material were to be found during the survey, DGA is the only authority to determine the required operations and to give the approval to commence construction works.

During construction, excavation and/or leveling works, excavation in sites of known archaeological interest should be avoided. Where this is unavoidable, prior discussions must be held with the DGA in order to undertake pre-construction excavation or assign an archaeologist to log discoveries as construction proceeds.

Where historical remains, antiquity or any other object of cultural or archaeological importance are unexpectedly discovered during construction in an area not previously known for its archaeological interest, a "Chance-Find Procedure" should be applied. This procedure should be included in all sub-contractors' contracts under a "Protection of Prehistorical, Archaeological and Historical Sites" clause, developed in accordance with the Lebanese regulations (Decree 3057/ 2016) and the World Bank Guidance – OP 4.11. The following actions should be taken:

- Stop construction activities.
- Delineate the discovered site area.
- Notify the responsible foreman/archaeologist who in turn should notify the DGA (within less than 24 hours).
- Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remains, a night guard should be present until the responsible authority takes over.
- Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out.
- An evaluation of the finding will be performed by the DGA. The significance and importance of the findings will be assessed according to various criteria relevant to cultural heritage including aesthetic, historic, scientific or research, social and economic values.
- Decision on how to handle the finding will be reached based on the above assessment and could include changes in the project layout (in case of finding an irrevocable remain of cultural or archaeological importance), salvage excavations, in situ conservation, preservation or restoration.
- Implementation of the authority's decision concerning the management of the finding.
- Construction works can resume only when permission is given from the DGA after the decision concerning the safeguard of the heritage is fully executed.

In case of Archeological finds, the Contractor should refer to the Conditions of Contract (General Conditions of Contract (FIDIC); and CDR Safety, Health and Environmental Regulations). These include the following:

- In case of delay incurred in direct relation to archaeological findings not stipulated in the contract (and affecting the overall schedule of works), the contractor may apply for an extension of time. However, the contractor will not be entitled for any kind of compensation or claim other than what is directly related to the execution of the archaeological findings works and protections.
- The duration of any actions needed in case of Chance Finding cannot be determined ahead of time. As for the estimated price, it varies according to the needed manpower / time frame for the needed procedures, and can only be determined in accordance with the needed works.

With proper implementation of mitigation, the impact on archaeology and culture will be reduced to **Minor Consequence (2)** and **Moderate Likelihood (2)** of occurrence, resulting in **Medium Significance (2M=4)**.

5.12.3 Impacts during Operation

No potential impacts on archaeology are anticipated during the project's operation phase.

5.13 POTENTIAL IMPACTS ON SOCIO-ECONOMY

5.13.1 Sources of Potential Impacts

The primary sources of potential impacts on the socio-economic conditions within the Project area from the various Project activities are listed in Table 5-36 below.

Table 5-36 Potential Impacts on Socio-Economy

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction • Creation of new job opportunities • Child Labor • Social tension between foreign and local workers, and the host community • Labor-induced sexual abuse and exploitation/ harassment • Potential damage to the existing infrastructure • Property loss due to expropriation • Disturbances to nearby receptors from noise and dust generation and traffic • Increased pressure on existing infrastructure (solid waste and wastewater management facilities) **Operation** • Improvement of overall socioeconomic and environmental conditions of serviced communities and receiving environment from containment of wastewater for ultimate treatment prior to discharge into the environment	• Existing socio-economic activities • Existing pressure on solid waste and wastewater infrastructure

5.13.2 Impacts during Construction

Table 5-37 below provides rating of potential socio-economic impacts during the construction phase before and after applying mitigation measures respectively.

Table 5-37 Consequence Assessment of Socio-Economic Impacts during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Creation of new job opportunities	Before Mitigation	P/D	H	L	M	C	-	Beneficial
	After Mitigation	-	-	-	-	-	-	-
Child Labor	Before Mitigation	N/D	M	L	M	C	R	3. Moderate
	After Mitigation	N/D	M	L	M	C	R	3. Moderate
Social tension between foreign and local workers, and the host community	Before Mitigation	N/D	M	L	S	C	R	3. Moderate
	After Mitigation	N/D	L	L	S	C	R	2. Minor
Labor- induced sexual abuse and exploitation/ harassment	Before Mitigation	N/D	H	L	L	C	I	4. Major
	After Mitigation	N/D	H	L	L	C	I	4. Major
Damage to the existing infrastructure	Before Mitigation	N/D	H	L	S	C	R	4. Major
	After Mitigation	N/D	M	L	S	C	R	3. Moderate
Property loss due to expropriation	Before Mitigation	N/D	M	L	L	C	I	3. Moderate
	After Mitigation	N/D	L	L	L	C	I	2. Minor
Disturbances to nearby sensitive receptors from noise and dust generation and traffic	Before Mitigation	N/D	M	L	S	C	R	3. Moderate
	After Mitigation	N/D	L	L	S	C	R	1. Negligible
Increased pressure on existing infrastructure (solid waste and wastewater management facilities)	Before Mitigation	N/D	M	L	S	C	R	3. Moderate
	After Mitigation	N/D	L	L	S	C	R	1. Negligible

5.13.2.1 Creation of New Job Opportunities

The construction phase will lead to the creation of temporary job opportunities and an increase in the purchase of construction materials and services, resulting in beneficial socio-economic impacts in the region. These job opportunities might be occupied by foreign nationals who usually work as laborers, many of whom already live in the Bekaa in considerable numbers; or by local Lebanese citizens as a result of the prevailing economic crisis. Thus, no labor influx is expected as a result of the project.

As a result, the project will have a positive socio-economic impact having a **Beneficial Consequence (+)** with **High Likelihood (3),** leading to an overall **Beneficial Significance (B+++).**

5.13.2.2 Child Labor

Poverty and lack of income are the driving reason for child labor. Children become breadwinners in their families in order to ensure the most basic needs such as food and healthcare. Accordingly, besides being prone to workplace injuries and health hazards, children are toiling long hours for low wages, exposed to violence, exploitation, and abuse, and deprived of education.

Child labor during construction is considered to have a **Moderate Consequence (3)** of **Moderate Likelihood (2),** resulting in a **Medium Impact Significance** (**3M=6**).

The assigned Contactor is bound to comply with laws prohibiting child labor and shall follow all applicable laws that recognize children's rights and minimum age of employment, especially that child labor among Syrian refugees in the Bekaa is very common. Additionally, the Contractor should maintain a record of labor registry and age verification, and must inform all workers of the internal GRM figuring in Section 6.2 for reporting any problems or complaints they might have, and ensure it is properly implemented.

Upon implementation of the proposed mitigation measures, the impact of child labor will become of **Moderate Consequence (3)** and a **Low Likelihood (1),** resulting in an overall **Low Significance** (**3L=3**).

5.13.2.3 Social Tension between Foreign and Local Workers, and the Host Community

Social tension might arise between foreign and local workers residing in the Bekaa region. This might actually escalate to violence and aggravate the already existing tension between foreign nationals and host communities, in which the latter usually believe that the presence of foreign nationals has posed new competition for low-skilled jobs. Additionally, growing tension between foreign workers and the host community might occur as a result of economic, social or violence reasons. This is mainly due to the competition over resources, overcrowding, the economic crisis, restricted access to basic public services, religious and sectarian concerns, and security concerns.

The social tension between foreign and local workers during construction is considered to have a **Moderate Consequence (3)** of **Moderate Likelihood (2),** resulting in a **Medium Impact Significance** (**3M=6**).

In order to mitigate the above-mentioned impact, the Project implementing agency – CDR- should ensure that the awarded Contractor is committed to adherence to the principles that define equal employment opportunity, while also complying with Decision 29/1 of 2018 restricting a number of jobs in the construction sector to Lebanese citizens. Therefore, equal employment opportunities will be provided to all qualified candidates regardless of color, citizenship status (when applicable), race, religion, gender, and marital status through clear selection criteria. Nonetheless, construction works in Lebanon have always been occupied by foreign labor, namely Syrian labor force. Hereby, all workers should be informed of the internal GRM for reporting any problems or complaints they might have. Additionally, Lebanese citizens

should be also informed of the external GRM in case they face problems with workers, or if they have any complaint.

Upon implementation of proposed mitigation measures, the impact will become of **Minor Consequence (2)** and a **Low Likelihood (2),** resulting in an overall **Low Significance** (**2L=2**).

5.13.2.4 Labor-Induced Sexual Abuse and Exploitation/ Harassment

Due to the considerable number of foreign nationals living in the Bekaa region, it is likely that workers will be already living near the project areas, and thus no labor camp will be needed and no labor influx is expected. However, in case the awarded Contractor decides that it is logistically better to have a labor camp, then labor influx might be unavoidable. As such, laborers may be susceptible to different forms of sexual abuse and sexual exploitation/ harassment.

Labor-induced sexual abuse and exploitation/ harassment during construction is considered to have a **Major Consequence (4)** of **Moderate Likelihood (2),** resulting in a **Medium Significance** (**4M=8**).

Mitigation measures that should be implemented include:

- Conducting rigorous pre-employment checks of all candidates to avoid hiring any previous offenders;
- The Contractor should have a Code of Conduct Policy that all hired labors should sign and follow;
- All hired labors should undergo mandatory training that covers sexual abuse and exploitation/harassment, and Gender-Based Violence. Sexual abuse and exploitation/harassment includes, but is not limited to:
    - Underage sexual activity;
    - Exchange of money, employment, goods, or services for sex or sexual favors; and
    - Engaging in sexual activities with sex workers.

Gender-Based Violence can be broadly defined into five categories, and these include:

- Sexual violence – rape, sexual assault, and sexual harassment;
- Physical violence – hitting, slapping, and beating;
- Emotional violence – psychological abuse;
- Economic violence – denial of financial resources; and
- Harmful traditional practices – forced marriages, and female genital mutilation.

- Reporting allegations of sexual abuse and exploitation/harassment and Gender-Base violence through confidential reporting tools. All allegations should be investigated, and if these allegations are proven, strict disciplinary measures should be promptly taken.

Upon implementation of proposed mitigation measures, the impact will become of **Major Consequence (4)** and a **Low Likelihood (1)**, resulting in an overall **Medium Significance (4L=4)**.

5.13.2.5 Damage to the Existing Infrastructure

The network pipelines will be installed along the roads and connected to existing wastewater networks. Potential damage might take place to underlying water supply pipelines, electricity power cables, and telecommunication lines during excavation and trenching works, namely due to faulty construction site practices or lack of coordination with relevant authorities prior to the initiation of works regarding the existence of infrastructure.

With no mitigation measures in place, the impact on existing infrastructure is of **Major Consequence (4),** with **Moderate Likelihood (2)**, resulting in **Medium Significance (4M=8).**

Mitigation measures that should be implemented include:

- Trial pits should be executed along the network route to locate the existing infrastructure components;
- Sewer lines should be installed at least[8] 3 meters horizontally from and 0.3 meters lower than existing water main lines;
- Where the separation requirements cannot be met due to topography, inadequate right-of-way easements, or conflicts with other provisions of these regulations, lesser separation is permissible if:
  - The water main and the sewer are located as far apart as feasible within the conditions listed above;
  - The water main and the sewer are not installed within the same trench; and

- The sewer line is appropriately constructed to prevent contamination of the water in the main by sewer leakage.No water main lines should pass through or come into contact with a sewer manhole; and

- Ensure the community GRM figuring in Section 6.1 is properly disseminated and implemented.

With the above-listed mitigation measures in place, the potential impact on existing infrastructure is of **Moderate Consequence (3),** with **Low Likelihood (1)**, resulting in a **Low Significance (3L=3).**

5.13.2.6 Property Loss due to Expropriation

The network pipelines will be constructed within the public domain along the existing roads Right-of-Way, except for part of Saouiri where the network will be located on private lands. This would require permanent acquisition of affected plots, which would deprive people from part of their property. However, the network design ensured that minimum land is proposed for acquisition while most of the sewer lines are planned on publicly owned plots. Moreover, a Land Acquisition Plan (LAP) has been prepared for the project, all property to be expropriated has been identified and assigned a monetary value based on the assets that will be affected, project affected persons (PAPs) have been consulted, and plot owners will be compensated based on local price of land, trees and physical structures that will be affected. Several plot owners have objected to the project implementation as a result of various reasons, especially the lack of confidence in proper operation and maintenance, and fear from the

[8]Separation distances specified should be measured from the nearest outside edges of the facilities.

consequences of a possible failure of the network. These plot owners were provided with the following clarifications by the Consultant:

- The project is vital in resolving the severe problem of soil and water resources contamination by untreated wastewater, and in helping achieve the Litani River Authority and the Ministry of Environment's vision and plans to prevent pollution of the Litani River and Qaraoun Lake. The project cannot be implemented without expropriating land to construct the networks.
- These plots were selected so as to i) minimize expropriation impacts and damage to existing structures in Saouiri (i.e., avoid demolition to the extent possible); and ii) distribute expropriations equally and ensure fairness in this respect.
- The networks are designed with sufficient capacity so as to avoid flooding, taking into account population growth until 2045; and they will be constructed with specifications that prevent problems during their operation.
- Networks will be regularly maintained by the Water Establishment. Moreover, a one-year operation, maintenance and defect liability for both the WWTP and network is integrated into the contractor's agreement.

The LAP report has been prepared and submitted to CDR and the World Bank on October 10, 2019, and can be referred to for additional details regarding land acquisition.

With no mitigation measure in place, the impact of property loss is of **Moderate Consequence (2)**, with **High Likelihood (3)**, resulting in **Medium Significance (3H=9)**.

Mitigation measures that should be implemented include:

- The CDR and PMU should ensure the proper implementation of the LAP and the grievance redress mechanism developed in the LAP (Section 6) in order to fairly compensate PAPs and address all complaints and grievances within an acceptable period of time and to the satisfaction of the plot owners; and
- Ensure the community GRM figuring in Section 6.1 is properly disseminated and implemented.

Upon implementing the above-mentioned mitigation measures, the potential impact of property loss is expected to be of Minor Consequence (2), with Medium Likelihood (2), resulting in Medium Significance (2M=4).

5.13.2.7 Disturbances from Noise and Dust Generation

As previously noted in sections 5.4.2, 5.5.2, and 5.8.2 above, dust emissions, elevated noise levels, and traffic generated during construction can cause nuisance to the nearby receptors (religious sites, hospitals, schools, etc. identified in Section 4.2.7.4) and commuters.

Therefore, disturbances from noise and dust generation and traffic during the construction phase will have **Moderate consequences (3)** and **High likelihood (3)**, resulting in **Medium Significance (3H=9).**

Nevertheless, if the proposed mitigation measures for dust and noise emissions and traffic impacts are properly implemented, the significance of this impact will be reduced. Additionally, in case of complaints related to noise level and dust generation, the proposed community GRM presented in Section 6.1 will help resolve these complaints, if properly disseminated and implemented.

Upon implementation of proposed mitigation measures, the impact will become of **Negligible Consequence (1)** and **Moderate Likelihood (2),** resulting in an overall **Low Significance** (**1M=2**).

5.13.2.8 Increased Pressure on the Existing Infrastructure (Solid Waste and Wastewater Management Facilities)

Excavated material and construction waste that is not recyclable or reusable will be disposed of in permitted dumps in coordination with the Municipality. Domestic-like solid waste generated by construction workers will be disposed of in the nearest curbside waste barrels to be collected by contractors appointed by the Municipality. Wastewater will be collected in temporary septic tanks, which will be emptied as needed, in a location approved by the Municipality.

The increase in pressure on the existing infrastructure during construction is considered to have a **Moderate Consequence (3)** of **High Likelihood (3),** resulting in a **Medium Significance** (**3H=9**).

In order to mitigate the above mentioned impacts, the Project implementing agency – CDR- should ensure the compliance of the awarded Contractor with the proposed waste management plan (refer to Section 5.11.2 above). Additionally, in case of complaints, the proposed community GRM presented in Section 6.1 will help resolve these complaints, if properly disseminated and implemented.

Upon implementation of proposed mitigation measures, the impact will become of **Negligible Consequences (1)** and a **Moderate Likelihood (2),** resulting in an overall **Low Significance** (**1M=2**).

5.13.3 Impacts during Operation

Table 5-38 below provides rating of potential impacts on the prevailing socio-economic conditions during the operation phase before and after applying mitigation measures, respectively.

Table 5-38 Consequence Assessment of Socio-Economic Impacts during Operation Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Improvement of overall socioeconomic and environmental conditions of serviced communities and receiving environment from containment of wastewater	Before Mitigation	P/I	H	L	L	O	-	Beneficial
	After Mitigation	-	-	-	-	-	-	-

With reference to the Project needs and objectives presented in section 1.5.2 above, the implementation of the Project will result in an overall positive impact on the area through the construction of new additional sewer lines, as per of the overall El Marj Wastewater System.

The project is expected to have a **Beneficial Consequence (+)** with **High Likelihood (3),** leading to an overall **Beneficial Significance (B+++).**

5.14 POTENTIAL IMPACTS ON OCCUPATIONAL AND PUBLIC HEALTH AND SAFETY

5.14.1 Sources of Potential Impacts

The primary sources of occupational and public health impacts from the various Project activities are listed in Table 5-39 below.

Table 5-39 Potential Impacts on Occupational and Public Health

Source of Change (Project Activities)	Cumulative Sources of Impact
Construction • Potential risks to general health and safety of the sites' workers, nearby residents, commuters, and pedestrians **Operation** • Potential occupational health and safety risks to operation and maintenance workers and to nearby receptors, pedestrians, and commuters during maintenance works or from sudden overflows or leakages • Improved public health conditions from the proper management of wastewater	Public health conditions associated with the mismanagement of wastewater

5.14.2 Impacts during Construction

Table 5-40 below provides rating of occupational and public health impacts during the construction phase before and after applying mitigation measures respectively.

Table 5-40 Consequence Assessment of Occupational and Public Health Impacts during Construction Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Potential risks to general health and safety of the sites' workers, nearby residents, commuters, and pedestrians	Before Mitigation	N/D	M	L	M	C	R	3. Moderate
	After Mitigation	N/D	L	L	M	C	R	2. Minor

Working on a construction project entails several health and safety risks that need to be addressed ahead of commencing the construction works. The main sources of health and safety risks include physical injuries and exposure to dust and noise. According to the World Health Organization (WHO), prolonged or excessive exposure to noise can cause hearing impairment; similarly, exposure to dust will have respiratory impacts.

The impact on occupational and public health and safety during construction is considered to have a **Moderate Consequence (3)** and a **Moderate Likelihood (2),** resulting in a **Medium Significance** (**3M=6**).

In order to further ensure that workers' and potential site visitors'/ pedestrians' health and safety are not affected, it is recommended to:

- Surround the construction areas with scaffolding nets;
- Provide sufficient lighting;
- Prohibit keeping trenches unnecessarily open and install barriers to avoid falling and tripping;
- Fence off all construction sites to prevent unauthorized access, and the contactor must take any other reasonable steps to prevent unauthorized access;
- Provide site boundaries by installing suitable physical barriers (roadblocks, tape, fence, etc.);
- Mark excavation holes and openings with physical boundaries (barriers, tape or fence), or cover them;
- Store and stack work materials (such as pipes, manhole rings, and cement bags) in a safe manner so that they cannot topple or roll over;
- Tidily stack, protect and cover materials and equipment where necessary. Additionally, ensure an adequate space for new materials to be stored in secured covered areas to avoid damage, theft, and to protect these items from weather conditions.
- Post material indicating the nearest police station and hospital with accident and emergency facilities;
- Keep machinery and vehicles passages clear;
- Implement a speed limit of 20 km/h for vehicles arriving to and leaving the construction sites;
- Provide workers with the appropriate PPE (goggles, dust masks, helmets, hearing protection equipment, proper clothing, safety boots, etc.) and enforce their use;
- Maintain the PPE (cleaning when dirty and replacement when damaged or worn out);
- Training materials and toolbox talks should be offered to the workers in order to educate and increase workers' awareness of potential hazards and work-related injuries. A record of all safety meetings should be documented for the duration of each and should include the date, topic, attendees, recommendations, and additional comments. Suggested topic include:
    - Personal Protective Equipment (PPE)
    - Fire protection and prevention
    - Electrical safety
    - Trenching and excavation safety
    - Slips, trips, and falls protection/prevention, etc.

  Safeguard security service providers in Lebanon include CIS Security Services, Protectron Security, Security Flash Control s.a.l. (SFC), Safeguard & Protection Company (SPC), Security Engineering s.a.l., and Security and Services (SAS) along with others.

- Ensure the availability of adequate loading and unloading space;
- Keep walkways free of tripping hazards such as work materials, and debris;
- If work involving the use of flammable materials is being carried out, prohibit smoking and do not allow other work activities involving potential ignition sources to take place nearby;
- Prohibit littering;
- Avoid burning of materials on-site;
- Provide easily accessible first aid kits at the active work site with the appropriate number of materials given the number of workers on-site. The locations of the first aid kits must be indicated to all workers;
- Post adequate signs at visible locations throughout the construction area indicating type of operation, potential risks, and appropriate medical/emergency action response;
- Perform staff training about the fundamentals of occupational health and safety procedures, and about handling hazardous material containers and related wastes;
- Implement the required air emissions and noise mitigation measures listed in sections 5.5.2 and 5.4.2 respectively; and
- Follow the technical note that provides guidance on addressing issues associated with COVID-19, and proposes measures to minimize the risk of transmission of COVID-19 related to construction/civil works. The technical note is provided in Appendix F. Additional COVID-19 considerations in construction/civil works projects recommended by the World Bank are provided in Appendix G.

After implementing the above mentioned mitigation measures, the impact on occupational and public health and safety is considered to become of a **Minor Consequence (2)** and a **Low Likelihood (1)** of occurrence, resulting in a **Low Significance** (**2L=2**).

5.14.3 Impacts during Operation

Table 5-41 below provides rating of occupational and public health impacts during the operation phase before and after applying mitigation measures respectively.

Table 5-41 Consequence Assessment of Occupational and Public Health Impacts during Operation Before and After Applying Mitigation Measures

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Potential health and safety risks to operation and maintenance workers and nearby receptors, pedestrians, and commuters from maintenance works or from sudden overflows or leakages	Before Mitigation	N/D	M	L	S	O	R	3. Moderate
	After Mitigation	N/D	L	L	S	O	R	1. Negligible
	Before Mitigation	P/I	H	L	L	O	-	Beneficial

Impact/Source		Nature	Magnitude	Extent	Timing	Duration	Reversibility	Consequence Rating
Improved public health conditions from the proper management of wastewater	After Mitigation	-	-	-	-	-	-	-

5.14.3.1 Potential Health and Safety Risks to Workers and Nearby Receptors, Pedestrians, and Commuters from Maintenance Works or from Sudden Overflows or Leakages

During the operation phase, damage to the pipelines are possible. The workers in charge of the maintenance of the networks will be exposed to odors, hazards and potential injuries.

The impact on occupational and public health and safety during operation is of a **Moderate Consequence (3)** and a **Low Likelihood (1),** resulting in a **Low Significance** (**3L=3**).

The awarded Contractor should implement the following site occupational health and safety measures at each work site that includes:

- Provide workers with the appropriate PPE (goggles, dust masks, helmets, hearing protection equipment, proper clothing, safety boots, etc.) and enforce their use;
- Post adequate signs at visible locations throughout the maintenance area indicating type of operation, potential risks, and appropriate medical/emergency action response;
- Prohibit keeping trenches unnecessarily open and install barriers to avoid falling and tripping;
- Fence all maintenance sites to prevent unauthorized access;
- Store and handle chemicals (if any) as directed by their material safety data sheets and use the required PPEs;
- Conduct regular training for workers about health and safety requirements; and
- Implement the required ambient air emissions and noise mitigation measures above listed in sections 5.4.3 and 5.5.3 respectively.

After implementing the above mentioned mitigation measures, the impact on occupational and public health and safety is considered to become of a **Negligible Consequence (1)** and a **Low Likelihood (1)** of occurrence, resulting in a **Low Significance** (**1L=1**).

5.14.3.2 Improved Public Health Conditions from the Proper Management of Wastewater

Proper implementation of the Project and sound operation and maintenance practices of its various components are expected to promote improvement in the public health conditions of communities potentially affected by the prevailing unsanitary management of wastewater.

The Project is expected to have a **Beneficial Consequence (+)** with **High Likelihood (3),** leading to an overall **Beneficial Significance (B+++).**

5.15 SUMMARY OF ENVIRONMENTAL IMPACTS BEFORE AND AFTER IMPLEMENTATION OF MITIGATION MEASURES

A summary of environmental impacts before and after implementation of mitigation measures is provided in Table 5-42 and Table 5-43.

Table 5-42 Impact Summary before Mitigation

Activity / Source of the impact	Receptors									
	Ambient Air Quality	Noise	Soil and Ground Water Resources Quality	Biological	Traffic	Water Resources Consumption	Energy Resources	Archaeology	Socio-economy	Occupational and Public Health and Safety
Construction Phase										
Site clearance, excavation, backfilling, and construction activities	9	9	12	9	9	3	9	12	9	6
Operation of equipment and generators	9	9					9		9	6
Accidental spills (fuels/chemicals) and material wash-off			5							
Waste Generation									9	
Inadequate Solid Waste Management			8						9	
Inadequate Wastewater Management			9						9	
Job creation									+++	
Child Labor									6	
Social tension between foreign and local workers									6	
Labor-induced sexual abuse and exploitation/ harassment									8	
Property loss									9	
Operation Phase										
Operation of networks		2		2					+++	+++

Activity / Source of the impact	Receptors									
	Ambient Air Quality	Noise	Soil and Ground Water Resources Quality	Biological	Traffic	Water Resources Consumption	Energy Resources	Archaeology	Socio-economy	Occupational and Public Health and Safety
Malfunctioning, accidental downtime of sewage network resulting in raw wastewater overflow	4		6						6	3
Maintenance activities		2	5		3		2		6	

Table 5-43 Impact Summary after Mitigation

Activity / Source of the impact	Receptors									
	Ambient Air Quality	Noise	Soil and Ground Water Resources Qaulity	Biological	Traffic	Water Resources Consumption	Energy Resources	Archaeology	Socio-economy	Occupational and Public Health and Safety
Construction Phase										
Site clearance, excavation, backfilling, and construction activities	4	6	4	1	4	2	6	4	2	2
Operation of equipment and generators	6	6					6		2	2
Accidental spills (fuels/chemicals) and material wash-off			3							
Waste Generation									6	

Activity / Source of the impact	Receptors									
	Ambient Air Quality	Noise	Soil and Ground Water Resources Qaulity	Biological	Traffic	Water Resources Consumption	Energy Resources	Archaeology	Socio-economy	Occupational and Public Health and Safety
Inadequate Solid Waste Management			3						2	
Inadequate Wastewater Management			1						2	
Job creation									+++	
Child Labor									3	
Social tension between foreign and local workers									2	
Labor-induced sexual abuse and exploitation/harassment									4	
Property loss									4	
Operation Phase										
Operation of sewage networks		1		++					+++	+++
Malfunctioning, accidental downtime of sewage network resulting in raw wastewater overflow	2		2						4	1
Maintenance activities		1	2		1		1		4	

6. GRIEVANCE REDRESS MECHANISM

6.1 COMMUNITY GRIEVANCE REDRESS MECHANISM

The purpose of the community GRM is to provide clear and accountable means for project beneficiaries and affected persons to raise complaints, including concerns of possible tensions and feelings of exclusion, as well as to seek remedies when they believe they have been harmed by the project.

In general, the main objective of establishing a GRM is to:

- Permit an aggrieved affected person to appeal against any unlikable decision or activity arising from the project implementation;
- Improve the accountability of the Project;
- Increase the level of satisfaction of beneficiaries from the Project; and
- Handle complaints and take corrective actions towards continuous improvement.

PAPs will be informed of the established GRM for addressing complaints and expressing dissatisfaction during the course of project implementation. The GRM shall be relayed to affected communities through the municipalities using announcements on the municipal board, on project billboards and in public places to inform PAPs that they can file any grievance orally or in writing to the concerned Municipality. PAPs who wish to remain anonymous should be allowed to.

If any person has any complaint, concern or suggestion regarding the project implementation (e.g., noise, dust, hindrance of access, etc.), they can follow the procedures below:

1. The affected person should file their grievance orally or in writing, to the Contractor's Site Supervisor.
2. The grievance note should be signed and dated by the aggrieved person, or by the receiving person in case the aggrieved person is illiterate or cannot write.
3. The above issue shall be resolved within the maximum of one week.
4. If the person is not satisfied with the action of the Site Supervisor, he or she can bring the complaint to the attention of the Site Engineer/Manager. The issue shall be resolved within a maximum of two weeks.
5. If the aggrieved person does not receive a response within the specified period or is dissatisfied with the outcome, they lodge their grievance to the Project Management Unit (PMU) at the CDR (CDR's phone number: 01-980096; extension number to be provided once the project execution starts), and a response should be given within a period of two weeks.

Visible contact details, including phone numbers, mailing addresses, websites, email address, and responsible person(s) of the Contractor and CDR PMU must be displayed on the project billboards on site upon commissioning of the project so that the community can contact them for any query or complaint. Since contact details of the Contractor are not available at this stage, they will be widely disseminated once construction activities commence using all forms of communication, including social media.

In all cases, copies of grievances filed by PAPs or aggrieved persons should be sent to the PMU for record keeping, follow up and to make sure the GRM steps and timing are adequately followed. The maximum time allocated to resolve a complaint is five weeks.

A flowchart of the community GRM is illustrated in Figure 6-1 below. Additionally, a grievance complaint form is provided in Appendix H.

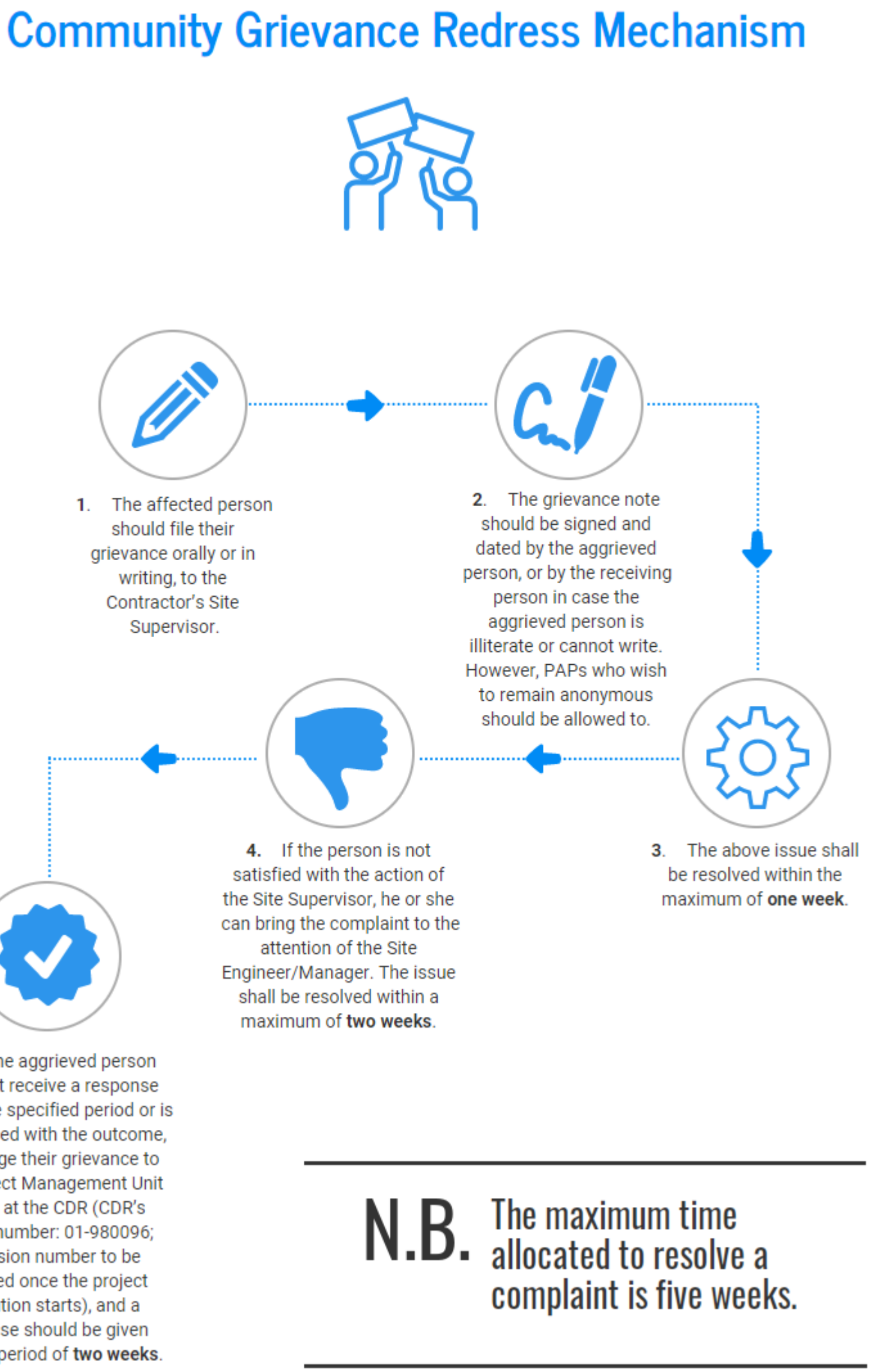


Figure 6-1 Community Grievance Redress Mechanism Process

6.2 WORKERS GRIEVANCE REDRESS MECHANISM

The purpose of the workers GRM is to ensure all employees are afforded both the rights and the means whereby grievances can be formally raised, lodged and resolved. The GRM allows employees to formally discuss and resolve any complaint that they may have and to provide a channel for the equitable settlement of complaints and grievances. Grievances refer to individual or group work-related problems, concerns or complaints that may arise in the nature of the work relationship with a co-employee or manager.

A grievance can be about any act, behavior or decision that has or is likely to have an unreasonable negative impact on the ability of a staff member to undertake their duties.

A grievance can relate to almost any aspect of employment, for example:

- Workplace discrimination;
- Safety in the workplace;
- Staff development or training;
- Leave allocation;
- Performance appraisal;
- Discrimination;
- Abusive language; and
- Sexual harassment.

The GRM should:

- Ensure that grievances are expressed openly and transparently, and could be discussed anonymously;
- Ensure that there will be no retaliation or discrimination against those who express grievances and that any grievances will be treated and resolved confidentially;
- Result in grievances being settled as close to the point of origin and as quickly as possible;
- Ensure that vulnerable employees (such as ethnic or religious minorities, migrant workers, or employees with disabilities) should not be deterred from logging a grievance;
- Ensure fairness and equity; and
- Promote a harmonious working environment.

If the affected employee feels prejudiced or considers that his/her rights were not preserved, they can follow the procedures below:

Stage 1:

The worker must raise the grievance verbally with the direct supervisor. The direct supervisor must, to the best of his / her ability:

- Listen to the worker in private; without any other parties present including HR;
- Encourage the worker to express the grievance freely and openly; and
- Obtain all relevant facts about the grievance, distinguishing fact from opinion.

1. The direct supervisor must endeavor to resolve the grievance as quickly as possible and within three (3) working days (unless a longer time frame is justified) and keep record of the resolution, with the acknowledgement of receipt of resolution by the employee;
2. If the direct supervisor's decision is not satisfactory to the employee, Level Two becomes effective and the immediate supervisor must advise the employee of the subsequent stages of the procedure and of the employee's right to seek the assistance of a representative; and
3. Any employee making use of the grievance procedure may nominate a shop steward or fellow worker to act as a representative during the meeting with Management in Level Two.

Stage 2:

1. With the assistance of a representative, if so required, the worker can formally raise the grievance with the next level of management above the immediate supervisor (Site Engineer), by completing a grievance form;
2. Acting as a chairperson, the designated Site Engineer concerned, in consultation with the worker relations representative, must endeavor to resolve the grievance within three (3) working days (unless a longer time frame is justified) by convening a meeting of all parties concerned;
3. The chairperson must communicate his / her decision to the worker by completing the grievance form and forward a copy to the worker; and
4. If the outcome of the grievance meeting is still not satisfactory to the worker, then he may appeal and refer the matter for final review to the next level of management, senior to the chairperson of the grievance meeting.

Stage 3:

1. The worker must complete the previous grievance form and forward it to the designated Project Manager, senior to the one in Level Two;
2. The designated Project Manager shall review and evaluate all facts and conclusions reached in all previous Levels (stages);
3. The designated Project Manager shall have the right to call for any additional facts or information he / she may require; and
4. The designated Project Manager shall make his decision within three (3) working days (unless a longer time frame is justified), from the date of receipt of the grievance.

Stage 4:

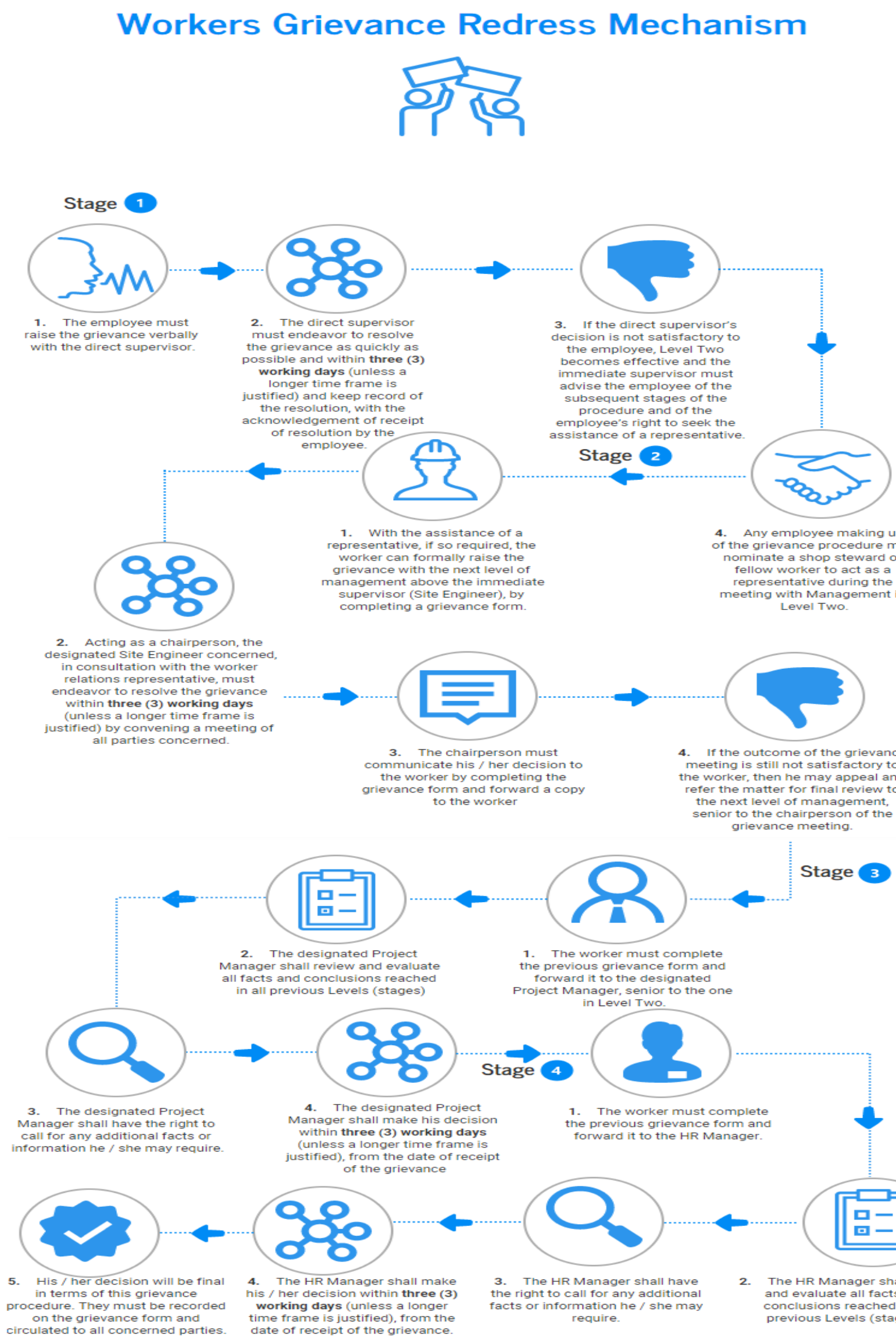
1. The worker must complete the previous grievance form and forward it to the HR Manager.
2. The HR Manager shall review and evaluate all facts and conclusions reached in all previous Levels (stages).
3. The HR Manager shall have the right to call for any additional facts or information he / she may require.

4. The HR Manager shall make his / her decision within three (3) working days (unless a longer time frame is justified), from the date of receipt of the grievance.
5. His / her decision will be final in terms of this grievance procedure. They must be recorded on the grievance form and circulated to all concerned parties.

Where the grievance to be raised affects a group of workers, then the workers concerned may either:

- Nominate a delegation of not more than three (3) workers from amongst themselves to raise the matter with their respective immediate superior;
- Nominate a delegation of not more than three (3) workers from amongst themselves to consult their respective shop steward; and
- Once the workers concerned have nominated their delegation and/or consulted with their respective shop steward, the three (3) stages of the grievance procedure as detailed above shall be followed.

The maximum time allocated to resolve a complaint is twelve (12) days, unless a longer timeframe is justified. A flowchart of the workers GRM is illustrated Figure 6-2 below. Additionally, a grievance complaint form is provided in Appendix H.



N.B. The maximum time allocated to resolve a complaint is twelve days (unless a longer time frame is justified).

Figure 6-2 Workers' Grievance Redress Mechanism Process

7. PUBLIC CONSULTATION

According to existing laws and regulations, international conventions and good practice, including the World Bank's Operational Policy OP 4.01, the public has the right to be properly and timely informed about any type of project that can cause an impact on the environment. In this context, public announcements (Appendix I) stamped and signed by the concerned Municipalities were posted at Bouerij, Chtaura, El Mraijet, Jdita, Jlala, Makse, Taalabaya, Taanayel, Wadi Ed Delem, Zebdol, Saouiri and Qabb Elias Municipalities on August 13, 2018 (15 days prior to the public consultation).

A consultation meeting was held on August 28, 2018 at the Chamber of Commerce Zahle to discuss the findings of the ESMP. Photos from the meeting are provided in Figure 7-1. The consultation presentation is provided in Appendix K.

Figure 7-1 Images from the Consultation Meeting

Although invitation letters were sent by fax and email and public announcements were posted in order to target all types of stakeholders (public, local authorities, NGOs and associations, communities, etc.), only 13 participants showed up to the public consultation, none of whom represented NGOs. It is worth mentioning that only 15% of the attendees were females. The attendees represented the following main affiliations; the list of participants is available in Appendix L:

- Qabb Elias and Wadi Ed Delem Municipality;
- Saouiri Municipality;
- The Litani River Authority;
- DGA (MoC);
- MoEW;

- Council for Development and Reconstruction;
- Bureau Technique pour le Développement (BTD);
- World Bank; and
- Chamber of Commerce, Industry and Agriculture of Zahle and Bekaa.

In general, the attendees welcomed the Project and acknowledged its positive impacts on the environment as a whole. Table 7-1 summarizes the main issues of concern raised during the public participation meeting.

Table 7-1 Concerns Raised during the Public Consultation Meeting

Authority	Comment/Question	Answer
Qab Elias Municipality represented by its president Mr. Jihad Moallem	The WWTP falls in Qab Elias, not in El Marj	-
	Some topographic limitations can hinder the wastewater flow by gravity from Saouiri towards El Marj WWTP and will require the installation of pumping stations. Therefore, it is suggested that the wastewater networks in Saouiri are connected to Joub Jannine WWTP.	El Marj WWTP can accommodate the amount of wastewater from Saouiri. The engineers have conducted the study and designed the networks in the most convenient way so that wastewater will flow by gravity without the need for pumping stations.
	New residences are being developed close to the plot on which El Marj WWTP will be constructed.	Regular maintenance of the WWTP will be conducted to avoid disturbances to nearby residents.
	Will the quality (physicochemical) of the treated wastewater effluent be tested in order to know if it can be used for irrigation of agricultural lands?	The quality of the wastewater generated from the WWTP will be regularly tested.
	What will the fate of sludge produced by the WWTP be? Will it be landfilled?	The CDR is ready to answer all the questions of Mr. Moallem in a meeting, and to show him all the studies that have been prepared for the project.
General Manager of CCIAZ, Mr. Youssef Geha	There is a concern that gas stations in the area served by the networks and WWTP might discharged their liquid waste into the sewer. They should not be allowed to do so.	Gas stations have to treat their effluent and make sure it complies with Decision 8/1 (2001) before discharging their wastewater into the sewer.
CCIAZ – Mr. Tony Tohmeh	An important meeting was previously held regarding pollution of the Litani and Qaraoun, and considerable budget was allocated by the World Bank to prevent such pollution. What is the status of this initiative?	Several projects are being implemented as part of the LEPAP project funded by the World Bank to collect and treat domestic wastewater, and to gradually promote the treatment of industrial effluents in the area.
Litani River Authority represented by Mr. Nassim Abou Hamad	The LRA is concerned about the violations of the small WWTPs that discharge the treated wastewater into the Litani river even through the quality is not compliant with the standards.	The WWTP will be regularly monitored to ensure proper operation and maintenance, and the quality of the effluent will be tested to ensure compliance with the standards before discharge into the river. Authorities should report any violations to enforce penalties.

Authority	Comment/Question	Answer
	Decentralized treatment systems such as constructed wetlands and aerated lagoons are a preferred option for rural areas, as per an article published by the EPA on the unsustainability of conventional activated sludge treatment processes. Rural systems are associated with fewer operational problems. They are widely used in the USA. There is a fear that BWE might not be able to operate the constructed WWTP due to the lack of technical and financial resources.	The problem with constructed wetlands is their high surface area requirement.
Saouiri Municipality represented by its president Mr. Hussein Ali Amer	Why can't the owner of the plots that require expropriation, signup for property alienation instead of expropriation?	To avoid future conflicts, it is preferable that the plots are expropriated and the land owners are fully compensated for their losses.
Directorate General of Antiquities - Mr. Raffi Gergian	During the execution of the Forzol water networks, important Roman archeological findings were uncovered. Hence the importance of informing DGA of all projects and ensure proper coordination to protect and manage archeological resources and avoid irreversible damage.	The needed coordination and information shall be carried out.

8. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This section presents the proposed Environmental and Social Management Plan (ESMP) for the Project. The ESMP will highlight the main impacts and control measures that were identified in the Environmental Impact Assessment section, particularly:

- Mitigation measures to be implemented during the construction and operation phases;
- References to control guidelines and standards;
- Responsibilities for the implementation of the plan;
- Verification, monitoring and training requirements; and
- Record keeping and documentation requirements.

The overall objectives of the ESMP are to:

1) Ensure the Project's compliance with Lebanese legislation;
2) Provide a basis to carry out monitoring activities and compliance inspection programs; and
3) Support the Contractors and relevant stakeholders in the implementation of mitigation and monitoring plans.

The ESMP may be subject to updates and modifications throughout the Project lifetime.

8.1 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This section comprises a priority list of the most important measures that the project proponent should adopt to ensure a practical, cost-effective and appropriate approach to impact mitigation.

Proposed mitigation measures for construction and operation impacts are summarized in Table 8-1 and Table 8-2.

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Table 8-1 Construction Phase Environmental and Social Management Plan

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Emissions													
Air Emissions	Combustion and exhaust emissions	N/D	M	L	S	C	R	H	M	• Ensure well designed, maintained, and operated equipment/vehicles. Precautionary control measures for emissions reduction could include proper engine fuel mixtures, regularly serviced exhaust emission systems, suitable engine tuning, and use of low sulfur content diesel, whenever available; • Use environmentally friendly equipment whenever possible (machinery with higher fuel efficiency or equipped with air pollution control devices to minimize exhaust emissions); • Keep a record of maintenance for all machinery, vehicles, and generators on site; • Report and monitor monthly fuel consumption records to keep track of consumption levels and identify overuse; • Avoid unnecessary idling of vehicles and equipment engines; and • Ensure that an effective Maintenance Plan and Schedule is in place for employed site machinery, vehicles, and power generators.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost
	Dust emissions	N/D	M	L	S	C	R	H	M	• Set physical barriers at site boundaries; • Ensure site roads are kept regularly damped down and compacted to minimize dust emissions; • Schedule deliveries of raw materials efficiently; • Wheel-washing of vehicles before departure from construction site; • Cover incoming and outgoing trucks with proper canopies; • Limit vehicular speed onsite to 20 km/h; • Maintain material stockpiles at minimum heights and adequate slopes and ensure that they are covered; • Surround the construction areas with scaffolding nets to control debris and dust from dispersing beyond the construction sites; and • Inform sensitive receptors of the scheduled construction works, ahead of time in conjunction with the concerned municipalities, especially for dust-generating activities.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost
Noise	Noise associated with site preparation, construction activities and operation of on-site generators, heavy machinery, equipment and vehicles	N/D	M	L	M	C	R	H	M	• Fit all machinery, equipment, and vehicles with exhaust silencers where possible; • Ensure proper inspection and maintenance of machinery, vehicles and generators; • Avoid idling and switch off engines when not in use; • Place noisy equipment away from sensitive receptors, behind stockpiles to provide acoustic barriers; • Control speed limits of vehicle movement on site and in the surrounding area; • Plan deliveries to and from the site during day time hours; • Respect scheduled working hours (7:00 am- 6:00pm) and avoid night-time work; • Avoid construction works on Sundays and public holidays; • Inform site staff and workers on the impact of noise and the applicable regulatory requirements; • Provide workers with noise protection equipment and enforce their use; • Conduct regular noise monitoring to ensure that noise emissions are compliant with national standards (Decision 52/1, provided in Appendix D); • Notify the residents of the plans and expected duration prior to initiating the works, in conjunction with concerned municipalities; and • Establish a noise complaint grievance mechanism as a measure to allow implementation of timely and effective actions to minimize noise impacts on downwind receptors.	Medium	Implementation: Contractor Supervision: CDR	• Noise PPEs: Washable and reusable ear plugs: ~1.5 USD/piece or Ear Muffs: ~28 USD/piece • Noise monitoring: 400 USD/Event
Soil and Ground Water Resources	Temporary or permanent change in topography, soil erosion and collapse from grading, trenching, or excavation works	N/I	H	L	L	C	I	H	H	• Ensure international standards (i.e. ASTM Soil Compaction Standards) are met during any excavation works, compaction and grading activities, in order to minimize expected disturbance during the construction phase; • Manage fixed routes for equipment movement and avoid multiple routes; and • Re-use excavated/cut materials as general fill where considered suitable.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
	Accidental spills of fuel, oil and chemicals	N/D	H	G	L	C	I	L	M	• Good housekeeping practices through handling and storage of chemicals, oil, fuels and lubricants within containment facilities (e.g. bunded areas, leak-proof trays) designed to prevent the release of spills/leaks to the soil and groundwater environment; • Maintenance schedule should be in place as part of the inspection procedures of all equipment/ generators/ machinery for risk minimization; • Maintenance of machines and equipment should take place off-site or onsite in a well-contained area with impermeable concrete pavement and drainage for vehicle washing and maintenance; • Oil spill response kits should be available wherever oils are being used/stored; • Promote awareness among workers on how to handle oil/lubricants; • Train workers how to clean up small-scale spills; • Ensure drip trays are present when re-fuelling; • Prepare a Spill Emergency Plan specific for the Project; and • In case of spill: - Immediately report incidents reporting to the concerned authorities; - Contain the source of spill (close valve, seal pipe, seal hole or as appropriate); - Check for hazardous flammable materials on site; - Prompt clean-up of the spill by removing affected top soil layer by trained employees who should be equipped with appropriate tools and Personal Protective Equipment (PPE); - Treat and contain the removed soil as hazardous waste; and - Adopt, to the extent possible, dry cleaning techniques to decrease resulting wastewater, and to avoid flushing of spills to deeper soil layers.	Low	Implementation: Contractor Supervision: CDR	Oil spill response kit: 80 USD Drip trays: 65 USD
	Inadequate solid waste management	N/D	H	L	L	C	R	M	M	• Segregate at source domestic-like wastes and construction wastes that can be reused onsite from those that need to be transferred for treatment or disposal; • Sort excavation waste resulting from construction activities into different types (bulky aggregates, fine aggregates, etc.); • Reuse part of the excavation waste in backfilling; and dispose of the rest (if any) in an adopted/authorized construction and demolition waste dump; • Material stockpiles should be of certain heights, slopes and be well covered and contained; • Schedule the works during dry season, when possible; • Progressively carry out rehabilitation of disturbed areas following completion of works at all construction sites (rehabilitation will include reinstatement of soil, surface leveling, re-vegetation and mulching, where applicable); and • Ensure that standards of "good housekeeping" are maintained (i.e., avoid littering, prevent storage of combustible waste for more than 24 hours to prevent attraction of pests and flies).	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost
	Inadequate wastewater management	N/D	M	L	M	C	R	H	M	• Ensure all connections are inspected and are not leaking through the regular inspection of septic/ holding tanks (if any) and connections to the wastewater sewage network; • Obtain a permit from the Municipality or the relevant Water Establishment to transport and discharge the domestic wastewater to an operating treatment facility; and • Restrict vehicle washing to contained maintenance areas offsite or onsite with impermeable concrete pavement and proper drainage.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Waste Generation	Construction-related solid and liquid wastes generation	N/D	M	L	M	C	R	H	M	• All construction workers and personnel should be responsible for ensuring that standards of "good housekeeping" are maintained. This will include: - Clear all rubbish and work associated debris; - Sort domestic and general waste into combustible (paper, food, cardboard, and wood) and non-combustible waste (metals, glass, rubble) streams at source by means of suitably labeled containers for safe collection, segregation and handling of all waste streams generated; and - Avoid storage of combustible waste for more than 24 hours to prevent attraction of pests and flies. • Regularly inspect garbage bins; • Sort and collect hazardous wastes separately from domestic waste. All hazardous waste bags should be properly labeled and stored so as to prevent occupational health hazards; • Compile log sheets of hazardous wastes, including type, amount and disposal method, to track final destinations and identify opportunities for improvement; • Transport excavation and construction wastes in covered/closed trucks for disposal in currently available dumpsite locations until a permitted sanitary landfill is made available by the Government; the disposal location shall be approved by the concerned municipality, CDR and MOE; • Regularly inspect and maintain septic tanks (if any) to detect and prevent leaks; • Ensure that the quality of the hydro-test water is compliant with decision 8/1 for the discharge of wastewater into sewage network or surface water bodies; and • Collect the concrete wash water in a designated tank and allow for water to evaporate and the concrete to harden to dispose it off with construction waste.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost
Depletion of Resources													

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Biological Resources	Excavation and construction activities	N/D	M	L	M	C	R	H	M	• Minimize disturbance of natural land by excavating and constructing necessary areas of land only; • Stay away from the KBAs, himas and the SBR while transporting materials and equipment to and from the project's sites, i.e., use roads that are far away from their boundaries to minimize negative impacts on these areas • Prohibit unnecessary cutting or damaging of wild plants and trees, specifically the wild species; • Trees that will not be cleared should be separated from the construction area by a barrier placed at an appropriate distance from the tree trunk. It is generally recommended that the barrier is placed at a distance equal to the branch spread of the tree or half its height, whichever is greater. When branches are in the way, they should be pruned rather than removing the whole tree; • Olive and fig trees are sturdy, and usually respond well to transplanting especially in the fall season, when soil and air temperatures are still warm and thus the roots can become established. Thus, it is recommended to transplant all trees of these two species (67 olive trees and 21 fig trees; other tree species' survival chances following translocation are low) once they are cleared from the affected plots. For higher chances of successful transplantation of olive and fig trees, the following method is suggested: - Tree leaves should be removed off the top branches; - Dig the hole around the trunk as deep as possible to expose the main roots of the tree. Trees could be removed with the help of a JCB Backhoe, while keeping as much of the soil intact as possible. - Trees should be removed with their soil and each gently put in a big pot. Some humus or peat moss should be added at the bottom of each pot before placing the dug tree in it. The top of the pot should also be covered with a layer of humus soil or peat moss. The trees should be delivered to the Municipality and watered regularly. • Coordinate with the Municipality of Saouiri, before initiating construction works to ensure translocation of all olive and fig trees (total of 88 trees) upon their clearance within the shortest period of time to increase their chances of survival; • Avoid construction works during the bird migration seasons only within plots of Medium ecological value in Saouiri, in the area within 500 m from Hima Anjar-Kfarzabad, and in the section that falls within the buffer and transition zones of the SBR, because these areas fall on the migratory route of birds for both seasons. The peak spring migration season is from March to mid-May, whereas the fall one is during September and October; • Proper disposal of domestic and construction waste at designated sites; • Enclosing all fine earth materials during transportation to and from the site to prevent spillage and dusting; • Proper storage and prompt transportation of construction material to prevent them from being washed away during rainfall or carried by wind; and • Storage of wastewater from the construction phase in tight septic tanks that shall be regularly emptied and transported for discharge into an operating wastewater treatment facility.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost
Water Resources Consumption	Water for construction activities and domestic use	N/D	L	L	S	C	R	H	L	• Adopt a water saving plan during the construction phase and limit the amount of water used for workforce daily uses.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost
Energy Resources	Energy consumption during construction activities	N/D	M	L	M	C	R	H	M	• Use equipment with higher fuel efficiency • Adopt a periodic inspection and maintenance schedule for power generators and equipment engines, as per manufacturer specifications, and maintain maintenance logs; • Report and monitor monthly fuel and energy consumption records to keep track of consumption levels and identify overuse; • Avoid unnecessary idling of vehicles and equipment engines.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost
Other Impacts													

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Traffic	Increase in traffic during construction	N/D	M	L	M	C	R	H	M	• Limit speed on the construction sites to 20 km/h unless otherwise advised, and adopt careful logistical and route planning; • Position any necessary traffic diversion signs and devices correctly. Signs and devices should be clearly displayed in the Arabic and English languages. Temporary traffic signals and signs should be employed to warn of hazards and provide directions, especially on narrow one-lane roads; • Coordinate with the concerned municipalities with respect to the planned road blockages, detours or diversion, and the scheduling of the construction works including material delivery, waste transfer, truck movement and other machinery operations in order to limit the disruption to the neighborhood from traffic inconveniences and traffic flow and to minimize noise and dust generation; • Follow a specific schedule for transport to avoid interference with peak traffic hours and minimize disturbance/delay to commuters at rush hours on the roads leading to the Project construction sites; • Fill up all holes and trenches, and level all mounds and heaps of earth, and exposed surface reinstatement, which have been excavated or made in connection with the works immediately upon completion of any part of the works; and • Provide/display adequate warning signs to prevent accidental falling into open areas; and • Assemble a fence around the construction work areas.	Medium	Implementation: Contractor Supervision: CDR	Part of construction activities cost

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Archaeology	Potential damage to undiscovered archaeological features during excavation	N/D	H	L	M	C	I	H	H	• Coordinate with DGA for a survey to be conducted prior to the initiation of works, allowing to identify any possible prehistorical and archaeological remains on the different locations of the Project; and • Ensure that all crew members and site engineers are made aware of the laws and regulations related to archaeological findings and are capable of identifying any if encountered. • If any material were to be found during the survey, DGA is the only authority to determine the required operations and to give the approval to commence construction works. During construction, excavation and/or leveling works, excavation in sites of known archaeological interest should be avoided. Where this is unavoidable, prior discussions must be held with the DGA in order to undertake pre-construction excavation or assign an archaeologist to log discoveries as construction proceeds. Where historical remains, antiquity or any other object of cultural or archaeological importance are unexpectedly discovered during construction in an area not previously known for its archaeological interest, a "Chance-Find Procedure" should be applied. This procedure should be included in all sub-contractors' contracts under a "Protection of Prehistorical, Archaeological and Historical Sites" clause, developed in accordance with the Lebanese regulations (Decree 3057/ 2016) and the World Bank Guidance – OP 4.11. The following actions should be taken: • Stop construction activities. • Delineate the discovered site area. • Notify the responsible foreman/archaeologist who in turn should notify the DGA (within less than 24 hours). • Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remains, a night guard should be present until the responsible authority takes over. • Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out. • An evaluation of the finding will be performed by the DGA. The significance and importance of the findings will be assessed according to various criteria relevant to cultural heritage including aesthetic, historic, scientific or research, social and economic values. • Decision on how to handle the finding will be reached based on the above assessment and could include changes in the project layout (in case of finding an irrevocable remain of cultural or archaeological importance), salvage excavations, in situ conservation, preservation or restoration. • Implementation of the authority's decision concerning the management of the finding. • Construction works can resume only when permission is given from the DGA after the decision concerning the safeguard of the heritage is fully executed. In case of Archeological finds, the Contractor should refer to the Conditions of Contract (General Conditions of Contract (FIDIC); and CDR Safety, Health and Environmental Regulations). These include the following: • In case of delay incurred in direct relation to archaeological findings not stipulated in the contract (and affecting the overall schedule of works), the contractor may apply for an extension of time. However, the contractor will not be entitled for any kind of compensation or claim other than what is directly related to the execution of the archaeological findings works and protections. • The duration of any actions needed in case of Chance Finding cannot be determined ahead of time. As for the estimated price, it varies according to the needed manpower / time frame for the needed procedures, and can only be determined in accordance with the needed works.	Medium	Implementation: Contractor Supervision: CDR, DGA	Part of construction activities cost
Socio-economic	Creation of new job opportunities	P/D	H	L	M	C	-	H	B	-	-	-	-

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
	Child Labor	N/D	M	L	M	C	R	M	M	• The assigned Contactor is bound to comply with laws prohibiting child labor and shall follow all applicable laws that recognize children's rights and minimum age of employment. • Maintain a record of labor registry and age verification. • Inform all workers of the internal GRM figuring in Section 6.2 for reporting any problems or complaints they might have, and ensure it is properly implemented.	Low	Implementation: Contractor Supervision: CDR/ World Bank	Part of construction activities cost
	Social tension between foreign and local workers, and the host community	N/D	M	L	S	C	R	M	M	• The Project implementing agency – CDR- should ensure that the awarded Contractor is committed to adherence to the principles that define equal employment opportunity, while also complying with Decision 29/1 of 2018 restricting a number of jobs in the construction sector to Lebanese citizens. Therefore, equal employment opportunities will be provided to all qualified candidates regardless of color, citizenship status (when applicable), race, religion, gender, and marital status through clear selection criteria. Nonetheless, construction works in Lebanon have always been occupied by foreign labor, namely Syrian labor force. • Inform all workers of the internal GRM for reporting any problems or complaints they might have. • Inform local citizens of the external GRM in case they face problems with workers, or if they have any complaint.	Low	Implementation: Contractor Supervision: CDR/World Bank	Part of construction activities cost
	Labor- induced sexual abuse and exploitation/harassment	N/D	H	L	L	O	I	M	M	• Conducting rigorous pre-employment checks of all candidates to avoid hiring any previous offenders; • The Contractor should have a Code of Conduct Policy that all hired labors should sign and follow the employee code of conduct policy; • All hired laborers should undergo mandatory training that coves sexual abuse and exploitation/harassment, and Gender-Based Violence. Sexual abuse and exploitation/harassment includes, but is not limited to: - Underage sexual activity; - Exchange of money, employment, goods, or services for sex or sexual favors; and - Engaging in sexual activities with sex workers. Gender-Based Violence can be broadly defined into five categories, and these include: - Sexual violence – rape, sexual assault, and sexual harassment; - Physical violence – hitting, slapping, and beating; - Emotional violence – psychological abuse; - Economic violence – denial of financial resources; and - Harmful traditional practices – forced marriages, and female genital mutilation. • Reporting allegations of sexual abuse and exploitation/harassment and Gender-Base violence through confidential reporting tools. All allegations should be investigated, and if these allegations are proven, strict disciplinary measures should be promptly taken.	Medium	Implementation: Contractor Supervision: CDR/World Bank	Part of construction activities cost

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
	Damage to the existing infrastructure	N/D	H	L	S	C	R	M	M	• Trial pits should be executed along the network route to locate the existing infrastructure components; • Sewer lines should be installed at least[9] 3 meters horizontally from and 0.3 meters lower than existing water main lines; • Where the separation requirements cannot be met due to topography, inadequate right-of-way easements, or conflicts with other provisions of these regulations, lesser separation is permissible if: - The water main and the sewer are located as far apart as feasible within the conditions listed above; - The water main and the sewer are not installed within the same trench; and - The sewer line is appropriately constructed to prevent contamination of the water in the main by sewer leakage. • No water main lines should pass through or come into contact with a sewer manhole; and • Ensure the community GRM figuring in Section 6.1 is properly disseminated and implemented.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost
	Property loss due to expropriation	N/D	M	L	L	C	I	H	M	• The CDR and PMU should ensure the proper implementation of the LAP and the grievance redress mechanism developed in the LAP (Section 6) in order to fairly compensate PAPs and address all complaints and grievances within an acceptable period of time and to the satisfaction of the plot owners; and • Ensure the community GRM figuring in Section 6.1 is properly disseminated and implemented.	Medium	Implementation: CDR Expropriation Unit Supervision: CDR PMU/World Bank	Part of construction activities cost
	Disturbances to nearby sensitive receptors from noise and dust generation and traffic	N/D	M	L	S	C	R	H	M	• Properly implement the mitigation measures proposed for dust and noise emissions and traffic; and • Ensure the community GRM figuring in Section 6.1 is properly disseminated and implemented.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost
	Increased pressure on existing infrastructure	N/D	M	L	S	C	R	H	M	• The Project implementing agency – CDR - will ensure the compliance of the awarded Contractor with the proposed waste management plan (refer to Section 5.11.2 above; and • Ensure the community GRM figuring in Section 6.1 is properly disseminated and implemented.	Low	Implementation: Contractor Supervision: CDR	Part of construction activities cost

[9]Separation distances specified should be measured from the nearest outside edges of the facilities.

Health and Safety Hazards	Potential risks to general health and safety of the sites' workers, nearby residents, commuters, and pedestrians	N/D	M	L	M	C	R	M	M	• Surround the construction areas with scaffolding nets; • Provide sufficient lighting; • Prohibit keeping trenches unnecessarily open and install barriers to avoid falling and tripping; • Fence off all construction sites to prevent unauthorized access, and the contactor must take any other reasonable steps to prevent unauthorized access; • Provide site boundaries by installing suitable physical barrier (roadblocks, tape, fence, etc.); • Mark excavation holes and openings with physical boundaries (barriers/ covers, tape or fence); • Store and stack work materials (such as pipes, manhole rings, and cement bags) in a safe manner so that they cannot topple or roll over; • Tidily stack, protect and cover materials and equipment where necessary. Additionally, ensure an adequate space for new materials to be stored in secured covered areas to avoid damage, theft, and to protect these items from weather conditions. • Post material indicating the nearest police station and hospital with accident and emergency facilities; • Keep machinery and vehicles passages clear; • Implement a speed limit of 20 km/h for vehicles arriving to and leaving the construction sites; • Provide workers with the appropriate PPE (goggles, dust masks, helmets, hearing protection equipment, proper clothing, safety boots, etc.) and enforce their use; • Maintain the PPE (cleaning when dirty and replacement when damaged or worn out); • Training materials and toolbox talks should be offered to the workers in order to educate and increase workers' awareness of potential hazards and work-related injuries. A record of all safety meetings should be documented for the duration of each and should include the date, topic, attendees, recommendations, and additional comments. Suggested topic include: - Personal Protective Equipment (PPE) - Fire protection and prevention - Electrical safety - Trenching and excavation safety - Slips, trips, and falls protection/prevention, etc. Safeguard security service providers in Lebanon include CIS Security Services, Protectron Security, Security Flash Control s.a.l. (SFC), Safeguard & Protection Company (SPC), Security Engineering s.a.l., and Security and Services (SAS) along with others. • Ensure the availability of adequate loading and unloading space; • Keep walkways free of tripping hazards such as work materials, and debris; • If work involving the use of flammable materials is being carried out, prohibit smoking and do not allow other work activities involving potential ignition sources to take place nearby; • Prohibit littering; • Avoid burning of materials on-site; • Provide easily accessible first aid kits at the active work site with the appropriate number of materials given the number of workers on-site. The locations of the first aid kits must be indicated to all workers; • Post adequate signs at visible locations throughout the construction area indicating type of operation, potential risks, and appropriate medical/emergency action response; • Perform staff training about the fundamentals of occupational health and safety procedures, and about handling hazardous material containers and related wastes; • Implement the required air emissions and noise mitigation measures listed in sections 5.5.2 and 5.4.2 respectively; and • Follow the technical note that provides guidance on addressing issues associated with COVID-19, and proposes measures to minimize the risk of transmission of COVID-19 related to construction/civil works. The technical note is provided in Appendix F.	Low	Implementation: Contractor Supervision: CDR	PPEs Prices/ person: Overall ~12 USD Boots ~100 USD Helmet ~ 5 USD PVC Gloves ~2 USD Welding Gloves ~ 4USD Goggles ~ 3 USD Mask ~8 USD Reusable ear plugs ~1.5 USD Ear Muffs ~28 USD First Aid Kit (for 100 workers) ~200 USD

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
										Additional COVID-19 considerations in construction/civil works projects recommended by the World Bank are provided in Appendix G.			

Table 8-2 Operation Phase Environmental and Social Management Plan

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Emissions													
Air	Foul odor emissions	N/D	L	L	L	O	R	M	M	• Ensure proper construction of the sewage network; • Ensure that a regular inspection and maintenance schedule is in place for the sewage network to avoid blocked, broken or cracked pipes; and • Establish an odor complaint grievance mechanism as a measure to allow implementation of timely and effective actions to minimize impacts from odors on downwind receptors.	Low	BWE and concerned Municipalities	Part of operations activities cost
Noise	Noise from the normal operation and maintenance activities	N/D	L	L	L	O	R	L	L	• Notify nearby residents of the networks maintenance plans and the expected duration prior to initiating the works, in conjunction with the concerned municipalities; • Avoid idling of equipment and the generator when not in use; and • Equip all internal combustion engine-driven equipment with intake and exhaust mufflers.	Low	BWE and concerned Municipalities	Part of operations activities cost
Soil and Ground Water Resources	Potential contamination from wastewater overflows and/or leakages	N/D	M	L	M	O	R	M	M	• Proper operation and maintenance procedures for the sewage network including replacing network portions with an expired design life; • Continuous monitoring of any signs of overflows; • Ensure sewage network manholes are closed with proper lids to prevent blockages from fallen bulky objects; and • Prepare an Emergency Response Plan in case of sewer overflows due to clogs in sewer lines or ground subsidence. The Emergency Response Plan will most likely consist of diverting the existing sewage flow to ensure uninterrupted service during maintenance activities, by installing a temporary bypass using flexible pipes, and a sump pump. An Emergency Response team assigned by BWE (operator) must follow the established Emergency Response Plan, and must have access to all sewer facilities, in order to repair any component due to contingencies related to sewer overflows. In case of overflow: - Clean the sewer line to remove grease, grit, and other debris that may lead to sewer overflow (in case of overflow due to clogging); or - Replace sewer line and backfill around the manhole equally to prevent tipping, and compact the fill (in case of ground subsidence).	Low	BWE and concerned Municipalities	Part of operations activities cost
Waste Generation	Operation-and maintenance-related solid and liquid wastes generation	N/D	M	L	L	O	R	M	M	• Implement the measures suggested in section 5.6.3.1 during maintenance activities; and • Provide low toxic or environment-friendly (biodegradable) detergents for general cleaning purposes.	Low	BWE and concerned Municipalities	Part of operations activities cost
Depletion of Resources													
Biological Resources	Normal operation	N/D	L	L	L	O	R	L	L	• Proper management of liquid and solid waste generated by maintenance activities; • Prevention of littering in the area; • Control hunting within the project area.	Beneficial	BWE and concerned Municipalities	Part of operations activities cost
Energy Resources	Energy consumption during maintenance activities	N/D	L	L	S	O	R	M	L	• Adopt a periodic maintenance schedule of power generators, as per manufacturer specifications, and maintain maintenance logs; • Upgrade machines/equipment used for maintenance activities to more energy efficient technology for the purpose of reducing consumption; and • Switch off all machines/ equipment or any other energy consuming appliances when not in use.	Low	BWE and concerned Municipalities	Part of operations activities cost
Other Impacts													

Source of Impact	Project Activities	Evaluation of Impact								Mitigation Measures	Residual Impacts	Institutional Responsibility	Cost Estimation
		N	M	E	T	D	R	L	S				
Traffic	Increase in traffic during maintenance works	N/D	L	L	S	O	R	M	L	• Avoid maintenance works during peak traffic hours; • Display temporary traffic signals and signs to warn of hazards and provide directions especially on narrow one-lane roads; and • Coordinate with municipal police in case of need for road closure and rerouting to be able to carry out specific maintenance activities, preferably ahead of time.	Low	BWE and concerned Municipalities	Part of operations activities cost
Socio-economic	Improvement of overall socioeconomic and environmental conditions of serviced communities and receiving environment from containment of wastewater	P/I	H	L	L	O	-	H	B	-	-	-	-
Health and Safety Hazards	Potential health and safety risks to operation and maintenance workers and nearby receptors, pedestrians, and commuters from maintenance works or from sudden overflows or leakages	N/D	M	L	S	O	R	L	L	• Provide workers with the appropriate PPE (goggles, dust masks, helmets, hearing protection equipment, proper clothing, safety boots, etc.) and enforce their use; • Post adequate signs at visible locations throughout the maintenance area indicating type of operation, potential risks, and appropriate medical/emergency action response; • Prohibit keeping trenches unnecessarily open and install barriers to avoid falling and tripping; • Fence all maintenance sites to prevent unauthorized access; • Store and handle chemicals (if any) as directed by their material safety data sheets and use the required PPEs; • Conduct regular training for workers about health and safety requirements; and • Implement the required ambient air emissions and noise mitigation measures above listed in sections 5.4.3 and 5.5.3 respectively.	Low	BWE and concerned Municipalities	PPEs Prices/ person: Overall ~12 USD Boots ~100 USD Helmet ~ 5 USD PVC Gloves ~2 USD Welding Gloves ~ 4USD Goggles ~ 3 USD Mask ~8 USD Reusable ear plugs ~1.5 USD Ear Muffs ~28 USD First Aid Kit (for 100 workers) ~200 USD
	Improved public health conditions from the proper management of wastewater	P/I	H	L	L	O	-	H	B	-	-	-	-

8.2 IMPLEMENTATION OF THE ESMP

Implementation of the ESMP requires a clear distribution of roles among concerned stakeholders, as well as an environmental monitoring plan to verify the effectiveness of mitigation measures, a capacity building plan and a well-defined auditing and reporting scheme.

8.2.1 Roles and Responsibilities

Roles and responsibilities of different institutions involved in the construction and operation of the project with respect to the implementation of the ESMP are summarized in Table 8-3.

Table 8-3 ESMP Implementation Plan

Institution/Body	Roles and Responsibilities
CDR	• Overall responsibility over the ESMP Implementation during construction • As part of the project bi-annual progress reports, a section will be dedicated to reporting on the implementation of the ESMP and will be submitted to the World Bank and MoE. • The review and approval of the CESMP prepared by the Contractor and submission of reports on its implementation to MoE • Periodical supervision/ monitoring of the on-going work and submission of monthly/quarterly progress report to the WB
MoE	• Review and approve CESMP prepared by CDR • Enforce and supervise the implementation of the Environmental and Social Management Plan (CESMP and OESMP) by CDR and BWE respectively • Ultimately approve ESMP implementation reports • Conduct site audits as needed to check implementation of ESMP during construction and operation phases of the project • Make sure the environmental monitoring plan is being implemented during construction and operation phases, and that the relevant reports are regularly submitted to MoE.
MoEW/BWE	• Overall responsibility over the project operation and maintenance, including ESMP Implementation during operation
Litani River Authority	• General oversight of implementation and operation of the project
World Bank	• Review and approval of ESMP reports

Institution/Body	Roles and Responsibilities
Contractor	• Prepare a Construction Environmental Management Plan (CESMP) that details how the Contractor shall implement the provisions of the CESMP • Provide a field HSE officer to ensure implementation of the CESMP • Immediately report to the site HSE Officer in case of accidents, spills or other events which have health, safety or environmental implications (and to MoE and/ or MoPH as applicable through CDR) in case of serious accidents, spills or other events). • In case of incidents, the contractor should fill an incident records form, including how the incident is planned to be addressed. However, incidents with fatalities should be reported to the PMU within 48 hours, which should in turn immediately communicate it to the World Bank.
Supervision consultant(s)	• Review CESMP prepared by Contractor; • Review and approve Contractor's ESMP implementation reports; • Supervise the Contractor's implementation of CESMP; • Prepare a checklist to be used to supervise Contractor's works; • Coordinate with CDR to ensure appropriate reporting of ESMP implementation; • Identify training needs of concerned parties to ensure ESMP and monitoring plan requirements are well-understood and can be implemented.
Municipalities	• Follow up on the ESMP implementation during construction and operation phases.

8.2.2 Capacity Building Needs

8.2.2.1 Training Needs during Site Preparation Phase

In order to ensure a proper and effective implementation of the ESMP, it is particularly important to undertake a training program for the contractors that will be in charge of the works regarding its preparation and implementation. Training sessions for the contractors should be conducted prior to the commencement of the construction works and should focus on the following topics:

- General environmental and health awareness for all employees;
- ESMP study key findings and recommendations;
- Implementation of the proposed ESMP;
- Air pollution control;
- Control of leakages;
- Wastewater management;
- Water consumption;
- Solid waste management;
- Hazardous waste management;
- Oil spill management plan;

- Occupational health and safety issues;
- Emergency plan;
- Sexual abuse and exploitation/harassment; and
- Gender-Based Violence.

8.2.2.2 Training Needs during Operation Phase

It is recommended to train the maintenance workers on the following:

- Training to ensure that the ESMP is well-understood;
- Occupational health and safety;
- Noise and air pollution;
- Wastewater networks inspection and maintenance; and
- Emergency plan.

8.2.3 Record Keeping and Reporting

All data collected as part of the ESMP should be well recorded and documented as part of the Environmental Monitoring Report (EMP) submitted to the MoE on an annual basis. Within the EMP report, all data should be presented and analyzed to eventually evaluate the performance of the networks and the effectiveness of the mitigation measures put in place. The EMP report gives all concerned parties a clear picture of the projects' activities and its environmental performance.

8.3 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

Compliance monitoring should be conducted to ensure the environmental soundness of the project. It should be the responsibility of the designated site HSE Officer during the Construction phase, and the BWE and Municipalities during the operation phase. The proposed monitoring plan for the project is summarized in Table 8-4.

Table 8-4 Environmental and Social Monitoring Plan during Project Construction and Operation

Phase	Impact	Parameters to Monitor	Frequency	Monitoring Location	Number of Samples/Monitoring Points	Standards/Guidelines National/International	Institutional Responsibility	MoE Ref.
Construction	**Emissions**							
	Air Pollutants	• Recorded respiratory health problems among workers • Color of fumes from equipment and construction generators • Emissions of Generators' and construction equipment	• Workers' respiratory problems: monthly • Color of fumes from equipment and generators: daily (visual) • Generators' and equipment's emissions: before starting construction works and monthly afterward (visual)	• Workers' respiratory problems: workers' health records • Color of fumes from equipment and generators: stacks • Generators' and equipment's emissions: stacks	• Generators and equipment stacks for color of fumes • Emissions at generators and equipment stacks for air emissions, and ambient air quality at nearest receptors	• MoE Decision 8/1, dated 2001 (National Standards for Environmental Quality (NSEQ)- Appendix 2-9 for stack emissions • MoE Decision 52/1 – Section 14 for ambient air quality (at receptors)	Site HSE officer	Construction Manager/ Contractors
	Noise	L_{eq}, L_{max}, L_{min}, L_{90} dB(A)	• Three times daily during grading and excavation • Once daily during concrete pouring and pipes laying	Near sensitive receptors	Depending on number of receptors	MoE Decision No. 52/1 (Section 10 (Noise Standards)	Site HSE officer	Construction Manager/ Contractors
	Wastewater Generation	Leakages	Daily	Networks and septic tanks (labor sanitary facilities)	Visual inspection	Decree No. 2761of 1933 (Provides guidelines related to wastewater management and disposal; related to the pollution caused by the discharge of liquid waste, emphasizes the prohibition of direct or indirect wastewater discharges and waste disposal into water streams)	Site HSE officer	Construction Manager/ Contractors
	Solid Waste Generation	• Waste types • Waste generation rates (kg or tons/day) • Waste reused • Waste transported for offsite reuse/recycling • Waste disposed of • Method and location of disposal	Daily	Construction site (waste storage)	Daily records	Law 80/2018 (ISWM Law) Law No. 973 dated 1974 (Related to solid waste pollution; followed by the application of Decree No. 8735)	Site HSE officer	Construction Manager/ Contractors
	Depletion of Resources							
	Energy Resources	Fuel bills and fuel quantities consumption follow up	• Daily records • Monthly report	Construction site	Fuel and electricity bills	-	Contractor	Construction Manager/ Contractors
	Water Resources Consumption	Water consumption (m^3/day) (install water meters to calculate volume consumed per week if applicable)	• Daily records • Monthly report	Construction site	Water bills	-	Contractor	Construction Manager/ Contractors
	Other Impacts							
	Socio-economic	• Number/ percentage of local workers • Number of internal and external grievances submitted/ resolved per month and the duration for resolving these complaints	• Local workers: Before commencement and during construction works (monthly) • Number of grievances: During construction works (monthly) • Trainings on topics related to sexual abuse and	Construction site and at sensitive receptors; Workforce	• Employee records • GRM records • Training records	-	Contractor, concerned municipalities, and PMU	Contractors, concerned municipalities, and PMU

Phase	Impact	Parameters to Monitor	Frequency	Monitoring Location	Number of Samples/Monitoring Points	Standards/Guidelines National/International	Institutional Responsibility	MoE Ref.
		• Number of Sexual abuse and exploitation/harassment training sessions, and number of participants • Number of Gender-Based Violence (GBV) training sessions, and number of participants • Number of labors aged below 18 years	exploitation/harassment: before commencement and during construction works • Trainings on topics related to GBV: before commencement and during construction works • Verify the age of applicants and update records of labor registry during the recruitment process prior to the commencement of construction works and during, especially when replacing workers and when hiring new ones.					
	Health and Safety Hazards	• Proper PPE use • Good housekeeping practices • Number, type and cause of accidents and injuries • Number of trainings addressing COVID-19 prevention, and number of COVID-19 cases reported	Continuous	Construction site	Accidents and health records	National Decree No. 11802 dated 2004 (Organizing prevention, public safety and occupational health in all institutions, as per the Labor Law)	Site HSE Officer	Contractors
	Archaeology	Monuments/objects found during the works	Daily	Construction site	Visual inspection	National Decree No. 3057 dated 2016 which defines and regulates the procedures followed by the DGA for preventive and rescue excavations.	Workers, Site HSE Officer, Contractor and Supervision Consultant	Contractors
Operation	**Emissions**							
	Wastewater	Leakages/overflow	Daily	Networks	Visual inspection	Decree No. 2761of 1933 (Provides guidelines related to wastewater management and disposal; related to the pollution caused by the discharge of liquid waste, emphasizes the prohibition of direct or indirect wastewater discharges and waste disposal into water streams)	Operator	BWE
	Solid Waste Generation	• Quantity of sludge generated • Method of disposal	During network maintenance activities	Maintenance locations	Records of waste generation and management	Law No. 973 dated 1974 (Related to solid waste pollution; followed by the application of Decree No. 8735)	Operator	BWE
	Other Impacts							
	Socio-economic	Number of grievances submitted/ resolved and the duration for resolving these complaints	During operation phase and maintenance activities	Near sensitive receptors and maintenance locations	GRM records	WB OP 4.01	Operator, concerned municipalities, and BWE	BWE, concerned municipalities
	Public health and safety	Number and cause of accidents during maintenance works	During maintenance activities	Maintenance locations	Accidents records	National Decree No. 11802 dated 2004 (Organizing prevention, public safety and	Operator	BWE

Phase	Impact	Parameters to Monitor	Frequency	Monitoring Location	Number of Samples/Monitoring Points	Standards/Guidelines National/International	Institutional Responsibility	MoE Ref.
						occupational health in all institutions, as per the Labor Law)		

8.4 COST OF ESMP IMPLEMENTATION

The cost of ESMP implementation including mitigation and monitoring measures, capacity building programs and the environmental and social safeguards specialist are provided in Table 8-5.

Table 8-5 ESMP Implementation Cost

Component	Cost (USD)
CESMP	25,000
OESMP	2,000/ month
	100,000 (cost of flexible pipe and sump pump)
Monitoring (construction phase)	50,000
Monitoring (operation phase)	- (Part of operation costs)
GRM	- (No added cost imposed on the concerned Municipalities)
	- (Part of the PMU operation cost)
Capacity building (construction and operation)	5,000
Environmental and Social Safeguards Specialist (construction phase)	90,000

9. REFERENCES

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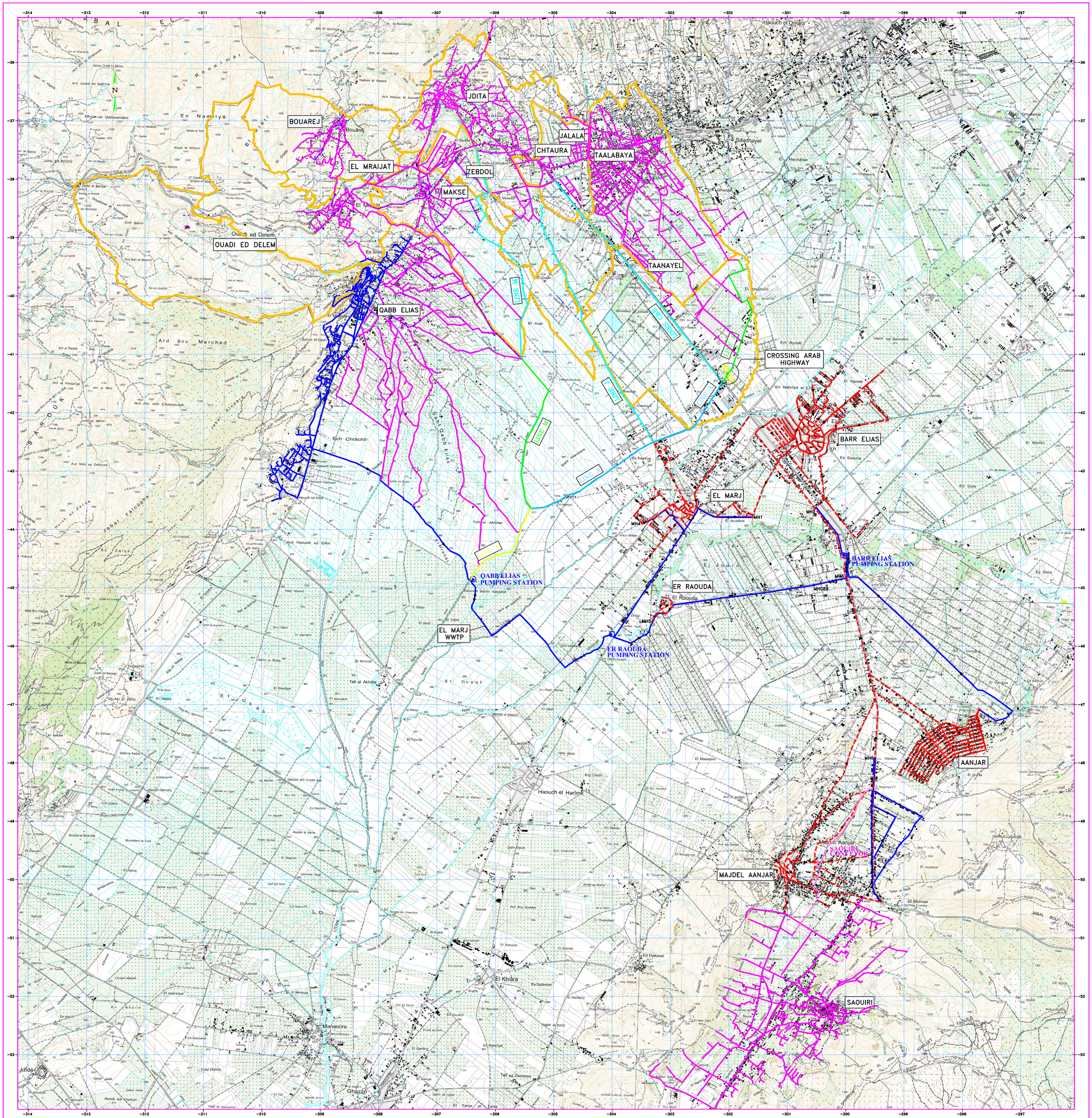
10. APPENDICES

APPENDIX A-MASTER PLAN OF THE EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARDS EL MARJ WWTP



LEGEND:

ANJAR / MAJDEL ANJAR WASTEWATER TREATMENT PROJECT

- EXISTING SEWER LINE
- EXISTING SEWAGE FORCEMAIN
- EXISTING PUMPING STATION
- ANJAR/MAJDEL ANJAR PROJECT-SEWER LINE
- ANJAR/MAJDEL ANJAR PROJECT-SEWAGE FORCEMAIN
- ANJAR/MAJDEL ANJAR-PUMPING STATION
- ANJAR/MAJDEL ANJAR WWTP

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WWTP

- CADASTRAL LIMITS OF PROJECT AREAS
- PROPOSED GRAVITY WASTEWATER COLLECTOR ø400mm.
- PROPOSED GRAVITY WASTEWATER COLLECTOR ø500mm.
- PROPOSED GRAVITY WASTEWATER COLLECTOR ø700mm.
- PROPOSED GRAVITY WASTEWATER COLLECTOR ø800mm.
- PROPOSED GRAVITY WASTEWATER COLLECTOR ø1000mm.
- PROPOSED GRAVITY WASTEWATER NETWORKS.

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT

JALL ED DIB – HAJAL Bldg
P.O.BOX:70492 – ANTELIAS

TEL: (04) 712157/712158 (03) 291016
FAX: (04) 712159

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

WASTEWATER PROJECT	GENERAL LAYOUT

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473W-000P02	B.T.D	B.T.D	B.T.D

DATE	SCALE	SHEET No.	DRAWING No.
DECEMBER 2017	1/25000	1/1	473W-000P02

APPENDIX B-CADASTRAL MAPS OF AFFECTED PLOTS IN SAOUIRI

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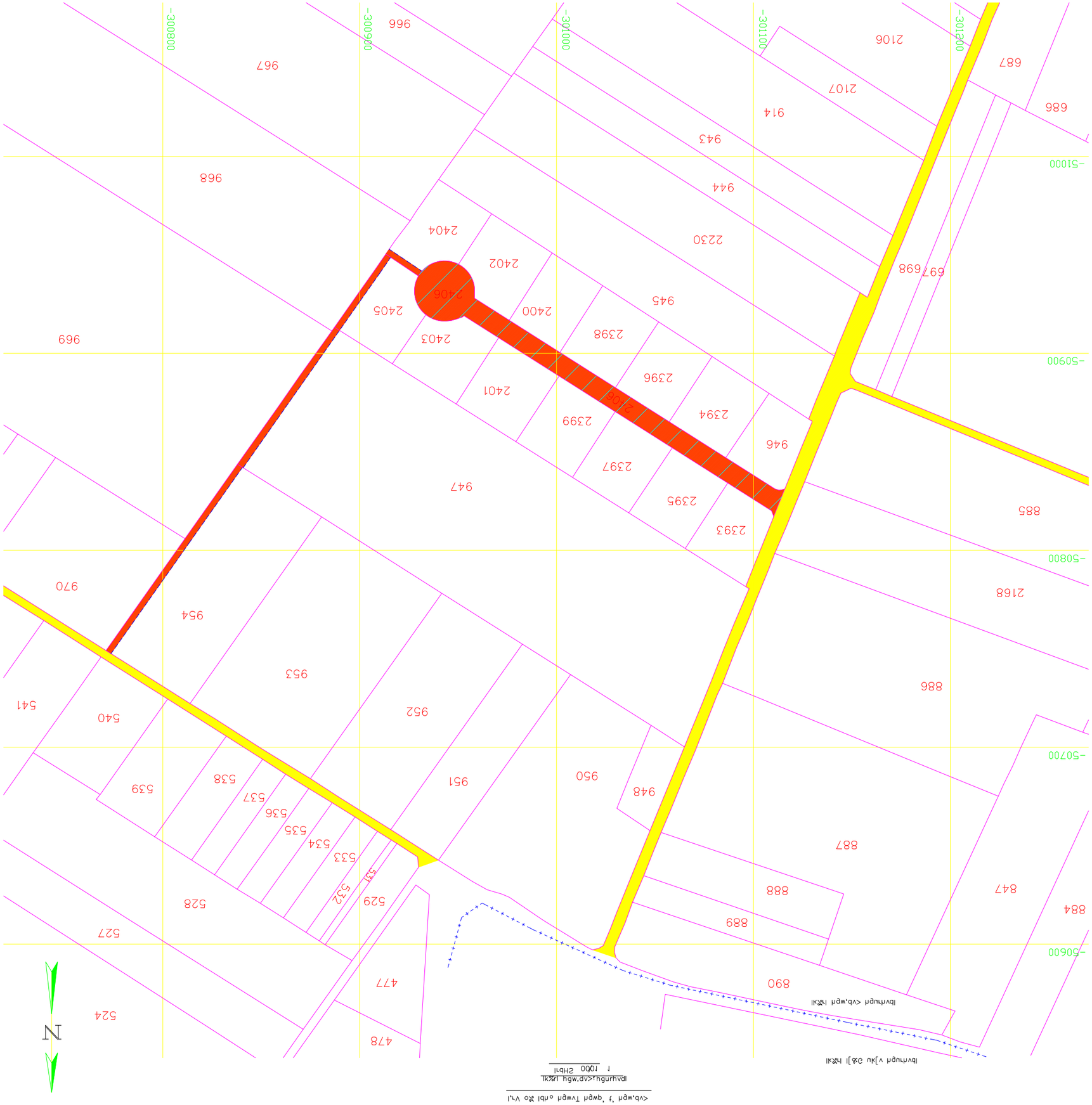
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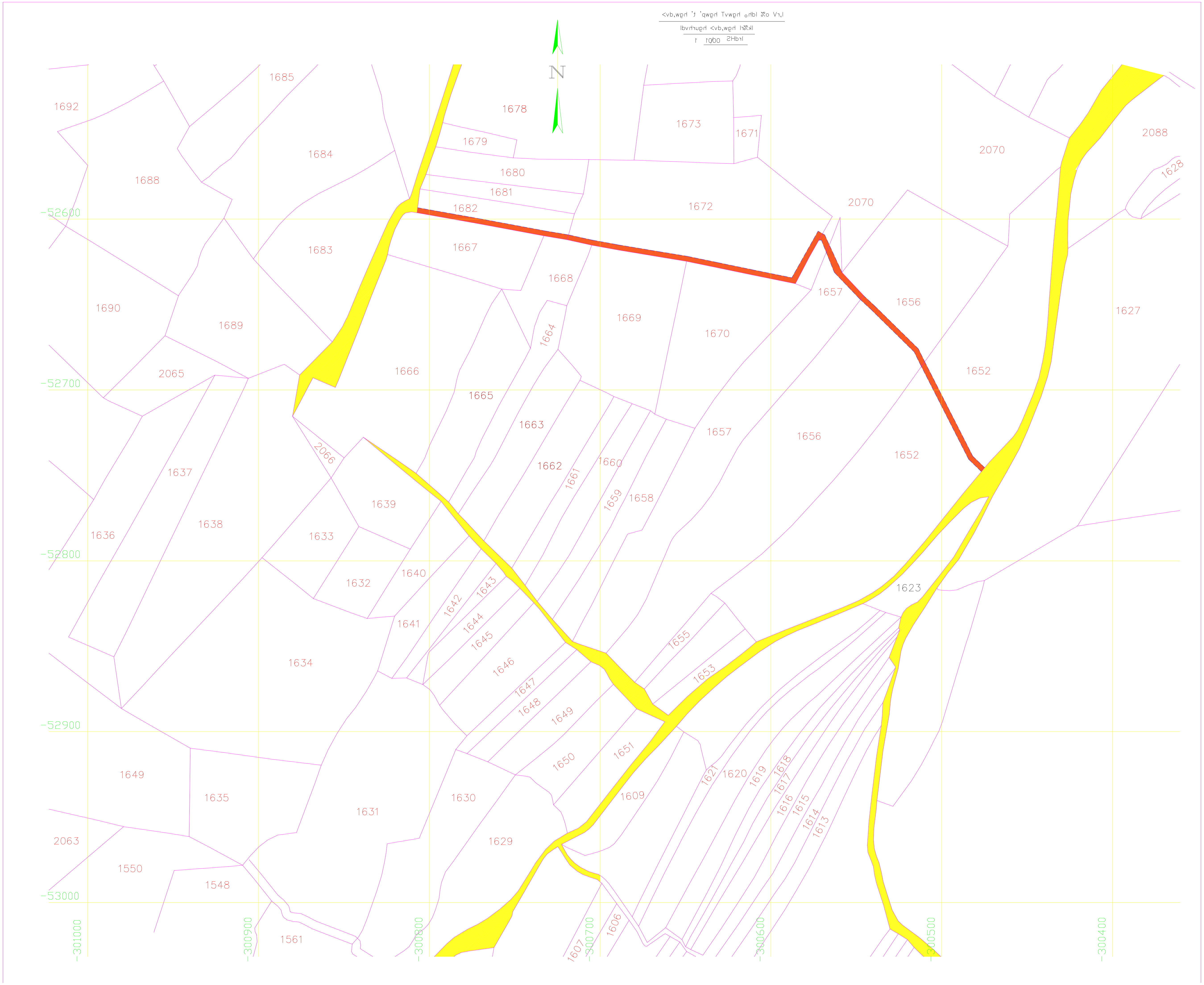
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APPENDIX C-LAND OWNERSHIP DOCUMENTS OF AFFECTED PLOTS IN SAOUIRI

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

رقم الطلب : ٣٥٠٣

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٢٤ المنطقة العقارية : الصويرة المحلة : السعيده

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٧٤٧٧

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ

وصف العقار : ارض بعل تزرع حبوب.

تعدي / تجاوز : تعدي: ان هذا العقار معتد على الطريق العام مصدرها زراعة بما مساحته / ٣٠ / مترا بموجب المصدر الفني المحفوظ بملف ١٨.

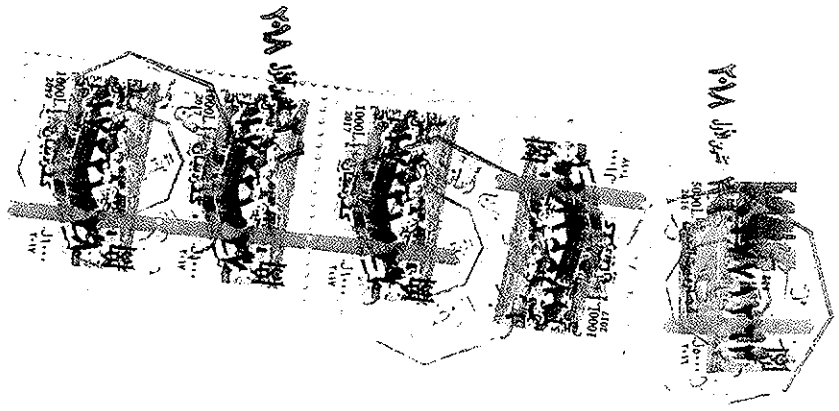
نوع التعدي : تعدي من عقار على أملاك دولة عامة.

المعتدي: -

المعتدى عليه: -

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٦٠٠	٠٢-٠٦-٢٠٠٣	بيع : حصة محمد عامر بملفه.	هشام محمد عامر (اميري)	١٢٠٠
١٤٤٦	٢٤-٠٨-٢٠١٠	بيع : علي احمد عامر بملف ٨٧ الدكوة.	فياض علي عامر (اسم الأم: دولة زيتون) مواليد: ١٩٦٣ - لبنانيّ (اميري)	١٢٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

البقاع الغربي في ٢٦-١٠-٢٠١٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٦-١٠-٢٠١٨ ٠٩:١٢:٣٠

IZOGHBI

افادة عقارية

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

رقم الطلب : ٣٥٠٣

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

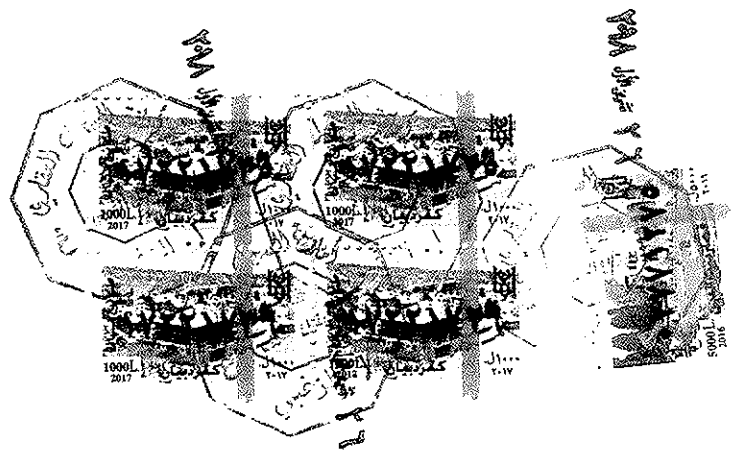
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٢٣ المنطقة العقارية : الصويرة المحلة : السعيده

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٥٣٩

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
١٨٠٢	١٤-١٢-٢٠٠٩	افراز : افرز هذا العقار الى ثمانية اقسام خرج منها قسما ضم للاملاك العامة ١٥٣م٢ (توسيع طريق) فتعدلت مساحته واصبحت كما هو مبين بجانبه وبقيت محتوياته كما هي بالتكليف الفني رقم ١٠٦٦ / ٢٠٠٩ بملفه. نوع العقار : أرض غير مبنية. العقارات المفروزة عنه: - ٢٤١١ - ٢٤١٢ - ٢٤١٣ - ٢٤١٤ - ٢٤١٥ - ٢٤١٦
		١ - حق إنتفاع او إرتفاق : يشترك بملكية الطريق الخاص رقم ٢٤١٦. نوع الانتفاع او الارتفاق: اشتراك في الملكية

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٨٠٢	١٤-١٢-٢٠٠٩	افراز : ومقاسمة بملفه.	رفيق قاسم عامر (اسم الأم: غضيه) مواليد: ١٩٦٨ - لبنانيّ (اميري)	٢٤٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٦-١٠-٢٠١٨

امين السجل العقاري

٢٦-١٠-٢٠١٨ ٠٩:١٢:٢٧

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الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ٣٥٠٣

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

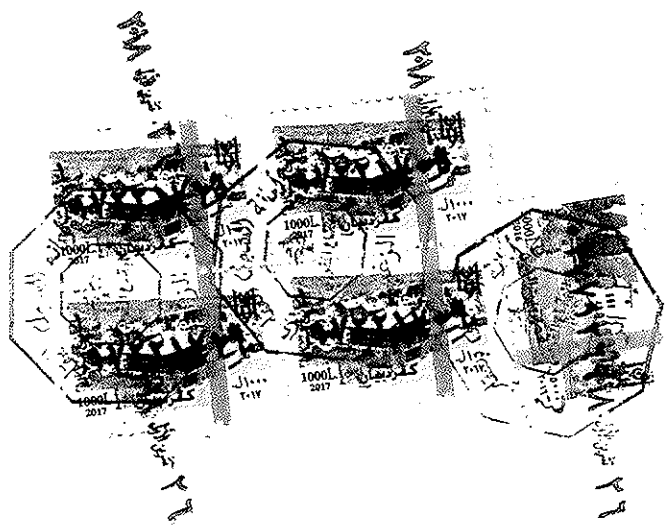
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٢٢ المنطقة العقارية : الصويرة المحلة : السعيده

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٣٣٥١

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٤٨١	٢٠٠٨-٠٥-١٥	بيع : بالعقد بملفه.	علي محمد حمزه (اسم الأم: المازه) مواليد: ١٩٧٤ - لبنانيّ (اميري)	٢٤٠٠
٤٨٢	٢٠٠٨-٠٥-١٥			



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٠١٨-١٠-٢٦

امين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٢:٢٥

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ٣٥٠٣

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٢١ المنطقة العقارية : الصويرة المحلة : السعيده وغرز الدين

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٠٣٢٧

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي

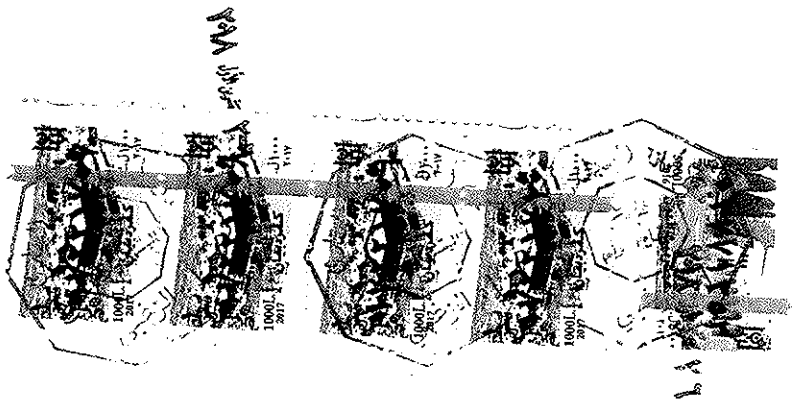
الرقم	التاريخ

وصف العقار : ارض بعل تزرع حبوب.

نوع العقار : أرض غير مبنية.

الملكية – التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
١٢٦٣	١٩٩٥-١٢-١٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : كامل العقار وبيع حصص جميع الورثة بموجب عقدين بملفه.	علي محمد حمزه – لبنانيّ (اميري)	٢٤٠٠
٢٦	٢٠٠٢-٠١-١٥			
٦٦٥	٢٠٠٧-٠٥-٢٦			



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٠١٨-١٠-٢٦

امين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٢:٢٢

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

امانة السجل العقاري في البقاع الغربي

رقم الطلب : ٣٥٠٤

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

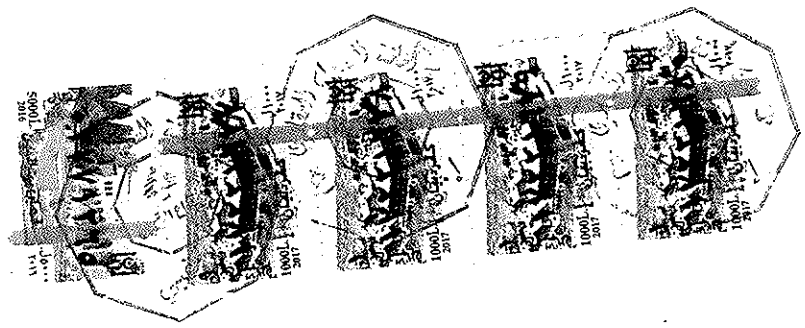
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٢٠ المنطقة العقارية : الصويرة المحلة :

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٦٩٢٧

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب.
٤٩٣	١٤-٠٦-١٩٧٢	استملاك : استملاك قسم من هذا العقار بالمرسوم رقم ٣٢٠٥ تاريخ ١٥ / ٥ / ٧٢ لانشاء خطي توتر عال بملف ١٨٣ مجدل عنجر
٥٥٦	١٥-٠٦-١٩٧٢	وضع يد : وضع يد بموجب القرار رقم ٥٦ تاريخ ١٥ / ٦ / ٩٧٢ على قسم من هذا العقار بملف ١٨٣ مجدل عنجر
		إظهار حدود : ان هذا العقار مرتفق بحق مرور خط توتر عالي بموجب المرسوم المصدق رقم ٣٢٠٥ تاريخ ١٥-٥-١٩٧٢ و القرار رقم ٥٦ تاريخ ١٥-٦-٩٧٢ بما مساحته / ٨٧٢ / م٢ (باعتباره من المنافع العامة العائدة لإنشاء خط توتر عالي ٦٦ ك ف ما بين محطة عنجر والحدود السورية) بالتكليف رقم ٣٢٧ / ٢٠٠٥ بملفه
٧٣٥	٠٣-٠٥-٢٠١٠	قيد احتياطي : ورد عقد بيع على ٨٠٠ سهم حصة خديجة احمد حمود و٤٠٠سهم حصة احمد محمد منصور لمصلحة محمد أحمد منصور ٣٤٦,٤٧١سهم واحمد خالد منصور ٣٠٣,٥٢٩سهم وعمر احمد منصور ٥٥٠سهم سجل احتياطيا" لضم إفادة محتويات وتخمين وخريطة مساحة وبيان الثمن الحقيقي.

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٤٢١	٣١-١٠-١٩٨٠	بيع : فراغ بالعقد بملفه.	خديجه احمد حمود (اميري)	٨٠٠
٧٧٢	١٩-٠٧-٢٠٠٥	بيع : ١٢٠٠ سهماً من حصة احمد محمد منصور بملفه.	محمد احمد منصور (اسم الأم: خديجة حمود) مواليد: ١٩٧٥ - لبنانيّ (اميري)	١٢٠٠
٧٧٢	١٩-٠٧-٢٠٠٥	بيع : ١٢٠٠ سهماً من حصة احمد محمد منصور بملفه.	احمد محمد منصور - لبنانيّ (اميري)	٤٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٦-١٠-٢٠١٨

امين السجل العقاري

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

رقم الطلب : ٣٥٠٤

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥١٨ المنطقة العقارية : الصويرة المحلة : السعيده

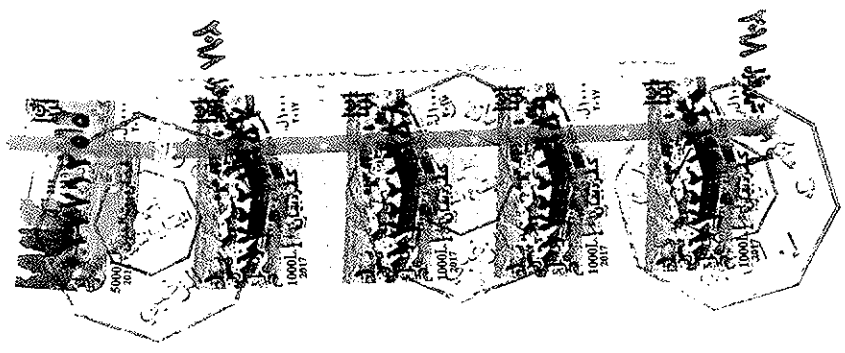
النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٣١٦١

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ
	وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٤٩٣	١٩٧٢-٠٦-١٤ استملاك : استملاك على هذا العقار بموجب المرسوم رقم ٣٢٠٥ تاريخ ١٥ / ٥ / ٧٢ المحفوظ في محضر رقم ١٨٣ من منطقة مجدل عنجر لانشاء خطي توتر عالي
٥٥٦	١٩٧٢-٠٧-٠٥ وضع يد : وضع يد بموجب القرار رقم ٥٦ تاريخ ١٥ / ٦ / ٩٧٢ على قسم من هذا العقار بملف ١٨٣ مجدل عنجر

الملكية – التصرف

المرجع في السجل اليومي			الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١١٧٣	١٩٧٩-٠٩-١٧	بيع : فراغ بالعقد بملفه.	ابراهيم ضاهر عامر (اميري)	٢٤٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٠١٨-١٠-٢٦

أمين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٣:٥٥

IZOGHBI

افادة عقارية

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

رقم الطلب : ٣٥٠٤

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

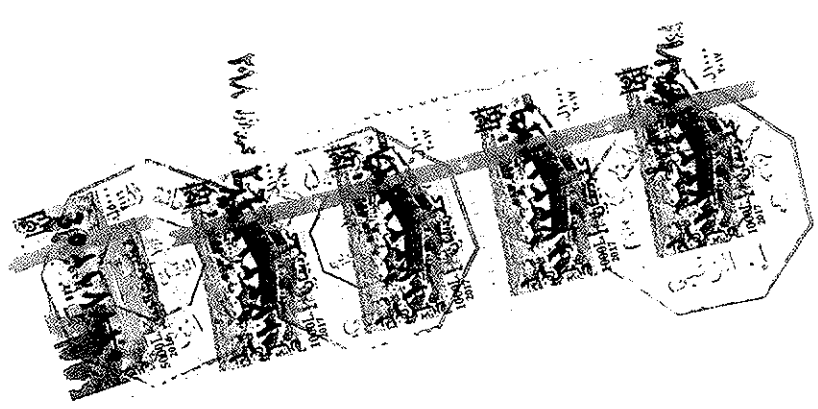
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥١٩ المنطقة العقارية : الصويرة المحلة : السعيده وغرز الدين

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٣٤٧٣

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٤٩٣	١٤-٠٦-١٩٧٢	استملاك : استملاك قسم من هذا العقار بالمرسوم رقم ٣٢٠٥ تاريخ ١٥ / ٥ / ٩٧٢ بملف ١٨٣ مجدل عنجر لانشاء خطي توتر عالي
٥٥٦	٠٥-٠٧-١٩٧٢	وضع يد : وضع يد بموجب القرار رقم ٥٦ تاريخ ١٥ / ٦ / ٩٧٢ على قسم من هذا العقار بملف ١٨٣ مجدل عنجر

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٠٧	٠١-٠٢-٢٠٠٢	بيع : فراغ بملفه.	د. ابراهيم بركات حامد (اميري)	٢٤٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٦-١٠-٢٠١٨

امين السجل العقاري

٢٦-١٠-٢٠١٨ ٠٩:١٣:٥٨

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

امانة السجل العقاري في البقاع الغربي

رقم الطلب : ٣٥٠٤

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥١٧ المنطقة العقارية : الصويرة المحلة : السعيده وغرز الدين

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٣٩٨٨

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٤٩٣	١٩٧٢-٠٦-١٤	استملاك : استملاك على هذا العقار بموجب المرسوم رقم ٣٢٠٥ تاريخ ١٥ / ٥ / ٧٢ المحفوظ في محضر رقم ١٨٣ من منطقة مجدل عنجر لانشاء خطي توتر عالي
٥٥٦	١٩٧٢-٠٧-١٥	وضع يد : وضع يد بموجب القرار رقم ٥٦ تاريخ ١٥ / ٦ / ٧٢ بملف ١٨٣ مجدل عنجر

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٤١٦	٢٠١٥-٠٨-٢٥	بيع : بالعقد بملفه..	ابراهيم عبد اللطيف حسين (اسم الأم: خديجه) مواليد: ١٩٧٠ - لبنانيّ (اميري)	٢٤٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٠١٨-١٠-٢٦

امين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٣:٥٣

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

SGEADOUN2

رقم الطلب : ٣٦٩٢

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ١٢-١١-٢٠١٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٥٨ المنطقة العقارية : الصويرة المحلة : غرز الدين

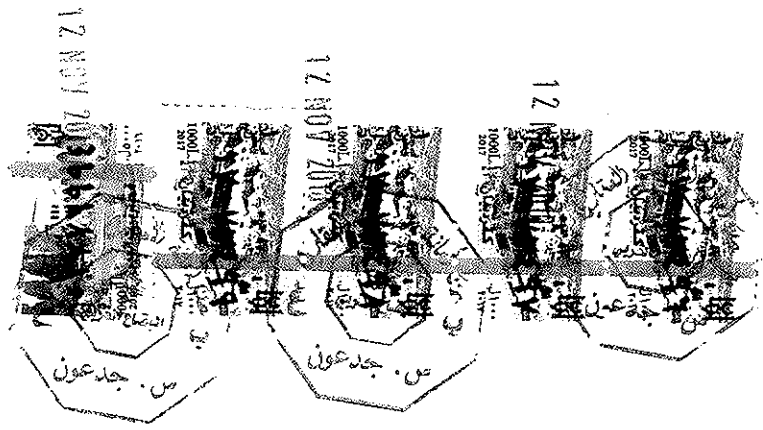
النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٧٢٠١

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي		
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٤٩٣	١٤-٠٦-١٩٧٢	استملاك : استملاك قسم من هذا العقار بالمرسوم رقم ٣٢٠٥ تاريخ ١٥ / ٥ / ٧٢ لانشاء خطي توتر عال بملف ١٨٣ مجدل عنجر
٥٥٦	٠٥-٠٧-١٩٧٢	وضع يد : وضع يد بموجب القرار رقم ٥٦ تاريخ ١٥ / ٦ / ٩٧٢ على قسم من هذا العقار بملف ١٨٣ مجدل عنجر
		تخطيط : ان هذا العقار مصاب بالتخطيط بموجب المرسوم رقم ٣٢٠٥ / ٧٢ لصالح خطوط توتر عالي عنجر الحدود السورية بملفه

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
١٢٩١	١١-١٠-٢٠٠٨	بيع : حصة ايمن عبد الناصر رمضان العقد بملفه..	أيمن عبد الناصر رمضان (اسم الأم: اسماء عبد الخالق) مواليد: ١٩٩٦ - لبنانيّ (اميري)	٤٧٢
٢٢٦٩	٢٣-١٢-٢٠١٤	بيع : ٧٧٣,٢١٩ سهم من حصة فاطمة اسماعيل ياسين بملفه.	عبد الباسط محمد عبد الرزاق (اسم الأم: فاطمه) مواليد: ١٩٧٤ - لبنانيّ (اميري)	٧٧٣,٢١٩
٢٢٧٠	٢٣-١٢-٢٠١٤	بيع : ٦١١,٩١٥ سهم من حصة فاطمة اسماعيل ياسين بملفه.	محمود محمد عبد الرزاق (اسم الأم: فاطمه) مواليد: ١٩٨٠ - لبنانيّ (رقبة)	٦١١,٩١٥
٢٢٧٠	٢٣-١٢-٢٠١٤	استثمار : بملفه.	محمد احمد عبد الرزاق. (اسم الأم: نايفه) مواليد: ١٩٣٧ - لبنانيّ (استثمار)	٦١١,٩١٥
١٣٧٢	١٩-٠٨-٢٠١٥	بيع : ١٥٣,٠٤٢ سهم من اصل حصة فاطمة اسماعيل ياسين بالعقد بملفه.	عبد الباسط محمد عبد الرزاق (اسم الأم: فاطمه) مواليد: ١٩٧٤ - لبنانيّ (اميري)	٣٨٩,٨٢٤
١٣٧٣	١٩-٠٨-٢٠١٥	بيع : ١٥٣,٠٤٢ سهم من اصل حصة فاطمة اسماعيل ياسين بالعقد بملفه.	محمود محمد عبد الرزاق (اسم الأم: فاطمه) مواليد: ١٩٨٠ - لبنانيّ (اميري)	١٥٣,٠٤٢



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ١٢-١١-٢٠١٨

امين السجل العقاري

١٢-١١-٢٠١٨ ١١:٥٥:٠١

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

SGEADOUN2

رقم الطلب : ٣٦٩٢

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ١٢-١١-٢٠١٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٢١٣٠ المنطقة العقارية : الصويرة المحلة : غرز الدنه

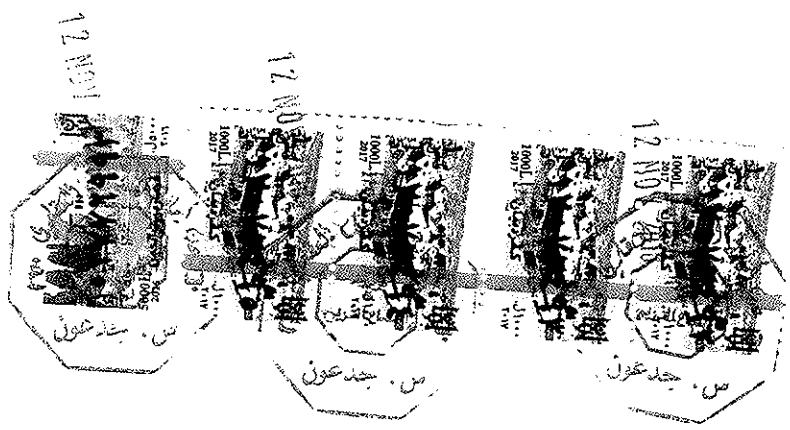
النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٢٠١٩

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٤٩٣	١٤-٠٦-١٩٧٢	استملاك : استملاك على هذا القرار بموجب المرسوم رقم ٣٢٠٥ تاريخ ١٥ - ٥ - ١٩٧٢ المحفوظ في محضر رقم ١٨٣ مجدل عنجر لانشاء خطي توتر عالي
٥٥٦	٠٥-٠٧-١٩٧٢	وضع يد : وضع يد بموجب القرار رقم ٥٦ تاريخ ١٥ - ٦ - ١٩٧٢ في محضر ١٨٣ مجدل عنجر
١٦٦	٢٨-٠٢-١٩٨٩	قيد احتياطي : قيد احتياطي ببيع حصتي محمد ويوسف علي شومان لمصلحة فاطمه اسماعيل ياسين وريه جاد الله عبد الله مناصفة بينهما سجل احتياطيا لضم النواقص بملف ٥٥٨
		تخطيط : ملاحظة: ان هذا العقار مصاب بالتخطيط بموجب المرسوم رقم ٣٢٠٥ / ٧٢ لصالح خطوط توتر عالي عنجر الحدود السورية بملف ٥٥٨
١٩٠١	٠٢-١١-٢٠١١	قيد احتياطي : ورد عقد بيع على حصة محمد علي شومان لمصلحة فامة اسماعيل ياسين سجل احتياطيا واعيد لمعاون الغربي تبعا للعقود السابقة
١٩٠٠	٠٢-١١-٢٠١١	قيد احتياطي : ورد عقد بيع على حصة يوسف علي شومان لمصلحة عبد الباسط محمد عبد الرزاق سجل احتياطيا واعيد لمعاون الغربي يومي ١٨٩٢ و ١٨٩٧
٢٢٦٩	٢٣-١٢-٢٠١٤	قيد احتياطي : ورد عقد بيع على حصة فاطمة اسماعيل ياسين لمصلحة عبد الباسط محمد عبد الرزاق سجل احتياطيا واعيد لمعاون البقاع الغربي

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	الحصة	
الرقم	التاريخ		اسماء المالكين	سهم
٨١٧	٠٨-٠٦-١٩٨٢	بيع : فراغ بملف ١٨.	محمد علي شومان (اميري)	٤٨٠
١١٢	١٦-٠٢-١٩٨٨	بيع : فراغ بملف ٥٥٨.	يوسف علي شومان (اميري)	٦٠٠
٢٢٦٩	٢٣-١٢-٢٠١٤	بيع : حصة فاطمة اسماعيل ياسين بملفه.	عبد الباسط محمد عبد الرزاق (اسم الأم: فاطمه) مواليد: ١٩٧٤ - لبنانيّ (اميري)	١٣٢٠



استوفي الرسم بموجب لصق تمغة على الطلب

البقاع الغربي في ١٢-١١-٢٠١٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

١٢-١١-٢٠١٨ ١١:٥٤:٥٩

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

امانة السجل العقاري في البقاع الغربي رقم الطلب : ٣٥٠٣

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

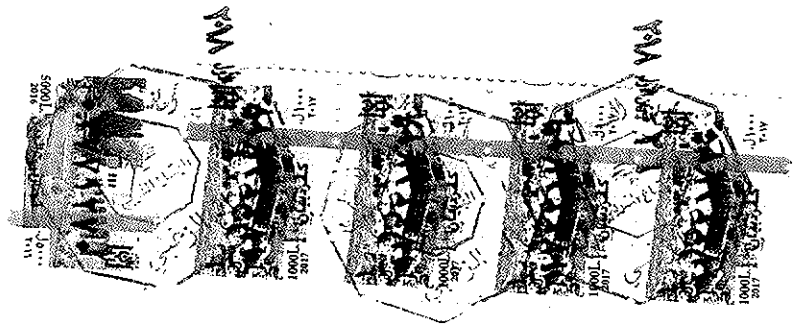
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٥٩ المنطقة العقارية : الصويرة المحلة : غرز الدين

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٨٤٤٧

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٨٣	١٩٦٤-٠١-٣٠	استملاك : استملاك على هذا العقار بموجب المرسوم رقم ١٤٨٠٧ تاريخ ١٧ / ١٢ / ٩٦٣ المحفوظ في محضر العقار رقم واحد من منطقة حوش الحريمة / ١٠ / م٢
٤٩٣	١٩٧٢-٠٦-١٤	استملاك : استملاك قسم من هذا العقار بالمرسوم رقم ٣٢٠٥ تاريخ ١٥ / ٥ / ٧٢ لانشاء خطي توتر عال بملف ١٨٣ مجدل عنجر
٥٥٦	١٩٧٢-٠٧-٠٥	وضع يد : وضع يد بموجب القرار رقم ٥٦ تاريخ ١٥ / ٦ / ٩٧٢ على قسم من هذا العقار بملف ١٨٣ مجدل عنجر

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٥٤٠	٢٠٠٧-٠٥-٠٢	بيع : حصص فواز ويوسف وعبد الرحيم اولاد محمد عامر بملفه.	عبد الرحمن علي عبد الخالق (اميري)	١٢٠٠
٦٢٤	٢٠٠٧-٠٥-١٦	بيع : انفاذ وكالة بملفه.	علي رضى عبد الخالق - لبنانيّ (اميري)	١٢٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٠١٨-١٠-٢٦

امين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٢:٣٤

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

امانة السجل العقاري في البقاع الغربي

رقم الطلب : ٣٥٠٣

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٦٠ المنطقة العقارية : الصويرة المحلة : غرز الدين

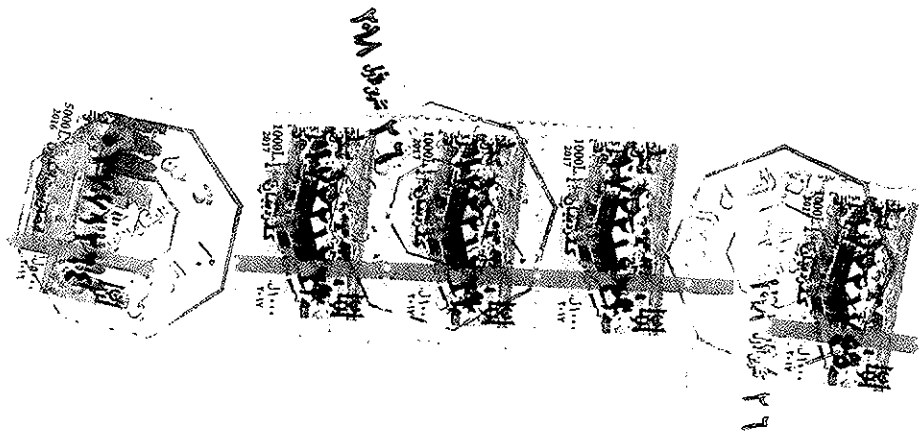
النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٧٣١٩

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي		
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٤٩٣	١٤-٠٦-١٩٧٢	استملاك : استملاك / ١٠ / م٢ بالمرسوم رقم ٣٢٠٥ تاريخ ١٥ / ٥ / ٩٧٢ لانشاء خطي توتر بملف ١٨٣ مجدل عنجر
٥٥٦	٠٥-٠٧-١٩٧٢	وضع يد : وضع يد بموجب القرار رقم ٥٦ تاريخ ١٥ / ٦ / ٩٧٢ على / ١٠ / م٢ بملف ١٨٣ مجدل عنجر

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
١٨٣	٠٦-٠٢-٢٠١٠	بيع : حصص خليل عيسى شبلي ومحاسن عبد الرحيم شومان ورضى وعمر ويونس وريما محمد شبلي بملفه.	فاطمه احمد يوسف (اسم الأم: نزيها عبد الكريم) مواليد: ١٩٧٧ - لبنانيّ (اميري)	١٤١٦
٢٢٢٦	٢٥-١١-٢٠١٣	بيع : حصة عليا محمد شبلي بملفه.	عبد السلام محمد يوسف (اسم الأم: فاطمة عبد الكريم) مواليد: ١٩٦٩ - لبنانيّ (اميري)	٩٨٤



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٦-١٠-٢٠١٨

امين السجل العقاري

٢٦-١٠-٢٠١٨ ٠٩:١٢:٣٧

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

امانة السجل العقاري في البقاع الغربي

رقم الطلب : ٣٥٠٣

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥١٤ المنطقة العقارية : الصويرة المحلة : السعيده

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١١٤٩٦

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٤٩٣	١٤-٠٦-١٩٧٢	استملاك : استملاك على هذا العقار بموجب المرسوم رقم ٣٢٠٥ تاريخ ١٥ / ٥ / ٧٢ المحفوظ في محضر رقم ١٨٣ من منطقة مجدل عنجر لانشاء خطي توتر عالي
٥٥٦	٠٥-٠٧-١٩٧٢	وضع يد : وضع يد بموجب القرار رقم ٥٦ تاريخ ١٥ / ٦ / ٧٢ بملف ١٨٣ مجدل عنجر
٩٣١	٠٩-٠٨-٢٠٠٤	مخالفة بناء : على هذا العقار بموجب احالة التنظيم المدني في البقاع الغربي و راشيا بملف ٢٠
١٦٠٩	٠٣-١٠-٢٠١٢	قيد احتياطي : ورد عقد انتقال على حصة جميل محمود حامد لمصلحة الورثة سجل احتياطيا واعيد لمعاون البقاع الغربي
١٦٢٣	٠٣-١٠-٢٠١٢	وبيع كامل حصتي محمود ابراهيم حامد وكرمه احمد صالح الاحتياطية لمصلحة الورثة ما عدا محمود ابراهيم حامد وكرمه احمد صالح وسعاد اسعد صالح سجل احتياطيا واعيد لمعاون البقاع الغربي
١٦٢٥	٠٣-١٠-٢٠١٢	قيد احتياطي : بيع ٤٩٥ سهم من حصة حكميه ابراهيم حسين وحصص سعاد اسعد صالح ونبيها وخلدات ووسام ومحمود وياسر ونادر وريما وندى ومحمد اولاد جميل حامد الاحتياطية لمصلحة جودت جميل حامد وله ٦٦ سهم واسراء جودت حامد لها ١٠٥ سهم ووائل له ٢٧٩,٣٣٨ سهم وجميل له ٢٧٩,٣٣٨ سهم وامجد له ٢٧٩,٣٣٩ سهم اولاد جودت حامد سجل احتياطيا واعيد لمعاون البقاع الغربي
١٤١٧	٣٠-٠٨-٢٠١٤	قيد احتياطي : ببيع ١٩٩,١٦٥ سهم من حصتي عبد الرحيم محمد عامر ويوسف محمد عامر لمصلحة سميح علي القرعوني سجل احتياطيا واعيد لمعاون البقاع الغربي
١٦٣٨	٢٧-٠٩-٢٠١٤	قيد احتياطي : بيع ١٥٠,٧٣١ سهم من حصة عبد الرحيم محمد عامر و١٥٠,٧٣١ سهم من حصة يوسف محمد عامر لمصلحة ابراهيم نايف حسين سجل احتياطيا واعيد لمعاون البقاع الغربي
١٩٥٣	١٢-١١-٢٠١٤	مخالفة بناء : على هذا العقار بملفه
٣٠٦	١٢-٠٣-٢٠١٥	قيد احتياطي : اشارة قيد احتياطي على كامل الشقة الواقعة في الطابق الارضي من الجهة الشرق من البلوك B بموجب وكالة رقم ٣٧٥ /٢٠١٥ كاتب عدل وسام شعبان على حصة ابراهيم نايف حسين الاحتياطية لمصلحة محمد عمر العجمي لمدة شهر واحد فقط بملفه
١٤٦٠	١٦-٠٨-٢٠١٨	ورد طلب وضع اشارة قيد احتياطي على صحيفة القسم رقم ٣ من هذا العقار لمصلحة عبدالعزيز حنين حمود رد الطلب وسجلت فقط اشارة بالورود لانه يتوجب افراز العقار اولا" الى حقوق مختلفة والتأكد بأن القسم الجاري عليه البيع هومن نصيب يوسف وعبد الرحيم دون سواهما لكن نتمكن من تسجيل الاشارة لمدة شهر.

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٥٦	١٢-٠٢-١٩٧٧	بيع : فراغ بالعقد بملف ٣٧٥.	يوسف محمد عامر (اميري)	٦٠٠
٥٦	١٢-٠٢-١٩٧٧	بيع : فراغ بالعقد بملف ٣٧٥.	عبد الرحيم محمد عامر (اميري)	٦٠٠
٥٠٨	١٢-٠٦-١٩٨٨	بيع : فراغ بملفه.	جميل محمود حامد (اميري)	٦٠٠
٥٠٨	١٢-٠٦-١٩٨٨	بيع : فراغ بملفه.	حكيمه ابراهيم حسين (اميري)	٦٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٦-١٠-٢٠١٨

امين السجل العقاري

٢٦-١٠-٢٠١٨ ٠٩:١٢:٢٠

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ٣٥٠٣

امانة السجل العقاري في البقاع الغربى

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

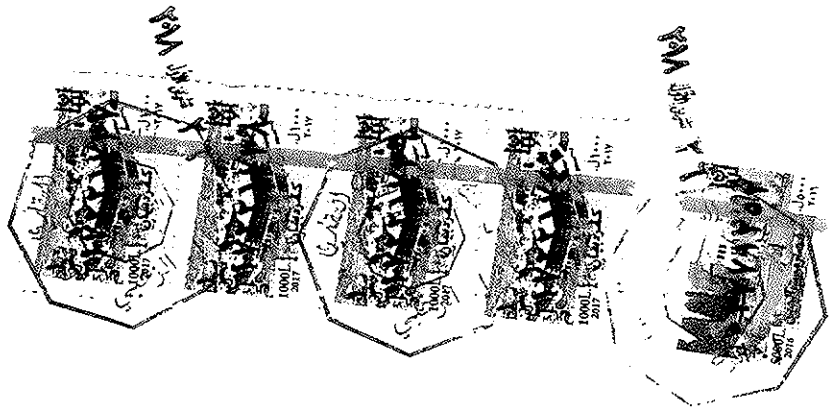
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥١٣ المنطقة العقارية : الصويرة المحلة : جزمات الخواجه

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٥٩٥٧

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب.
		تعدي / تجاوز : تعدي: ان هذا العقار معتد على الطريق العام بما مساحته ٣٠ مترا مصدرها زراعة بموجب المصدر الفني المحفوظ بملف ٦٨. نوع التعدي : تعدي من عقار على أملاك دولة عامة. المعتدي: - المعتدى عليه: -
٩٣١	٢٠٠٤-٠٨-٠٩	مخالفة بناء : على هذا العقار بموجب احالة التنظيم المدني في البقاع الغربي و راشيا بملف ٢٠
٢٦٠	٢٠٠٥-٠٣-١٥	قيد احتياطي : ببيع مئتا سهم (تؤخذ مئة سهم من حصة كل من حسين عبد الرزاق الخطيب و فاطمة ديب عبد الخالق) لمصلحة اياد وليد الخطيب حفظ بملفه .
٢٦١	٢٠٠٥-٠٣-١٥	قيد احتياطي : ببيع مئتا سهم (تؤخذ مئة سهم من حصص كل من حسين عبد الرزاق الخطيب و فاطمة ديب عبد الخالق) لمصلحة اميرة علي صالح حفظ بملفه .
١٦٠٩	٢٠١٢-١٠-٠٣	قيد احتياطي : ورد عقد انتقال على حصة جميل محمود حامد لمصلحة الورثة سجل احتياطيا واعيد لمعاون البقاع الغربي
١٦٢٤	٢٠١٢-١٠-٠٣	وبيع كامل حصتي محمود ابراهيم حامد وكرمه احمد صالح الاحتياطية لمصلحة الورثة ما عدا محمود ابراهيم حامد وكرمه احمد صالح وسعاد اسعد صالح سجل احتياطيا واعيد لمعاون البقاع الغربي
١٦٢٣	٢٠١٢-١٠-٠٣	وبيع حصص سعاد اسعد صالح وتبيها وخلدات وريما وندى اولاد جميل حامد الاحتياطية لمصلحة وسام وله ٢٤,٠١٥ ومحمود له ٢٤,٠١٦ ونادر له ٢٤,٠١٦ وجودت له ٤٩,٧٧٥ ووليد ١٧٦,٦٧٩ وياسر له ١٧٦,٦٧٩ ومحمد له ٢٨١,٢٦ اولاد جميل حامد سجل احتياطيا واعيد لمعاون البقاع الغربي
١٦٧٠	٢٠١٤-١٠-٠٧	قيد احتياطي : بيع ٣٠٠ سهم من حصة حسين عبد الرزاق الخطيب لمصلحة ابتسام وعيشه وهناء اولاد حسين الخطيب مناصفة بينهما سجل احتياطيا واعيد لمعاون البقاع الغربي
١٦٧١	٢٠١٤-١٠-٠٧	قيد احتياطي : ورد عقد بيع على حصص ايتسام وعيشه وهناء اولاد حسين الخطيب الاحتياطية لمصلحة اياد وليد الخطيب سجل احتياطيا واعيد لمعاون البقاع الغربي
١٤١	٢٠١٥-٠٢-٠٥	قيد احتياطي : بيع ١٠٠ سهم من حصة حسين عبد الرزاق الخطيب و١٠٠ سهم من حصة فاطمة ديب عبد الخالق لمصلحة احمد حسين الخطيب سجل احتياطيا واعيد لمعاون البقاع الغربي
١٤٢	٢٠١٥-٠٢-٠٥	قيد احتياطي : بيع ١٠٠ سهم من حصة احمد حسين الخطيب الاحتياطية لمصلحة جيهاد احمد الخطيب سجل احتياطيا واعيج لمعاون الغربي

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٠٩٧	١٩٧٨-١١-٠٧	بيع : فراغ بالعقد بملفه.	حسين عبد الرزاق الخطيب (اميري)	٦٠٠
١٩٣	١٩٧٩-٠٢-١٩	بيع : فراغ بالعقد بملفه.	جميل محمود حامد (اميري)	١٢٠٠
١١٨٤	١٩٧٩-٠٩-١٩	بيع : فراغ بملفه.	فاطمة ديب عبد الخالق (اميري)	٦٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربى في ٢٠١٨-١٠-٢٦

امين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٢:١٧

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ٣٥٠٣

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥١٢ المنطقة العقارية : الصويرة المحلة : جزمات الخواجه

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٤٤٦١

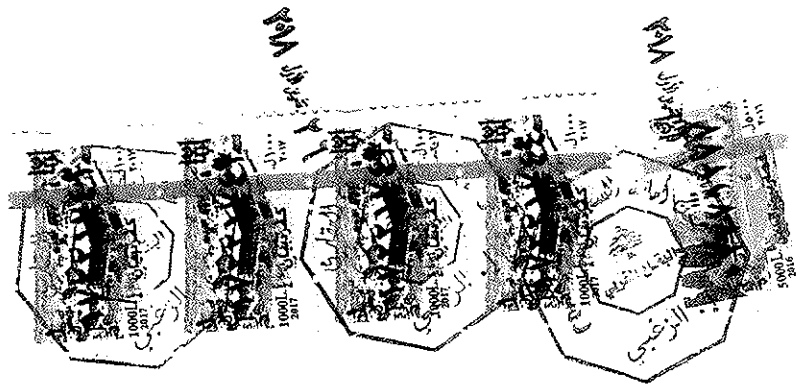
محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي

الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
		رسوم، شرفية تحسين : يتوجب تصفية رسم فني بالتكليف ٢٩٧ / ٨٥ بملفه

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٤١٥	١٩٧٨-٠٤-٢١	بيع : فراغ بملفه.	علي حسن حمود (اميري)	٦٠٠
٤١٥	١٩٧٨-٠٤-٢١	بيع : فراغ بملفه.	عمر حسن حمود (اميري)	٦٠٠
٤١٥	١٩٧٨-٠٤-٢١	بيع : فراغ بملفه.	محمد حسن حمود (اميري)	٦٠٠
١٢٣٧	١٩٧٨-١٢-٢١	بيع : فراغ بالعقد بملفه.	حسن درويش حمود (اميري)	٦٠٠



البقاع الغربي في ٢٠١٨-١٠-٢٦

امين السجل العقاري

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

٢٠١٨-١٠-٢٦ ٠٩:١٢:١٥

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ٣٥٠٣

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥١٠ المنطقة العقارية : الصويرة المحلة : جزمات الخواجه

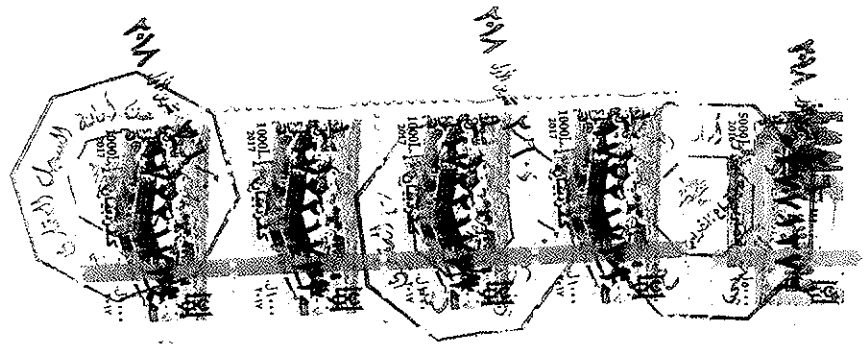
النوع الشرعي للعقار: أميري مساحة العقار/القسم (م٢) : ٤٩٣٤

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ
	وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٨٣	استملاك : استملاك على هذا العقار بموجب المرسوم رقم ١٤٨٠٧ تاريخ ١٧ / ١٢ / ٦٤ المحفوظ في محضر العقار رقم واحد من منطقة حوش الحريمة / ١٠ / م٢
٣٨٥	قيد احتياطي : قيد احتياطي: ورد عقد بيع على ٢٤٣,٢١ سهم من اصل حصة صالح ابراهيم حسين لمصلحة احمد حسن حسين اعيد لرئيس المكتب المعاون لازالة المانع بملفه ١٩٨١-٠٤-٠٩
٤٥٥	قيد احتياطي : قيد احتياطي: بيع ٤٦٩,٧٩٠ سهما من حصة صالح ابراهيم حسين لمصلحة خديجه محمد صالح وعلي احمد حسين بالتساوي بملفه ١٩٩٢-٠٥-١٦
١٨١٠	قيد احتياطي : ورد عقد بيع على حصة خديجة محمد صالح لمصلحة ريا جميل حسين سجل احتياطيا واعيد لمعاون الغربي لضم شهادة القيد واتمام القيود الاحتياطية ومحتويات وتخمين وخريطة والثمن ٢٠١١-١٠-٢٤

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٦٩٢	١٩٦٣-٠٧-١٦	بيع : فراغ بالعقد بملفه.	حسين عبدو صالح (اميري)	١٢٠٠
٣٤٢٠	١٩٧٩-٠٣-٢٩	بيع : فراغ بالعقد بملفه.	أحمد حسن حسين (اميري)	٤٨٧
٣٤٢٠	١٩٧٩-٠٣-٢٩	بيع : فراغ بالعقد بملفه.	صالح ابراهيم حسين (اميري)	٧١٣



استوفي الرسم بموجب لصق تمغة على الطلب

البقاع الغربي في ٢٠١٨-١٠-٢٦

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٢:١٣

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ٣٥٠٣

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

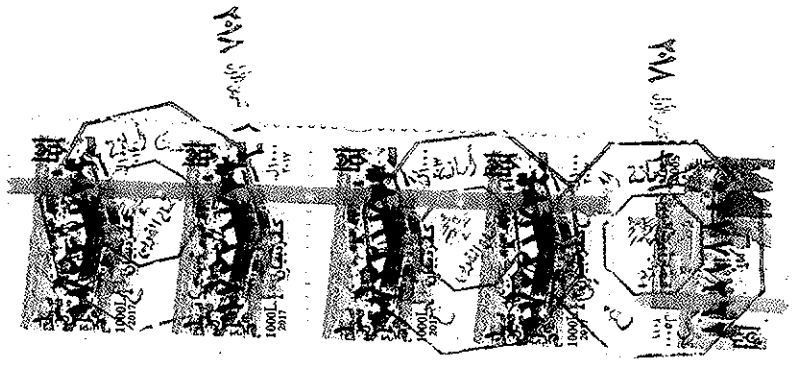
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٠٦ المنطقة العقارية : الصويرة المحلة : جزمات السعيده

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٢٢٥

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٢٦١	١٥-٠٤-١٩٩٨	قيد احتياطي : قيد احتياطي: ورد عقد ضم على هذا العقار والعقار رقم ٥٠٥ سجل احتياطيا لضم النواقص بملف ٥٠٥
١٩٦٢	١٣-١١-٢٠١٤	قيد احتياطي : ورد عقد بيع على حصة جميل صالح حسين لمصلحة محمد وصالح واحمد وخالد اولاد جميل حسين بالتساوي فيما بينهم سجل احتياطيا واعيد لمعاون البقاع الغربي

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٩٢١	١٧-٠٩-١٩٧٠	بيع : فراغ بالعقد بملف ٥٠٥.	جميل صالح حسين (اميري)	١٢٠٠
٩٢١	١٧-٠٩-١٩٧٠	بيع : فراغ بالعقد بملف ٥٠٥.	أحمد صالح حسين (اميري)	١٢٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٦-١٠-٢٠١٨

امين السجل العقاري

٢٦-١٠-٢٠١٨ ١٠:١٢:٠٩

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

رقم الطلب : ٣٥٠٤

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

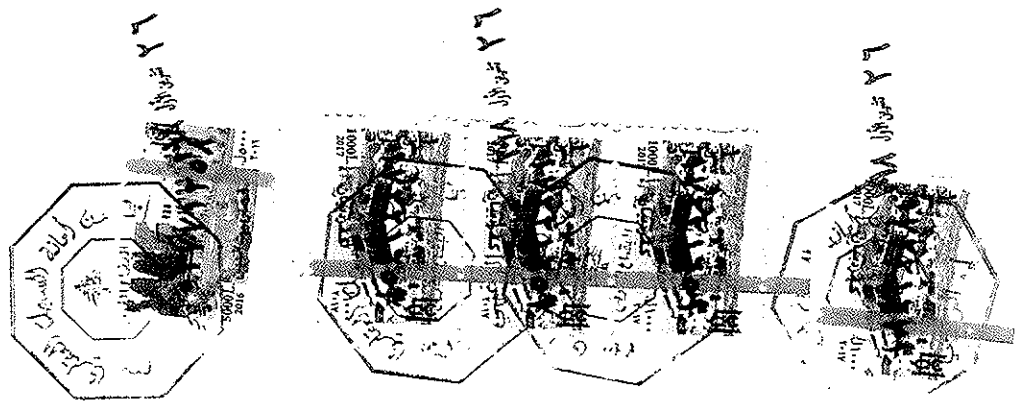
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٢١٥٩ المنطقة العقارية : الصويرة المحلة : غراز لدب

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٩٢٧

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.

المرجع في السجل اليومي		الملكية – التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٨٣٤	١٩٥٥-١٢-٣١	انتقال (ارث، وصية) : انتقال بملف ٢٤٠.	علي حمود شومان (اميري)	٨٠٠
٧٧٨	٢٠٠٧-٠٦-٢٣	بيع : حصة عبد الناصر رمضان بملف ٥٥٨.	جمال عبد الناصر رمضان – لبنانيّ (اميري)	١٦٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

البقاع الغربي في ٢٦-١٠-٢٠١٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

أمين السجل العقاري

٢٦-١٠-٢٠١٨ ٠٩:١٣:٤٩

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

امانة السجل العقاري في البقاع الغربي

رقم الطلب : ٣٥٠٣

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

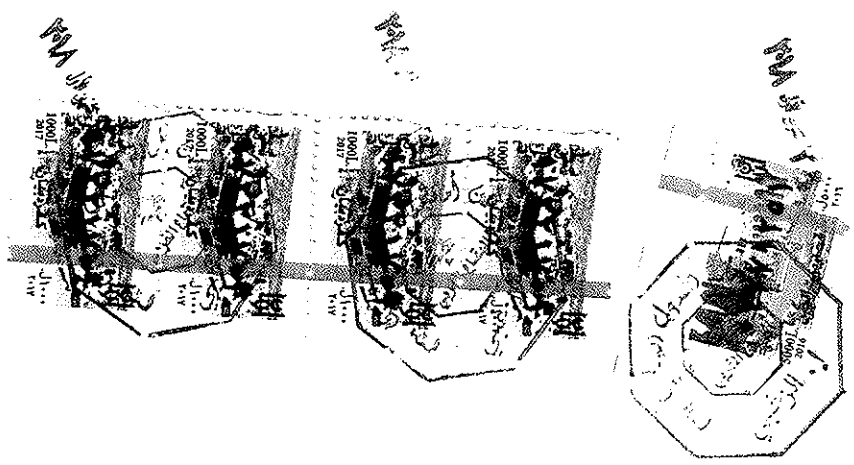
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٢١٥٨ المنطقة العقارية : الصويرة المحلة : غرز الدين

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٤٢٧٧

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٧٧٨	٢٠٠٧-٠٦-٢٣	بيع : كامل العقار بملف ٥٥٨.	احمد عبد الناصر رمضان - لبنانيّ (اميري)	١٣١٩,١٢٢
٧٧٨	٢٠٠٧-٠٦-٢٣	بيع : كامل العقار بملف ٥٥٨.	جمال عبد الناصر رمضان - لبنانيّ (اميري)	١٠٨٠,٨٧٨



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٠١٨-١٠-٢٦

امين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٢:٠٨

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ٣٥٠٣

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٢١٣١ المنطقة العقارية : الصويرة المحلة : غرز الديه

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٢٥٤٩

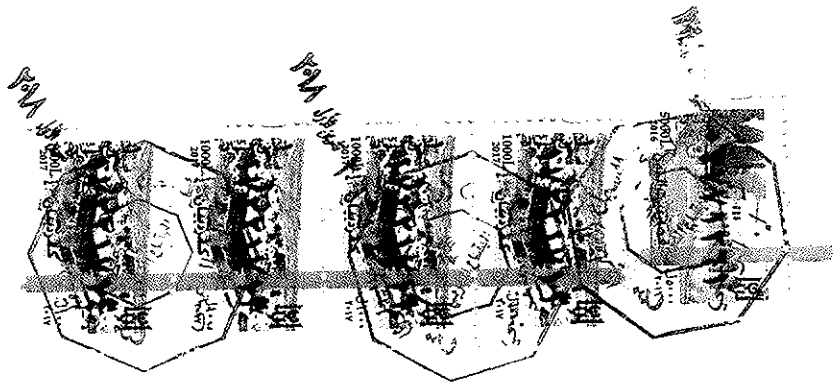
محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي

الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.

الملكية – التصرف

المرجع في السجل اليومي			الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٧٧٨	٢٣-٠٦-٢٠٠٧	بيع : حصتي ريا عبدالله وعبد الناصر رمضان بملف ٥٥٨.	احمد عبد الناصر رمضان – لبنانيّ (اميري)	٧٤٩,٧
١٢٩٢	١١-١٠-٢٠٠٨	بيع : حصة فاطمة اسماعيل ياسين العقد بملفه..	ايمن عبد الناصر رمضان (اسم الأم: اسماء) مواليد: ١٩٩٦ – لبنانيّ (اميري)	١٦٥٠,٣



استوفي الرسم بموجب لصق تمغة على الطلب

البقاع الغربي في ٢٦-١٠-٢٠١٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٦-١٠-٢٠١٨ ٠٩:١٢:٠٥

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

إفادة عقارية

IZOGHBI

أمانة السجل العقاري في زحلة

رقم الطلب : ١٧٩٦

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧٢٤ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٢٧٧٦

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ

وصف العقار : كرم عنب وتين.
نوع العقار : أرض غير مبنية.

الملكية - التصرف

المرجع في السجل اليومي			الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١١٢٨	١٩٧٨-٠٩-١٠	بيع : فراغ بملف ٧٧٥.	محمد قاسم شومان والدته يزده توالد ٩٣٨ (اميري)	١٦٠٠
٤٦٧	٢٠٠٩-٠٤-٢٨	بيع : حصة رضى قاسم شومان العقد بملف ١٣٠٥..	ابراهيم رضى شومان (اسم الأم: عليا) مواليد: ١٩٦٥ - لبنانيّ (اميري)	٨٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٦-٠٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

أمين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٥:٤٦

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧٢٠ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٤٦٢

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : كرم عنب وتين. نوع العقار : أرض غير مبنية.
٨٩	٢٠١٢-٠١-١٧	دعوى : رقم ٢٤١ / ٢٠١١ تاريخ الدعوى : ٢٠١٢-٠١-١٠ مصدر الدعوى : مدنية. مكان حفظ الملف : الصويرة ١٧٢٠. المدعي: - محمد محمود جانبين المدعى عليه: - محمد رشدي المغبط

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١١٩١	٢٠٠٧-٠٩-١٨	انتقال (ارث، وصية ابتداء من ١٩٥٢) : وبيع بالعقد بملفه.	محمد محمود جانبين - لبنانيّ (اميري)	٢٤٠٠
١١٩٣	٢٠٠٧-٠٩-١٨			

JUN 2018

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٦-٠٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

IZOGHBI

افادة عقارية

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

امانة السجل العقاري في زحلة

رقم الطلب : ١٧٩٦

بناء على الطلب المقدم من : عمر الساروط

بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧١٩ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٣٠٤٦

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي

الرقم	التاريخ	
		وصف العقار : كرم عنب وتين. نوع العقار : أرض غير مبنية.
٣٥٤	٢٩-٠٤-١٩٨٨	قيد احتياطي : قيد احتياطي: ورد عقد فراغ على حصة محمد ذيب عبد الرزاق لمصلحة قاسم محمد عبد الرزاق سجل احتياطيا بملفه

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٦٢	٢٤-٠١-١٩٨٦	بيع : فراغ بملف ١٣٢.	محمد ذيب قاسم عبد الرزاق (اميري)	٢٠٠
١٠٢٣	١٦-١٠-١٩٨٦	بيع : فراغ بملفه.	قاسم محمد عبد الرزاق (اميري)	١٠٠٠
٣٤	٠١-٠٢-١٩٨٣	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة احمد ابراهيم عبد الرزاق بالعقد بملف ١٠٩٢.	احمد سعيد شبلي - لبنانيّ (اميري)	٥٦,٢٥
٣٤	٠١-٠٢-١٩٨٣	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة احمد ابراهيم عبد الرزاق بالعقد بملف ١٠٩٢.	امونه يوسف شبلي - لبنانيّ (اميري)	٧٩,٦٨٧
٣٤	٠١-٠٢-١٩٨٣	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة احمد ابراهيم عبد الرزاق بالعقد بملف ١٠٩٢.	هنديه يوسف شبلي - لبنانيّ (اميري)	٧٩,٦٨٨
٤٧٢ ٤٧٣	٢٤-٠٤-٢٠٠٧ ٢٤-٠٤-٢٠٠٧	تنفيذ حكم : بملف ٦٩ على حصة خديجة شبلي.	محمد محمود عبد الرزاق - لبنانيّ (اميري)	٢٤٦,٠٩٣
٤٧٢ ٤٧٣	٢٤-٠٤-٢٠٠٧ ٢٤-٠٤-٢٠٠٧	تنفيذ حكم : بملف ٦٩ على حصة خديجة شبلي.	علي محمود عبد الرزاق مواليد: ١٩٣٣ - لبنانيّ (اميري)	٢٤٦,٠٩٤
٤٧٢ ٤٧٣	٢٤-٠٤-٢٠٠٧ ٢٤-٠٤-٢٠٠٧	تنفيذ حكم : بملف ٦٩ على حصة خديجة شبلي.	ابراهيم محمود عبد الرزاق - لبنانيّ (اميري)	٢٤٦,٠٩٤
٤٧٢ ٤٧٣	٢٤-٠٤-٢٠٠٧ ٢٤-٠٤-٢٠٠٧	تنفيذ حكم : بملف ٦٩ على حصة خديجة شبلي.	يوسف محمود عبد الرزاق - لبنانيّ (اميري)	٢٤٦,٠٩٤

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٠٨-٠٦-٢٠١٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

أمين السجل العقاري

IZOGHBI

افادة عقارية

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

امانة السجل العقاري في زحلة

رقم الطلب : ١٧٩٦

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧١٨ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٦٥٠

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : كرم عنب وتين. نوع العقار : أرض غير مبنية.
		١ - حق إنتفاع او إرتفاق : انتفاع له حق المرور على العقار رقم ١٧٣٠. نوع الانتفاع او الارتفاق: مرور العقار(ات) المنتفع(ة): ـــ ١٧١٨ العقار(ات) المرتفق(ة): ـــ ١٧٣٠
٧٣١	١٩٦٣-٠٨-٠٧	وضع يد : وضع يد بموجب القرار رقم ١٨١٥ / ١ تاريخ ٣١ / ٧ / ٩٦٣ على / ١٢ / م٢ هذا العقار في محضر ١٧١٧

المرجع في السجل اليومي		الملكية - التصرف	الحصة	
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٤٧٦	١٩٥٦-٠٩-٢٨	انتقال (ارث، وصية) : انتقال بملفه.	حليمه علي حسين عبد الله (اميري)	٣٤٢,٨٥٧
٥٠١	٢٠٠٤-٠٥-١١	بيع : حصتي احمد وخالدحسين بالعقد بملفه.	قاسم محمد حسين (اميري)	٢٠٥٧,١٤٣

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٦-٠٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٥:٤٠

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الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧١٧ المنطقة العقارية : الصويرة المحلة : كرم الحمراء

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٣٦٥٣

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ

وصف العقار : كرم عنب.

نوع العقار : أرض غير مبنية.

الملكية – التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
١٢٧	٢٠٠٧-٠١-٣١	بيع : انتقال حصة محمد عثمان عبد الله وفراغ حصص الورثة وحصة حسين عثمان عبدالله بملفه وملف ١٥٧٩.	عبد الله محمد عبد الله – لبنانيّ (اميري)	١٢٠٠
١٢٣	٢٠٠٧-٠١-٣١			
١٢٧	٢٠٠٧-٠١-٣١	بيع : انتقال حصة محمد عثمان عبد الله وفراغ حصص الورثة وحصة حسين عثمان عبدالله بملفه وملف ١٥٧٩.	يوسف محمد عبد الله – لبنانيّ (اميري)	١٢٠٠
١٢٣	٢٠٠٧-٠١-٣١			

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ٢٠١٨-٠٦-٠٨

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٥:٣٧

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افادة عقارية

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بتاريخ ٢٠١٨-٠٦-٠٨

بناء على الطلب المقدم من : عمر الساروط

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧١٤ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١١٧٩

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي

الرقم	التاريخ	
		وصف العقار : كرم عنب وتين. نوع العقار : أرض غير مبنية.
		رسوم، شرفيّة تحسين : يتوجب على هذا العقار تصفية رسم فني بملفه

الملكية - التصرف

المرجع في السجل اليومي			الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٢٤	٢٠٠٧-٠١-٣١	بيع : انتقال حصة محمد عثمان عبد الله وفراغ حصص الورثة بملفه وملف ١٥٧٩.	محسن محمد عبد الله (اسم الأم: فاطمة صوان) مواليد: ١٩٧٣ - لبنانيّ (اميري)	٢٤٠٠
١٢٣	٢٠٠٧-٠١-٣١			

زحلة في ٢٠١٨-٠٦-٠٨

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

IZOGHBI

افادة عقارية

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٦٨٢ المنطقة العقارية : الصويرة المحلة : كرم الحمره

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٣٦٢

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : كرم عنب وتين. نوع العقار : أرض غير مبنية.
٦٧٢	١٩٥٥-١١-٢٦	حق استثمار: احتفظ البائع حامد احمد علي عبد الفتاح الصميلي لنفسه بحق استثمار حصته المباعة طالما هو على قيد الحياة بملف ٨٩٥

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٩٢٩	١٩٩٤-١٠-٢١	بيع : فراغ كامل العقار بالعقد بملف ٤١٠.	غانم خليل الصميلي (اميري)	٢٤٠٠

زحلة في ٢٠١٨-٠٦-٠٨

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

IZOGHBI

افادة عقارية

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٦٧٢ المنطقة العقارية : الصويرة المحلة : كرم الحمره

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٧٨٩٨

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : كرم عنب وتين. نوع العقار : أرض غير مبنية.

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٥٩٤	٢٠٠٧-٠٥-٠٩	بيع : كامل العقار بملفه.	حسين علي الصميلي - لبنانيّ (اميري)	٢٤٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٦-٠٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٥:٣١

IZOGHBI

افادة عقارية

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

امانة السجل العقاري في زحلة

رقم الطلب : ١٠١٩

بناء على الطلب المقدم من : عمر الساروط

بتاريخ ٢٠١٨-٠٣-٢٢

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٦٥٢ المنطقة العقارية : الصويرة المحلة : كرم الحمره

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٦٨٠٥

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي		
الرقم	التاريخ	
		وصف العقار : كرم مغروس ضمنه اشجار تين وعنب ولوز. نوع العقار : أرض مبنية.
		تعدي / تجاوز : اعتداء بالبناء من قبل هذا العقار بالبناء A على الطريق العام بالبناء بمامساحته / ٥٠ / م٢ والاستعمال بمامساحته / ٢٥١/ م٢ وعلى العقار رقم ٢٠٧٠ بالبناء بما مساحته / ٢ / م٢ والاستعمال بمامساحته /٦٥ / م٢ وعلى العقار رقم ٢٠٨٨ ببناء حائط والاستعمال بمامساحته / ٩/ م٢ وذلك بموجب التكليف الفني رقم ٥٠٣/ ٢٠٠٧ تاريخ ٥-١٠-٢٠٠٧ بملفه. نوع العقار : أرض مبنية.
١٠٦	١٩٦٤-٠٢-٠٨	حق استثمار للبائع طيلة حياته الحصة المباعة بملف ١٢٨
٤٧٣	١٩٧٥-٠٥-١٢	حق استثمار: احتفظ البائع بحق استثمار كامل الاسهم المباعة طالما هو على قيد الحياة بملفه
٦٢٦	٢٠٠٦-٠٦-٢٠	دعوى : تتضمن الطلب بابطال عقد اتفاق وكالتين بقرار صادر عن محكمة غرفة الابتدائية في زحلة رقم ٧١٩ / ٢٠٠٦ تاريخ الدعوى : ١٢-٠٦-٢٠٠٦ مصدر الدعوى : بدائية. مكان حفظ الملف : الصويرة ١٦٥٢. المدعي: - خليل ابراهيم صالحه المدعى عليه: - محمد ابراهيم صالحه - بهية ابراهيم صالحة
		يوجد على هذا العقار بناء لم تذكر أوصافه لعدم إبراز رخصة اسكان وتنظيم عقد إنشاءات ودفع رسمها حسب الاصول بموجب التكليف الفني رقم ٥٣٠ / ٢٠٠٧ بملفه
١٢٥٢	٢٠٠٧-١٠-٠٦	ورد كتاب من بلدية الصويري تفيد بمضمون بان هذا العقار يوجد عليه بناء ويتوجب استفاء رسم من اليومي ١٠٤٤/ ٢٠٠٧ بملفه
٥٠٨	٢٠١٠-٠٣-٢٢	اشارة احترازية صادرة عن محكمة البقاع الشرعية السنية على حصص حسين سليم صالحه في كافة العقارات التي يملكها بتعيينها قيما على املاكه لحين تغيير الحال القانوني والشرعي للغائب بملف ١٤٤٨
٤٥	٢٠١٢-٠١-١٠	قيد احتياطي : ورد عقد بيع على حصة تيسير محمد صالحه لمصلحة منير محمد صالحه سجل احتياطيا واعيد لمعاون الغربي لضم النواقص والثمن
١٢٦٩	٢٠١٢-٠٨-٠٨	قيد احتياطي : ورد عقد بيع على حصة عبد اللطيف احمد صالحة لمصلحة عائشة قاسم ياسين سجل احتياطيا واعيد لمعاون البقاع الغربي

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
		اساس الملكية (ملكية، تصرف، قرار قاضي) : التصرف: بموجب قرار لجنة التحديد المؤرخ في ١٤ كانون الثاني ١٩٢٨.	حسين ابن سليم حسين صالحه (اميري)	٤٨٠
٤٧٣	١٩٧٥-٠٥-١٢	بيع : فراغ بالعقد بملفه.	عبد اللطيف احمد صالحة (اميري)	٤٨٠
٣٢٩	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال العقد بملفه.	سليم علي صالحة (اميري)	٣٢,٧٢٨
٣٢٩	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال العقد بملفه.	كمال علي صالحة (اميري)	٣٢,٧٢٨
٣٢٩	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال العقد بملفه.	عزيرة علي صالحة (اميري)	٣٢,٧٢٧
٣٢٩	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال العقد بملفه.	صبحية علي صالحة (اميري)	٣٢,٧٢٧
٣٢٩	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال العقد بملفه.	حسين علي صالحة (اميري)	٣٢,٧٢٧
٣٢٩	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال العقد بملفه.	عبد الرحيم علي صالحة (اميري)	٣٢,٧٢٧
٣٣١	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال بالعقد بملفه.	كامل علي صالحة (اميري)	١٧,١٤٣
٣٣١	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال بالعقد بملفه.	محمد علي صالحة (اميري)	٤٩,٨٧
٣٣١	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال بالعقد بملفه.	عادل سليم صالحة (اميري)	٢,١٤٣
٣٣١	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال بالعقد بملفه.	بديع سليم صالحة (اميري)	٢,١٤٣
٣٣١	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال بالعقد بملفه.	وليد سليم صالحة (اميري)	٢,١٤٣
٣٣١	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال بالعقد بملفه.	فؤاد سليم صالحة (اميري)	٢,١٤٣
٣٣١	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال بالعقد بملفه.	علي سليم صالحة (اميري)	٢,١٤٣
٣٣١	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال بالعقد بملفه.	سليم سليم صالحة (اميري)	٢,١٤٣
٣٣١	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال بالعقد بملفه.	مريم سليم صالحة (اميري)	٢,١٤٣
٣٣١	١٩٨٩-٠٤-٢٢	انتقال (ارث، وصية) : انتقال بالعقد بملفه.	نوال سليم صالحة (اميري)	٢,١٤٣
٧٨	١٩٨٩-٠٢-٠٤	انتقال (ارث، وصية) وبيع : انتقال حصة محمد احمد سليم صالحه وفراغ حصص بعض الورثة للبعض الاخر.	بشير محمد صالحه (اميري)	١٠٠
٧٨	١٩٨٩-٠٢-٠٤	انتقال (ارث، وصية) وبيع : انتقال حصة محمد احمد سليم صالحه وفراغ حصص بعض الورثة للبعض الاخر.	منير محمد صالحه (اميري)	١٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٣-٢٢

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

رقم الطلب : ٣٥٠٣

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

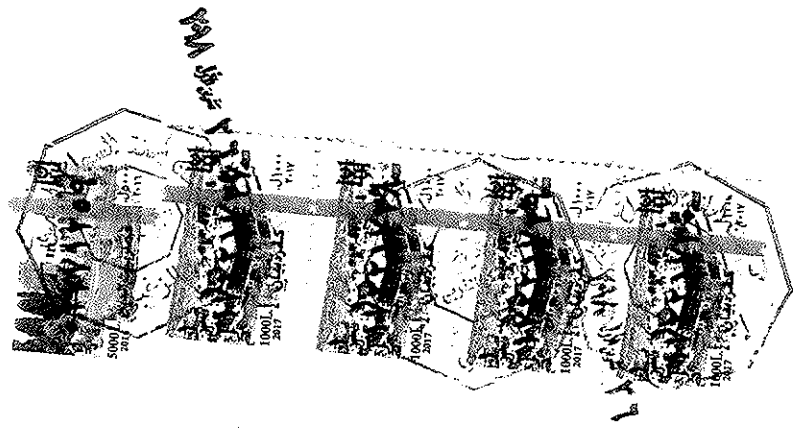
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٤١ المنطقة العقارية : الصويرة المحلة : صوّان الشمالي

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٣١٤٣

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٧٣٤	٢٠١٣-٠٤-٢٩	بيع : حصة زهير حسين جانبين بملفه.	عمر احمد جانبين (اسم الأم: قنوع) مواليد: ١٩٦٧ - لبنانيّ (اميري)	٢٤٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٠١٨-١٠-٢٦

امين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٢:٣٢

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

امانة السجل العقاري في البقاع الغربي

رقم الطلب : ٣٥٠٤

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٤٨ المنطقة العقارية : الصويرة المحلة : صوّان الشمالي

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٩٥٤٣

محتويات و وصف العقار و الحقوق العينية و الوقوعات

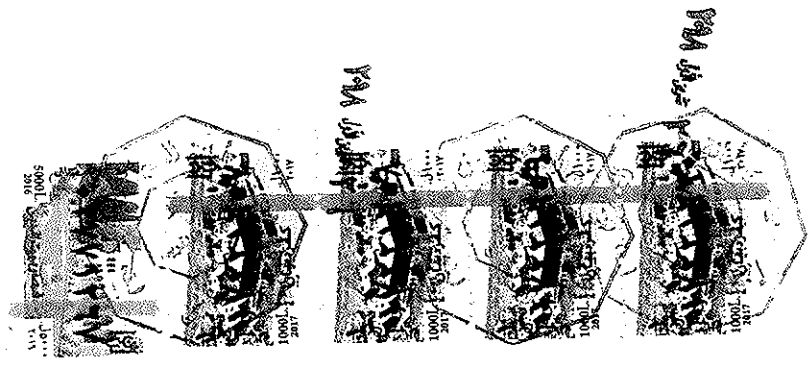
المرجع في السجل اليومي

الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.

الملكية - التصرف

المرجع في السجل اليومي

الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	الحصة سهم
٤٩٥	٢٠٠٢-٠٥-٠٨	بيع : فراغ بملف ٢٥٥.	قاسم محمد زيتون (اميري)	١٢٠٠
٤٩٥	٢٠٠٢-٠٥-٠٨	بيع : فراغ بملف ٢٥٥.	يوسف محمد زيتون (اميري)	١٢٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٦-١٠-٢٠١٨

امين السجل العقاري

٢٦-١٠-٢٠١٨ ٠٩:١٤:٠٥

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

امانة السجل العقاري في البقاع الغربي

رقم الطلب : ٣٥٠٤

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٤٩ المنطقة العقارية : الصويرة المحلة : الصوان الشمالي

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٠٨٣٦

محتويات و وصف العقار و الحقوق العينية و الوقوعات

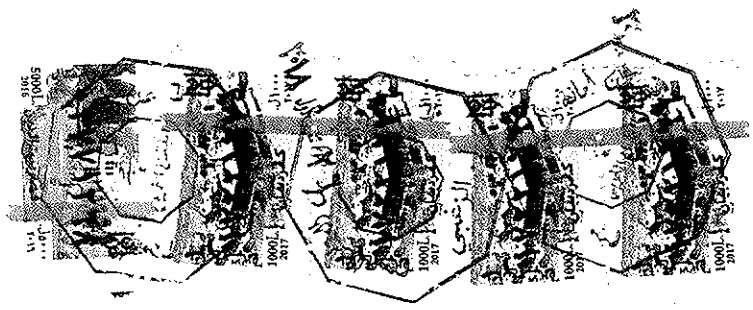
المرجع في السجل اليومي

الرقم	التاريخ

وصف العقار : ارض بعل تزرع حبوب.
نوع العقار : أرض غير مبنية.

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	الحصة	
الرقم	التاريخ		اسماء المالكين	سهم
٤٤٨	١٩٧٩-٠٤-١٢	بيع : فراغ بملفه.	عمر محمد يوسف (اميري)	٥٠٠
٤٤٨	١٩٧٩-٠٤-١٢	بيع : فراغ بملفه.	بديعه محي الدين حمود (اميري)	٥٠٠
٨٦١	٢٠٠٦-٠٩-٢١	بيع : حصة خليل ابراهيم صالحة العقد بملفه..	ليلى ديب عبد الفتاح (اسم الأم: خزما) مواليد: ١٩٧٣ - لبنانيّ (اميري)	١٠٠٠
١٥٣٣	٢٠١٠-٠٩-٠٦	بيع : حصتي احمد ومحمد عامر بملف ٥٤٩.	محمد علي عامر (اسم الأم: دولة) مواليد: ١٩٥٨ - لبنانيّ (اميري)	٤٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

البقاع الغربي في ٢٠١٨-١٠-٢٦

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٤:٠٧

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ٣٥٠٤

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٦-١٠-٢٠١٨

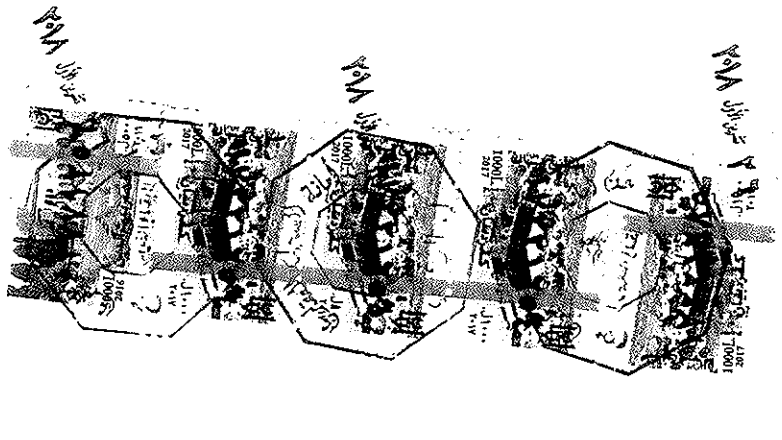
و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٥٠ المنطقة العقارية : الصويرة المحلة : الصوّان الشمالي

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٤٠٢٦

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.

المرجع في السجل اليومي		الملكية – التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٥٣٣	٠٦-٠٩-٢٠١٠	بيع : كامل العقار بملف٥٤٩.	محمد علي عامر (اسم الأم: دولة) مواليد: ١٩٥٨ – لبنانيّ (اميري)	٢٤٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

البقاع الغربي في ٢٦-١٠-٢٠١٨

امين السجل العقاري

٢٦-١٠-٢٠١٨ ٠٩:١٤:١٠

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ٣٥٠٤

امانة السجل العقاري في البقاع الغربي

بناء على الطلب المقدم من : محمد علي رسلان الكردي بتاريخ ٢٠١٨-١٠-٢٦

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٥٢٧ المنطقة العقارية : الصويرة المحلة :

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٤٧١٢

محتويات و وصف العقار و الحقوق العينية و الوقوعات

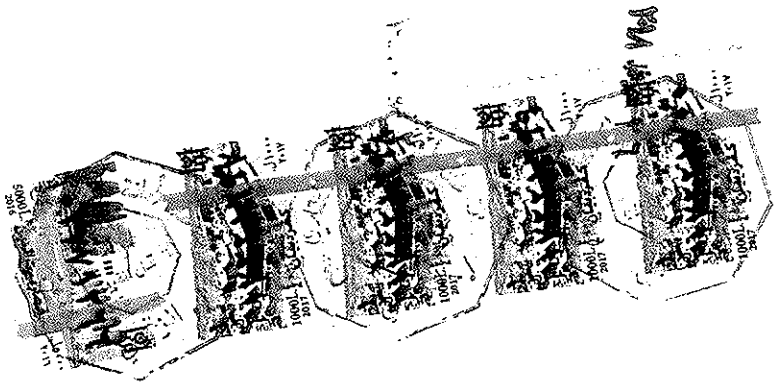
المرجع في السجل اليومي	
الرقم	التاريخ

وصف العقار : ارض بعل تزرع حبوب.

نوع العقار : أرض غير مبنية.

الملكية – التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٥٨٩	١٩٩٤-٠٧-١٩	بيع : فراغ بالعقد بملفه.	علي احمد عامر (اميري)	٢٤٠٠



استوفي الرسم بموجب لصق تمغة على الطلب

البقاع الغربي في ٢٠١٨-١٠-٢٦

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٠١٨-١٠-٢٦ ٠٩:١٤:٠٢

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

إفادة عقارية

IZOGHBI

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١١٠ المنطقة العقارية : الصويرة المحلة : البلانة

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٨٤٥٥

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ
	وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.
٦	١٩٩٩-٠١-٠٥ مخالفة بناء : مخالفة بناء على هذا العقار من قبل المدعو باسم محمد بلعيس بموجب احالة التنظيم المدني في البقاع الغربي وراشيا عدد ٢١ / ت تاريخ ١٦ / ١٢ / ٩٨ بملفه
٩٩	٢٠٠٤-٠١-٢٦ قيد احتياطي : بيع حصة عبدو محمد بلعيس لمصلحة علي وخالد ولدا عبدو بلعيس بملفه

الملكية - التصرف

المرجع في السجل اليومي			الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٩٣٦	١٩٧٣-١١-٠٥	بيع : فراغ بملف ١ الدكوة.	علي اسماعيل ضاهر شومان (اميري)	٦٠٠
١٢٣	١٩٧٧-٠٣-٢٣	بيع : فراغ بملفه.	عبدو محمد بلعيس (اميري)	١٨٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ٢٠١٨-٠٦-٠٨

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٦:٠٨

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٠٩ المنطقة العقارية : الصويرة المحلة : البلانة

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٤١٥

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ

وصف العقار : ارض بعل تزرع حبوب.

نوع العقار : أرض غير مبنية.

الملكية – التصرف

المرجع في السجل اليومي			الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٩٤	٢٠٠٠-٠٣-٠٤	بيع : فراغ بملفه.	خالد عبدو بلعيس (اميري)	٢٤٠٠

8 JUN 2018

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ٢٠١٨-٠٦-٠٨

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٦:٠٦

IZOGHBI

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٠٨ المنطقة العقارية : الصويرة المحلة : البلانة

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٠٢١٥

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ

وصف العقار : ارض بعل تزرع حبوب.

نوع العقار : أرض غير مبنية.

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
١٠٦٥ ١٠٦٦	٢٠٠٩-٠٨-٢٥ ٢٠٠٩-٠٨-٢٥	بيع : ٧٠,٤٨٤ سهم من حصة علي احمد دريج وفراغ حصة عليا علي دريج بملفه.	علي احمد دريج (اسم الأم: مريم) مواليد: ١٩٦٦ - لبنانيّ (اميري)	١٥٦٣,٧٩٤
١٠٦٥	٢٠٠٩-٠٨-٢٥	بيع : ٧٠,٤٨٤ سهم من حصة علي احمد دريج وفراغ حصة عليا علي دريج بملفه.	خضر عبد الهادي طالب (اسم الأم: ثريا) مواليد: ١٩٧٩ - لبنانيّ (اميري)	٢٠٩,٠٥١
١٠٦٥	٢٠٠٩-٠٨-٢٥	بيع : ٧٠,٤٨٤ سهم من حصة علي احمد دريج وفراغ حصة عليا علي دريج بملفه.	قاسم عبد الهادي طالب (اسم الأم: ثريا) مواليد: ١٩٧٩ - لبنانيّ (اميري)	٢٠٩,٠٥٢
١٠٦٥	٢٠٠٩-٠٨-٢٥	بيع : ٧٠,٤٨٤ سهم من حصة علي احمد دريج وفراغ حصة عليا علي دريج بملفه.	محمد عبد الهادي طالب (اسم الأم: ثريا) مواليد: ١٩٨٦ - لبنانيّ (اميري)	٢٠٩,٠٥٢
١٠٦٥	٢٠٠٩-٠٨-٢٥	بيع : ٧٠,٤٨٤ سهم من حصة علي احمد دريج وفراغ حصة عليا علي دريج بملفه.	محمود عبد الهادي طالب (اسم الأم: ثريا) مواليد: ١٩٩١ - لبنانيّ (اميري)	٢٠٩,٠٥١

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٦-٠٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

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الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧٤٢ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٤٣٨٨

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ

وصف العقار : كرم عنب وتين ولوز واجاصة.

نوع العقار : أرض غير مبنية.

الملكية - التصرف

المرجع في السجل اليومي			الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٠٥٦	١٨-١١-١٩٩٢	بيع : فراغ بملف ١٦٠.	احمد علي برو (اميري)	٢٤٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ٢٠١٨-٠٦-٠٨

امين السجل العقاري

IZOGHBI

افادة عقارية

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

امانة السجل العقاري في زحلة

رقم الطلب : ١٧٩٦

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٢١٩٥ المنطقة العقارية : الصويرة المحلة : حقل البلانه

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٥٥٦٣

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي		
الرقم	التاريخ	
		إظهار حدود : ارض مغروسة كرم عنب ضمنها بعض اشجار تين. بالتكليف الفني رقم ٣٢١ تاريخ ٢٤ - ٦ - ٧٨. نوع العقار : أرض غير مبنية.
		مرتفق بتخصيص طرق وحدائق عند فرزه مجددا بالعقد بملف ١٧٥٣
٣٣١	٢٠١٠-٠٢-٢٧	قيد احتياطي : ورد عقد بيع على ١٢٠٠ سهم من حصة محمد بلعيس لمصلحة زين قاسم يوسف سجل احتياطيا واعيد لمعاون الغربي لضم افادة محتويات وخريطة
١١٧٤	٢٠١٠-٠٧-١٧	قيد احتياطي : ورد عقد بيع على حصة زين قاسم يوسف (١٢٠٠ سهم) لمصلحة وليد ومحمد خالد يوسف سجل احتياطيا واعيد لمعاون الغربي لضم افادة محتويات وتبعا للبيع يومي ٣٣١ / ٢٠١٠ وخريطة وبيان الثمن
١١٩٦	٢٠١٧-٠٧-٠٨	اشارة على سبيل العلم بورود عقد بيع على كامل حصة وليد خالد يوسف ومحمد خالد يوسف لمصلحة سوريا خالد يوسف ٦٠٠سهم وكاتيا خالد يوسف ٦٠٠سهم سجل على سبيل العلم لدفع الرسم.

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
١٢٢٢	٢٠٠٨-٠٩-٢٥	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمود محمد بلعيس العقد بملفه..	محمد محمود بلعيس (اسم الأم: طرف) مواليد: ١٩٦٨ - لبنانيّ (اميري)	٢٤٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ٢٠١٨-٠٦-٠٨

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٦:٠٣

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الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

امانة السجل العقاري في زحلة

رقم الطلب : ١٧٩٦

بناء على الطلب المقدم من : عمر الساروط

بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٢٠٧٠ المنطقة العقارية : الصويرة المحلة : شمس الزيتون

النوع الشرعي للعقار: أميري مساحة العقار/القسم (م٢) : ٢٧٣١٧

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : بيادر وأرض صخرية. نوع العقار : أرض غير مبنية.
		تعدي / تجاوز : اعتداء على هذا العقار بالفلاحة والزراعة من قبل بعض اهالي قرية الصويري. نوع العقار : أرض غير مبنية. نوع التعدي : تعدي من أشخاص على عقار. المعتدي: - المعتدى عليه: -
		تعدي / تجاوز : اعتداء على هذا العقار من قبل اهالي الصويري. نوع العقار : أرض غير مبنية. نوع التعدي : تعدي من أشخاص على عقار. المعتدي: - المعتدى عليه: -
		تعدي / تجاوز : اعتداء من قبل العقار رقم ١٦٥٢ على هذا العقار ببناء بمامساحته / ٢/ م٢ والاستعمال بمامساحته / ٦٥ /م٢ وذلك بموجب التكليف الفني رقم ٥٣٠ /٢٠٠٧ بملف ١٦٥٢. نوع العقار : أرض غير مبنية.
١٢٧	١٩٤٨-٠٦-٢٤	١ - حق إنتفاع او إرتفاق : ان حق الانتفاع بهذا العقار عائد لملاكي واهالي قرية الصويري. نوع الانتفاع او الارتفاق: ----------
٢٩	١٩٩٩-٠٣-٣١	مخالفة بناء : على هذا العقار مخالفة بناء بموجب احالة قائمقامية البقاع الغربي رقم ٢٧٤

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٢٧	١٩٤٨-٠٦-٢٤	اخرى (تصحيح، حق مختلف) : تصحيح قيد ملكية بملف ٢٠٤٦.	الجمهورية اللبنانية (اميري)	٢٤٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٦-٠٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠١:٤٦:٠٩

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الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧٥٣ المنطقة العقارية : الصويرة المحلة : حقل البلاته

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٧٦٤٧

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ
		إظهار حدود : ارض مغروسة كرم عنب ضمنها بعض اشجار تين بالتكليف الفني رقم ٣٢١ تاريخ ٢٤ / ٦ / ٧٤. نوع العقار : أرض غير مبنية.
		مرتفق بتخصيص طرق وحدائق عند افرازه مجددا وذلك وفقا للمادة ٢٩ من قانون التنظيم المدني بملفه
١٣٤٣	١٩٩٦-١٢-٠٣	مخالفة بناء : مخالفة بناء على هذا العقار من قبل ابراهيم محمد الصميلي سجل بموجب اشعار صادر عن المكتب الفني القضائي في البقاع الغربي وراشيا رقم ٣١٥ تاريخ ٢٨ - ١١ - ٩٧ بملفه

الملكية - التصرف

المرجع في السجل اليومي			الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٩٦٠	١٩٨٧-١٠-٠١	بيع : فراغ بملف ١٥٥.	علي محمد الصميلي (اميري)	١٢٠٠
٩٦٠	١٩٨٧-١٠-٠١	بيع : فراغ بملف ١٥٥.	ابراهيم محمد الصميلي (اميري)	١٢٠٠

JUN 2018

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ٢٠١٨-٠٦-٠٨

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٦:٠٠

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

رقم الطلب : ١٧٩٦

اماتة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧٤٧ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٥٩٦٢

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : كرم عنب وتين. نوع العقار : أرض غير مبنية.

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٧٨٨	٢٠١٣-٠٥-٠٨	بيع : ٨٠٠ سهم من حصة بدر الدين صبحي عامر بملفه.	بدر الدين صبحي عامر (اسم الأم: ريا) مواليد: ١٩٤٠ - لبنانيّ (اميري)	٨٠٠
١٢٢٥	٢٠١٥-٠٨-٠٥	بيع : حصة محمدوصبحي ولدابدرالدين عامر بالعقد بملفه..	ابراهيم محمد زيتون (اسم الأم: حمده) مواليد: ١٩٨٧ - لبنانيّ (اميري)	١٦٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٦-٠٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٥:٥٨

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

إفادة عقارية

IZOGHBI

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٢٤٠٦ المنطقة العقارية : الصويرة المحلة :

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٢٥٥٧

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ
٤٤٣	٢٠٠٩-٠٤-٢٥

افراز : طريق خاص لمنفعة العقار رقم ٩٤٦ والعقارات ٢٣٩٣ و٢٣٩٤ و٢٣٩٥ و٢٣٩٦ و٢٣٩٧ و٢٣٩٨ و٢٣٩٩ ووالحديقتين ٢٤٠٠ و٢٤٠١ والعقارات ٢٤٠٢ و٢٤٠٣ و٢٤٠٤ و٢٤٠٥ / مفرز عن العقار ٩٤٦.
نوع العقار : أرض غير مبنية.

١ – حق إنتفاع او إرتفاق : مرتفق بتنفيذ نصف ١٢ % وفقا للمقطع الطولي المرفق.
نوع الانتفاع او الارتفاق: اشتراك في الملكية

يحق للادارات والمؤسسات العامة والبلديات استملاك هذه الطريق او بعضها مجانا وفقا للربع المجاني من مساحة العقار الاساسية قبل الفرز وذلك في حال حاجتها اليها لتحسين شبكة الطرق في المنطقة

الملكية – التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٤٤٣	٢٠٠٩-٠٤-٢٥	افراز : ومقاسمة بملف ٩٤٦.	طريق خاص لمنفعة العقار رقم ٩٤٦ والعقارات ٢٣٩٣ و٢٣٩٤ و٢٣٩٥ و٢٣٩٦ و٢٣٩٧ و٢٣٩٨ و٢٣٩٩ ووالحديقتين ٢٤٠٠ و٢٤٠١ والعقارات ٢٤٠٢ و٢٤٠٣ و٢٤٠٤ و٢٤٠٥ – لبنانيّ (اميري)	٢٤٠٠

_8 JUIN 2018

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٦-٠٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٦:١١

IZOGHBI

افادة عقارية

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧٣٩ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: أميري مساحة العقار/القسم (م٢) : ٥٦٣

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
		وصف العقار : كرم عنب. نوع العقار : أرض غير مبنية.

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٢٢٧	٢٠٠٢-١٠-١٢	بيع : فراغ بملفه.	خليل حسين طالب (اميري)	٢٤٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ٢٠١٨-٠٦-٠٨

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٥:٥٥

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الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧٣٨ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٥٤٩

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ

وصف العقار : كرم عنب.

نوع العقار : أرض غير مبنية.

الملكية – التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٧٧٩	١٩٨١-٠٩-٢٩	انتقال (ارث، وصية) وبيع : انتقال وفراغ بملف ٧٠٤.	علي محمود زيتون (اميري)	٨٠
٧٨٠	١٩٨١-٠٩-٢٩			
٧٨١	١٩٨١-٠٩-٢٩			
١٢٨٨	١٩٨١-١٢-٢٦	انتقال (ارث، وصية) : انتقال بملف ٧٠٤.	سمية حامد الصميلي (اميري)	١٣٢
١٢٨٨	١٩٨١-١٢-٢٦	انتقال (ارث، وصية) : انتقال بملف ٧٠٤.	حوا احمد الصميلي (اميري)	٧٢
١٢٨٨	١٩٨١-١٢-٢٦	انتقال (ارث، وصية) : انتقال بملف ٧٠٤.	يزدة احمد الصميلي (اميري)	٧٢
١٢٨٨	١٩٨١-١٢-٢٦	انتقال (ارث، وصية) : انتقال بملف ٧٠٤.	خيرية احمد الصميلي (اميري)	٧٢
١٢٨٨	١٩٨١-١٢-٢٦	انتقال (ارث، وصية) : انتقال بملف ٧٠٤.	بدر احمد الصميلي (اميري)	٧٢
١٢٨٨	١٩٨١-١٢-٢٦	انتقال (ارث، وصية) : انتقال بملف ٧٠٤.	زبيدة الشربجي (اميري)	١٨
١٢٨٨	١٩٨١-١٢-٢٦	انتقال (ارث، وصية) : انتقال بملف ٧٠٤.	اليسار علي الصميلي (اميري)	١٠,٥
١٢٨٨	١٩٨١-١٢-٢٦	انتقال (ارث، وصية) : انتقال بملف ٧٠٤.	بارعة علي الصميلي (اميري)	١٠,٥
١٢٨٨	١٩٨١-١٢-٢٦	انتقال (ارث، وصية) : انتقال بملف ٧٠٤.	يسار علي الصميلي (اميري)	١٠,٥
١٢٨٨	١٩٨١-١٢-٢٦	انتقال (ارث، وصية) : انتقال بملف ٧٠٤.	وسيم علي الصميلي (اميري)	١٠,٥
٥٨٣	١٩٨٣-١١-٢٩	بيع وانتقال (ارث، وصية) : فراغ وانتقال بملف ٧٠٤.	سليمان خالد الصميلي (اميري)	٢٢,٥
١٢٧٤	١٩٨٦-١٢-٠٥			
١٢٧٥	١٩٨٦-١٢-٠٥			
٢١٣٠	٢٠١٠-١٢-٠٤	بيع : ٦٠٥,٨٣٤ سهم من حصة بدر عامر بملف ١٧٣٨.	محمد بدر الدين عامر (اسم الأم: عزيزة) مواليد: ١٩٦٩ – لبنانيّ (اميري)	٦٠٥,٨٣٤
٧٨٨	٢٠١٣-٠٥-٠٨	بيع : ٦٠٥,٨٣٣ سهم من حصة بدر الدين صبحي عامر بملفه.	صبحي بدر الدين عامر (اسم الأم: عزيزه) مواليد: ١٩٨١ – لبنانيّ (اميري)	٦٠٥,٨٣٣
٧٨٨	٢٠١٣-٠٥-٠٨	بيع : ٦٠٥,٨٣٣ سهم من حصة بدر الدين صبحي عامر بملفه.	بدر الدين صبحي عامر (اسم الأم: ريا) مواليد: ١٩٤٠ – لبنانيّ (اميري)	٦٠٥,٨٣٣

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٦-٠٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٥:٥٢

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الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧٣٧ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٨٩٥

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ

وصف العقار : كرم عنب وتين.

نوع العقار : أرض غير مبنية.

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٢٠٠	١٩٦٠-٠٣-٢٣	بيع : قراغ بملف ١٤٠٦.	محمد عمر جانبيه (اميري)	٦٠٠
١٤٨٩	١٩٦١-١٢-٢٤	انتقال (ارث، وصية) وبيع : انتقال وفراغ ٨٠٢.	رشديه محمد ابو غره (اميري)	١٥٠
١٤٨٩	١٩٦١-١٢-٢٤	انتقال (ارث، وصية) وبيع : انتقال وفراغ ٨٠٢.	محمد قاسم حسين (اميري)	٧٥
١٤٨٩	١٩٦١-١٢-٢٤	انتقال (ارث، وصية) وبيع : انتقال وفراغ ٨٠٢.	لطيفه قاسم حسين (اميري)	٧٥
١٤٨٩	١٩٦١-١٢-٢٤	انتقال (ارث، وصية) وبيع : انتقال وفراغ ٨٠٢.	احمد خليل برو (اميري)	١٥٠٠
١٤٩٠	١٩٦١-١٢-٢٤			

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ٢٠١٨-٠٦-٠٨

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٥:٥١

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

إفادة عقارية

IZOGHBI

رقم الطلب : ١٧٩٦

اماتة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧٢٦ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٢٥٥٣

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ
	وصف العقار : كرم عنب وتين. نوع العقار : أرض غير مبنية.
٥٧	١٩٧٠-٠١-٢٧ حق استثمار للبائع قاسم شومان طيلة حياته بملف ٧٢٦
٢٧٢ ٢٧٨	١٩٨١-٠٢-٠٢ قيد احتياطي : قيد احتياطي ورد عقد انتقال وفراغ على حصة صبحية شومان وحصص الورثة لمصلحة رضا ومحمد وخالد قاسم شومان بملف ٧١ بملفه
٤٤٩	٢٠٠٥-٠٤-١٨ قيد احتياطي : ببيع حصة خالد قاسم شومان الاحتياطية لمصلحة رضية قاسم شومان حفظ بملفه

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٩٥٦	١٩٥٢-٠٣-١٥	انتقال (ارث، وصية) : انتقال بملف ٨٦٦.	صبحيه احمد شومان (اميري)	٣٦٠
٥٧	١٩٧٠-٠١-٢٧	بيع : فراغ بملف ٧٢٦.	رضيه قاسم شومان (اميري)	٢٠٤٠

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استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ٢٠١٨-٠٦-٠٨

أمين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٥:٤٩

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افادة عقارية

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

امانة السجل العقاري في زحلة

رقم الطلب : ١٧٩٦

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٦-٠٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٧٢٥ المنطقة العقارية : الصويرة المحلة : كرم الحمرا

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٤٧٣٩

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي		
الرقم	التاريخ	
		وصف العقار : كرم عنب وتين. نوع العقار : أرض غير مبنية.
٣٥٤	١٩٨٨-٠٤-٢٩	قيد احتياطي : قيد احتياطي: ورد عقد فراغ على حصة محمد ذيب لمصلحة قاسم محمد عبد الرزاق سجل احتياطيا بملف ١٧١٩
٢١٧	٢٠٠٢-٠٣-٠٧	دعوى-حكم-قرار : استحضار دعوى مقدم من ورثة محمود احمد عبد الرزاق ضد خديجه احمد شبلي تتضمن الطلب باتخاذ القرار بتنفيذ وكالة البيع ١٧١ / ٩٨٤ منظمة لدى كاتب عدل زحلة وفقا لمضمونها وتسجيل العقارات المذكورة اعلاه على اسم الجهة المدعية بقرار صادر عن قاضي المنفرد المدني في البقاع رقم ٣٣٥ / ٢٠٠٢ بملف ٦٩

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٥٨	١٩٨٦-٠١-٢٤	بيع : فراغ بملف ٦٨ و١٣٢.	محمد ذيب قاسم عبد الرزاق (اميري)	٢٠٠
٥٩	١٩٨٦-٠١-٢٤			
٦٠	١٩٨٦-٠١-٢٤			
٦١	١٩٨٦-٠١-٢٤			
٦٢	١٩٨٦-٠١-٢٤			
٦٣	١٩٨٦-٠١-٢٤			
١٠٣٣	١٩٨٧-١٠-١٦	بيع : فراغ بملف ١٧١٩.	قاسم محمد عبد الرزاق (اميري)	١٠٠٠
٣٤	١٩٨٣-٠٢-٠١	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة احمد ابراهيم عبد الرزاق بالعقد بملف ١٠٩٢.	احمد سعيد شبلي - لبنانيّ	٥٦,٢٥
٣٤	١٩٨٣-٠٢-٠١	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة احمد ابراهيم عبد الرزاق بالعقد بملف ١٠٩٢.	امونه يوسف شبلي - لبنانيّ	٧٩,٦٨٧
٣٤	١٩٨٣-٠٢-٠١	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة احمد ابراهيم عبد الرزاق بالعقد بملف ١٠٩٢.	هنديه يوسف شبلي - لبنانيّ	٧٩,٦٨٨
٤٧٢	٢٠٠٧-٠٤-٢٤	تنفيذ حكم : على حصة خديجة شبلي بملف ٦٩.	محمد محمود عبد الرزاق - لبنانيّ (اميري)	٢٤٦,٠٩٣
٤٧٣	٢٠٠٧-٠٤-٢٤			
٤٧٢	٢٠٠٧-٠٤-٢٤	تنفيذ حكم : على حصة خديجة شبلي بملف ٦٩.	علي محمود عبد الرزاق - لبنانيّ (اميري)	٢٤٦,٠٩٤
٤٧٣	٢٠٠٧-٠٤-٢٤			
٤٧٢	٢٠٠٧-٠٤-٢٤	تنفيذ حكم : على حصة خديجة شبلي بملف ٦٩.	ابراهيم محمود عبد الرزاق - لبنانيّ (اميري)	٢٤٦,٠٩٤
٤٧٣	٢٠٠٧-٠٤-٢٤			
٤٧٢	٢٠٠٧-٠٤-٢٤	تنفيذ حكم : على حصة خديجة شبلي بملف ٦٩.	يوسف محمود عبد الرزاق - لبنانيّ (اميري)	٢٤٦,٠٩٤
٤٧٣	٢٠٠٧-٠٤-٢٤			

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٦-٠٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٢٠١٨-٠٦-٠٨ ٠٩:٤٥:٤٨

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افادة عقارية

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

رقم الطلب : ٢٨٤٥

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ١٥-٠٩-٢٠١٧

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٩٤٦ المنطقة العقارية : الصويرة المحلة :

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٣٠٣

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
٤٤٣	٢٥-٠٤-٢٠٠٩	افراز : ارض بعل تزرع حبوب افرز هذا العقار الى ستة عشر قسما خرج منها قسما وضم للاملاك العامة (توسيع طريق) وفقا لقرار الاجازة بالافراز رقم ٢٣٩ تاريخ ٦-١٢-٢٠٠٩ فتعدلت مساحته كما هو مبين بجانبه اما محتوياته فبقيت على حالها بموجب التكليف الفني رقم ٣٦٢ /٢٠٠٩ بملفه. نوع العقار : أرض غير مبنية. العقارات المفروزة عنه: - ٢٣٩٣ - ٢٣٩٤ - ٢٣٩٥ - ٢٣٩٦ - ٢٣٩٧ - ٢٣٩٨ - ٢٣٩٩ - ٢٤٠٠ - ٢٤٠١ - ٢٤٠٢ - ٢٤٠٣ - ٢٤٠٤ - ٢٤٠٥ - ٢٤٠٦
		١ - حق إنتفاع او إرتفاق : يشترك هذا العقار بملكية الحديقتين الخاصتين ٢٤٠٠ و٢٤٠١ والطرق الخاص رقم ٩٤٦. نوع الانتفاع او الارتفاق: اشتراك في الملكية
		يتوجب على هذا العقار انشاء محطة تكرير مياه مستعمله

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٤٤٣	٢٥-٠٤-٢٠٠٩	افراز : ومقاسمة بملف ٩٤٦.	خالد محمد شبلي (اسم الأم: صاره) مواليد: ١٩٦٦ - لبنانيّ (اميري)	١٢٠٠
٤٤٣	٢٥-٠٤-٢٠٠٩	افراز : ومقاسمة بملف ٩٤٦.	خلائق محمد عبد الله (اسم الأم: المازه) مواليد: ١٩٧٢ - لبنانيّ (اميري)	١٢٠٠

٠٣٩٤٩٧٠٦

15 SEP

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ١٥-٠٩-٢٠١٧

امين السجل العقاري

١٥-٠٩-٢٠١٧ ١٠:٢٧:٥٤

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إفادة عقارية

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

أمانة السجل العقاري في زحلة

رقم الطلب : ١٦٧٩

بناء على الطلب المقدم من : طارق الرفاعي بتاريخ ٢٠١٨-٠٥-٢٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٢٤٠٥ المنطقة العقارية : الصويرة المحلة :

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٣٦٣

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ
٤٤٣	٢٠٠٩-٠٤-٢٥

افراز : ارض بعل تزرع حبوب / مفرز عن العقار ٩٤٦.
نوع العقار : أرض غير مبنية.

١ – حق إنتفاع او إرتفاق : يشترك هذا العقار بملكية الحديقتين الخاصتين ٢٤٠٠ و٢٤٠١ والطرق الخاص رقم ٩٤٦.
نوع الانتفاع او الارتفاق: اشتراك في الملكية

يتوجب على هذا العقار انشاء محطة تكرير مياه مستعمله

الملكية – التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٤٤٣	٢٠٠٩-٠٤-٢٥	افراز : ومقاسمة بملف ٩٤٦.	محمد احمد عبد الله (اسم الأم: هدلا) مواليد: ١٩٥٩ – لبنانيّ (اميري)	٢٤٠٠
٤٤٣	٢٠٠٩-٠٤-٢٥	افراز : ومقاسمة بملف ٩٤٦.		

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٥-٢٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

أمين السجل العقاري

٢٠١٨-٠٥-٢٨ ١١:٣٨:٢٥

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

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امانة السجل العقاري في زحلة

رقم الطلب : ١٠١٩

بناء على الطلب المقدم من : عمر الساروط بتاريخ ٢٠١٨-٠٣-٢٢

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٦٥٦ المنطقة العقارية : الصويرة المحلة : كرم الحمره

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٦٢٦١

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي		
الرقم	التاريخ	
		وصف العقار : كرم عنب وتين.
		تعدي / تجاوز : تعدي: ان هذا العقار معتد على الطريق العام بنصب كرم بما مساحة ٥٠ مترا مربعا بموجب المصور الفني المحفوظ بملف ١٨. نوع التعدي : تعدي من عقار على أملاك دولة عامة. المعتدي: - المعتدى عليه: -
١٢٥٣	٢٠٠١-١٠-١٠	تأمين الحصة المؤمنة : حصة المدين في هذا العقار درجة التأمين : أولى. شرط التأمين : مع حق التحويل. وصف شهادة التأمين : نظمت بتاريخ ٢٠٠١-١٠-١٠. وصف عقد التأمين : بملف ٢٩٤ حمارة. تاريخ الإستحقاق : تدفع حسب شروط العقد الدائن: - مشروع انعاش الانتاج الحيواني المدين: - عمر قاسم ابو عرب قيمة التأمين : ٦٠،٠٠٠،٠٠ دولار اميريكي ستون ألف دولار اميريكي فقط لا غير نوع الفائدة : حسب شروط العقد.
٨١٣	١٩٨٧-٠٨-١٩	حق استثمار لمصلحة دريه محمود زيتون على حصتها المباعة من هذا العقار والبالغة ٤٦٠ سهما طيلة فترة حياتها بملف ١٨٥
		تعهد : يتعهد الفريق الثاني بعدم اجراء اي حق عيني الا بموافقة الفريق الدائن وبعدم استعمال هذا القرض لغير الغاية التي اعد لها
٦٧٨	٢٠١٧-٠٤-٠٤	قيد احتياطي : ورد عقد بيع على حصة قنوع محمد برو وعرب وسهير وبسمة ورحمه ورقيه اولاد محمد ابو عرب لمصلحة قاسم وبلال ولدا محمد ابو عرب ٤٧٦,٤٠٣ سهم بالتساوي فيمابينهم سجل احتياطيا"للنظر بالثمن

الملكية - التصرف

المرجع في السجل اليومي			الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٨٧٢	١٩٥٥-١٢-٣١	انتقال (ارث، وصية) : انتقال بالعقد بملف ٧٥٥.	خليل ابراهيم عامر (اميري)	٨٠
٤٦٥	١٩٩٩-٠٥-١٠	بيع : فراغ بالعقد بملفه.	يوسف قاسم ابو عرب (اميري)	١٧٧
٤٦٦	١٩٩٩-٠٥-١٠	بيع : فراغ بالعقد بملفه.	ابراهيم قاسم ابو عرب (اميري)	٣٢٤
٦٣٩	١٩٩٩-٠٦-٠٨	بيع : فراغ حصة محمد قاسم عامر لمصلحة محمد وعمر ورضا أبو عرب بالعقد بملفه.	عمر قاسم ابو عرب (اميري)	٦٠٦,٣٣٣
٦٣٩	١٩٩٩-٠٦-٠٨	بيع : فراغ حصة محمد قاسم عامر لمصلحة محمد وعمر ورضا أبو عرب بالعقد بملفه.	رضا قاسم ابو عرب (اميري)	٦٠٦,٣٣٤
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	قنوع محمد برو (اسم الأم: مريم) مواليد: ١٩٤٦ - لبنانيّ (اميري)	١٥١,٥٨٣
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	بلال محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٧٥ - لبنانيّ (اميري)	٦٤,٩٦٥
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	قاسم محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٨١ - لبنانيّ (اميري)	٦٤,٩٦٥
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	عرب محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٧٠ - لبنانيّ (اميري)	٦٤,٩٦٤
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	سهير محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٧٩ - لبنانيّ (اميري)	٦٤,٩٦٤
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	بسمه محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٨٢ - لبنانيّ (اميري)	٦٤,٩٦٤
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	رحمه محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٨٦ - لبنانيّ (اميري)	٦٤,٩٦٤
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	رقيه محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٧٧ - لبنانيّ (اميري)	٦٤,٩٦٤

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٣-٢٢

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

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الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

افادة عقارية

رقم الطلب : ٢٨٤٥

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ١٥-٠٩-٢٠١٧

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٩٤٧ المنطقة العقارية : الصويرة المحلة : قبلي النبعة

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٢٢٠٩١

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي

الرقم	التاريخ	
		وصف العقار : ارض بعل تزرع حبوب. نوع العقار : أرض غير مبنية.

الملكية - التصرف

المرجع في السجل اليومي			الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
١٦٣٤	١٨-١١-٢٠٠٩	بيع : حصص احمد الطحان وربيعه محمد موسى والاء وياسمين ونادين الطحان بملف ٩٤٧.	عبد الله رضا الطحان (اسم الأم: ربيعه) مواليد: ٢٠٠٣ - لبنانيّ (اميري)	١٢٠٠
١٠٠٥	٢٤-٠٨-٢٠٠١	بيع : فراغ بملف ٢٤.	معمر احمد الطحان (اميري)	١٢٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ١٥-٠٩-٢٠١٧

امين السجل العقاري

١٥-٠٩-٢٠١٧ ١٠:٢٧:٥٧

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افادة عقارية

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

رقم الطلب : ٣١٠٨

اماتة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر ساروط بتاريخ ١٠-١٠-٢٠١٧

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٢٤٠٤ المنطقة العقارية : الصويرة المحلة :

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٣٠٣

المرجع في السجل اليومي		محتويات و وصف العقار و الحقوق العينية و الوقوعات
الرقم	التاريخ	
٤٤٣	٢٥-٠٤-٢٠٠٩	افراز : ارض بعل تزرع حبوب / مفرز عن العقار ٩٤٦. نوع العقار : أرض غير مبنية.
		١ - حق إنتفاع او إرتفاق : يشترك هذا العقار بملكية الحديقتين الخاصتين ٢٤٠٠ و٢٤٠١ والطرق الخاص رقم ٩٤٦. نوع الانتفاع او الارتفاق: اشتراك في الملكية
		يتوجب على هذا العقار انشاء محطة تكرير مياه مستعمله

المرجع في السجل اليومي		الملكية - التصرف		الحصة
الرقم	التاريخ	نوع الحق خلاصة العقود	اسماء المالكين	سهم
٤٤٣	٢٥-٠٤-٢٠٠٩	افراز : ومقاسمة بملف ٩٤٦.	منيره محمد عبد الله (اسم الأم: المازه) مواليد: ١٩٦٢ - لبناني (اميري)	٢٤٠٠

10 OCT 2017

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ١٠-١٠-٢٠١٧

امين السجل العقاري

١٠-١٠-٢٠١٧ ١٣:٠٢:٥٤

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إفادة عقارية

الجمهورية اللبنانية

المديرية العامة للشؤون العقارية

رقم الطلب : ٣١٠٧

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر الساروط بتاريخ ١٠-١٠-٢٠١٧

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ٢٤٠٥ المنطقة العقارية : الصويرة المحلة :

النوع الشرعي للعقار: أميري مساحة العقار/القسم (م٢) : ١٣٦٣

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ
٤٤٣	٢٥-٠٤-٢٠٠٩

افراز : ارض بعل تزرع حبوب / مفرز عن العقار ٩٤٦.
نوع العقار : أرض غير مبنية.

١ – حق إنتفاع او إرتفاق : يشترك هذا العقار بملكية الحديقتين الخاصتين ٢٤٠٠ و٢٤٠١ والطرق الخاص رقم ٩٤٦.
نوع الانتفاع او الارتفاق: اشتراك في الملكية

يتوجب على هذا العقار انشاء محطة تكرير مياه مستعمله

الملكية – التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
٤٤٣	٢٥-٠٤-٢٠٠٩	افراز : ومقاسمة بملف ٩٤٦.	محمد احمد عبد الله (اسم الأم: هدلا) مواليد: ١٩٥٩ – لبنانيّ (اميري)	٢٤٠٠

10 OCT 2016

استوفي الرسم بموجب لصق تمغة على الطلب

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

زحلة في ١٠-١٠-٢٠١٧

امين السجل العقاري

١٠-١٠-٢٠١٧ ١٢:٤٤:٣٠

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

افادة عقارية

IZOGHBI

امانة السجل العقاري في زحلة

رقم الطلب : ١٠١٩

بناء على الطلب المقدم من : عمر البارود

بتاريخ ٢٠١٨-٠٣-٢٢

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١٦٥٦ المنطقة العقارية : الصويرة المحلة : كرم الحمره

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ١٦٢٦١

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي		
الرقم	التاريخ	
		وصف العقار : كرم عنب وتين.
		تعدي / تجاوز : تعدي: ان هذا العقار معتد على الطريق العام بنصب كرم بما مساحة ٥٠ مترا مربعا بموجب المصور الفني المحفوظ بملف ١٨. نوع التعدي : تعدي من عقار على أملاك دولة عامة. المعتدي: – المعتدى عليه: –
١٢٥٣	٢٠٠١-١٠-١٠	تأمين الحصة المؤمنة : حصة المدين في هذا العقار درجة التأمين : أولى. شرط التأمين : مع حق التحويل. وصف شهادة التأمين : نظمت بتاريخ ٢٠٠١-١٠-١٠. وصف عقد التأمين : بملف ٢٩٤ حمارة. تاريخ الإستحقاق : تدفع حسب شروط العقد الدائن: – مشروع انعاش الانتاج الحيواني المدين: – عمر قاسم ابو عرب قيمة التأمين : ٦٠،٠٠٠،٠٠ دولار اميريكي ستون ألف دولار اميريكي فقط لا غير نوع الفائدة : حسب شروط العقد.
٨١٣	١٩٨٧-٠٨-١٩	حق استثمار لمصلحة دريه محمود زيتون على حصتها المباعة من هذا العقار والبالغة ٤٦٠ سهما طيلة فترة حياتها بملف ١٨٥
		تعهد : يتعهد الفريق الثاني بعدم اجراء اي حق عيني الا بموافقة الفريق الدائن وبعدم استعمال هذا القرض لغير الغاية التي اعد لها
٦٧٨	٢٠١٧-٠٤-٠٤	قيد احتياطي : ورد عقد بيع على حصة قنوع محمد برو وعرب وسهير وبسمة ورحمه ورقيه اولاد محمد ابو عرب لمصلحة قاسم وبلال ولدا محمد ابو عرب ٤٧٦,٤٠٣ سهم بالتساوي فيمابينهم سجل احتياطيا"للنظر بالثمن

الملكية – التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	الحصة	
الرقم	التاريخ		اسماء المالكين	سهم
٨٧٢	١٩٥٥-١٢-٣١	انتقال (ارث، وصية) : انتقال بالعقد بملف ٧٥٥.	خليل ابراهيم عامر (اميري)	٨٠
٤٦٥	١٩٩٩-٠٥-١٠	بيع : فراغ بالعقد بملفه.	يوسف قاسم ابو عرب (اميري)	١٧٧
٤٦٦	١٩٩٩-٠٥-١٠	بيع : فراغ بالعقد بملفه.	ابراهيم قاسم ابو عرب (اميري)	٣٢٤
٦٣٩	١٩٩٩-٠٦-٠٨	بيع : فراغ حصة محمد قاسم عامر لمصلحة محمد وعمر ورضا أبو عرب بالعقد بملفه.	عمر قاسم ابو عرب (اميري)	٦٠٦,٣٣٣
٦٣٩	١٩٩٩-٠٦-٠٨	بيع : فراغ حصة محمد قاسم عامر لمصلحة محمد وعمر ورضا أبو عرب بالعقد بملفه.	رضا قاسم ابو عرب (اميري)	٦٠٦,٣٣٤
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	قنوع محمد برو (اسم الأم: مريم) مواليد: ١٩٤٦ – لبنانيّ (اميري)	١٥١,٥٨٣
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	بلال محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٧٥ – لبنانيّ (اميري)	٦٤,٩٦٥
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	قاسم محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٨١ – لبنانيّ (اميري)	٦٤,٩٦٥
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	عرب محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٧٠ – لبنانيّ (اميري)	٦٤,٩٦٤
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	سهير محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٧٩ – لبنانيّ (اميري)	٦٤,٩٦٤
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	بسمه محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٨٢ – لبنانيّ (اميري)	٦٤,٩٦٤
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	رحمه محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٨٦ – لبنانيّ (اميري)	٦٤,٩٦٤
٦٧٥	٢٠١٧-٠٤-٠٤	انتقال (ارث، وصية ابتداء من ١٩٥٢) : حصة محمد قاسم ابو عرب بالعقد بملف ٢٩٤.	رقيه محمد ابو عرب (اسم الأم: قنوع) مواليد: ١٩٧٧ – لبنانيّ (اميري)	٦٤,٩٦٤

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٢٠١٨-٠٣-٢٢

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

IZOGHBI

افادة عقارية

الجمهورية اللبنانية
المديرية العامة للشؤون العقارية

رقم الطلب : ١٧٩٦

امانة السجل العقاري في زحلة

بناء على الطلب المقدم من : عمر السباروط بتاريخ ٠٨-٠٦-٢٠١٨

و لدى مراجعة قيود السجل العقاري اعطيت هذه الإفادة الشاملة

العقار : ١١١ المنطقة العقارية : الصويرة المحلة : البلانة

النوع الشرعي للعقار: اميري مساحة العقار/القسم (م٢) : ٥٦٤٢

محتويات و وصف العقار و الحقوق العينية و الوقوعات

المرجع في السجل اليومي	
الرقم	التاريخ

وصف العقار : ارض بعل تزرع حبوب.
نوع العقار : أرض غير مبنية.

الملكية - التصرف

المرجع في السجل اليومي		نوع الحق خلاصة العقود	اسماء المالكين	الحصة
الرقم	التاريخ			سهم
١٦٤٩	١٩٩٩-١٢-٢٣	بيع : فراغ بملف ١٠٩.	محمد مرعي عامر (اميري)	٦٠٠
١٦٤٩	١٩٩٩-١٢-٢٣	بيع : فراغ بملف ١٠٩.	جميل مرعي عامر (اميري)	٦٠٠
١٦٤٩	١٩٩٩-١٢-٢٣	بيع : فراغ بملف ١٠٩.	حكمت مرعي عامر (اميري)	٦٠٠
١٦٤٩	١٩٩٩-١٢-٢٣	بيع : فراغ بملف ١٠٩.	محمود مرعي عامر (اميري)	٦٠٠

استوفي الرسم بموجب لصق تمغة على الطلب

زحلة في ٠٨-٠٦-٢٠١٨

هذا ما تم تسجيله على الصحيفة العقارية حتى تاريخه أعلاه

امين السجل العقاري

٠٨-٠٦-٢٠١٨ ٠٩:٤٦:٠٩

APPENDIX D- RELEVANT NATIONAL ENVIRONMENTAL STANDARDS

Ambient Air Quality and Stack Emissions

The maximum allowable limits of atmospheric ambient air pollutants (Decision 52/1) are shown in Table D 1.

Table D 1 Maximum Allowable Limits for Ambient Air Pollutants (MoE Decision 52/1)

Pollutant	Maximum Allowable Concentration (in µg/m³)	Averaging Period
Sulfur Dioxide (SO_2)	350	1 hour
	120	24 hours
	80	1 year
Nitrogen Dioxide (NO_2)	200	1 hour
	150	24 hours
	100	1 year
Ozone (O_3)	150	1 hour
	100	8 hours
Carbon Monoxide (CO)	30,000	1 hour
	10,000	8 hours
Total Suspended Particulate (TSP)	120	24 hours
Particulate Matter (PM-10)	80	24 hours
Lead	1.0	1 year
Benzene	5 ppb	1 year

In addition to the above-mentioned, Decision 8/1 gives specific regulations for stack emissions. The Environmental Limit Values (ELV) for power generators operated with fuel having a thermal capacity greater than 0.5 MW are presented in Table D 2.

Table D 2 Maximum Limits for Power Generation Emissions (MoE Decision 8/1)

Parameter	ELV for New Facilities	ELV for Existing Facilities	Remark
O_2 correction	5%	5%	
Dust (mg/m³)	20 150 250	20 150 250	Using soot filter Diesel fuel Other fuel
CO (mg/m³)	800	1,500	
NO_x (calculated to NO_2) (mg/m³) <3MW/ > 3MW thermal capacity	4,000 / 2,000	6,000	

Parameter	ELV for New Facilities	ELV for Existing Facilities	Remark
SO_x (calculated to SO_2) (mg/m^3) If diesel fuel (European standard) If other type of fuel	- To be determined in later stages	- To be determined in later stages	

According to the Decision 8/1, a minimum stack height has to be kept for the release of exhaust gases in order to ensure the dispersion of pollutants. This method can be used instead of applying the ELVs for generators. This means that an operator of a plant can choose whether he meets the ELVs on one hand or installs a capacity correlated stack height on the other hand to fulfill the demands related to the necessary dilution of the emissions.

The formula required is:

$$H = h + 0.2\sqrt{kVA}$$

Where

H = Total stack height in meters

h = Height of neighboring building in meters

kVA = Total generator capacity of the set in kVA = kW, i.e. the total capacity which is determined by the maximum fuel (energy) input

Noise

The National Maximum allowable noise level and the permissible occupational Noise Exposure standards according to Decision 52/1 are presented in Table D 3 and Table D 4, respectively.

Table D 3 Permissible Ambient Noise Levels in Selected Regions

Region Type	Limit for Noise Level dB(A)		
	Day Time (7 a.m. - 6 p.m.)	Evening Time (6 p.m. - 10 p.m.)	Night Time (10 p.m. - 7a.m.)
Rural residential areas	35 – 45	30 – 40	25 – 35

Table D 4 National Occupational Noise Exposure Standards in Work Areas

Duration per Day (hrs)	Sound Level dB(A)
8	90
4	95
2	100
1	105
½	110
¼	115

Wastewater Discharges

New standards for discharge into receiving water bodies are presented in Decision no. 8/1, to update similar standards set by Decision 52/1 (Table D 5).

Table D 5 Maximum Limits for Wastewater Discharge into Receiving Water Bodies

Substance	Maximum Allowable Limits For Receiving Water Bodies	
	Sewerage System	Surface Water
Color	none	none
pH	6-9	6-9
Temperature	35°C	30 °C
BOD (5 day, 20°C)	125 mg/l	25 mg/l
COD (dichromate)	500 mg/l	125 mg/l
Total Phosphorus	10 mg/l	10 mg/l
Total Nitrogen[10]	60 mg/l	30 mg/l
Suspended solids	600 mg/l	60 mg/l
AOX	5	5
Detergents	-	3 mg/l
Coliform Bacteria 370 C in 100 ml[11]	-	2,000
Salmonellae	Absence	Absence
Hydrocarbons	20 mg/l	20 mg/l
Phenol Index	5 mg/l	0.3 mg/l
Oil and grease	50 mg/l	30 mg/l
Total Organic Carbon (TOC)	750 mg/l	75 mg/l
Ammonia (NH_4^+)	-	10 mg/l
Silver (Ag)	0.1 mg/l	0.1mg/l
Aluminum (Al)	10 mg/l	10 mg/l
Arsenic (As)	0.1 mg/l	0.1 mg/l

[10] Sum of Kjeldahl-N(organic N + NH3),NO3-N, NO2-N

[11] For discharges in close distance to bathing water, a stricter environmental limit value could be necessary

Substance	Maximum Allowable Limits For Receiving Water Bodies	
	Sewerage System	Surface Water
Barium (Ba)	2 mg/l	2 mg/l
Cadmium (Cd)	0.2 mg/l	0.2 mg/l
Cobalt (Co)	1 mg/l	0.5 mg/l
Chromium total (Cr)	2 mg/l	2 mg/l
Hexavalent Chromium (Cr^{VI+})	0.2 mg/l	0.2 mg/l
Copper total (Cu)	1 mg/l	0.5 mg/l
Iron total (Fe)	5 mg/l	5 mg/l
Mercury total (Hg)	0.05 mg/l	0.05 mg/l
Manganese (Mn)	1 mg/l	1 mg/l
Nickel total (Ni)	2 mg/l	0.5 mg/l
Lead total (Pb)	1 mg/l	0.5 mg/l
Antimony (Sb)	0.3mg/l	0.3mg/l
Tin total (Sn)	2 mg/l	2 mg/l
Zinc total (Zn)	10 mg/l	5 mg/l
Active (Cl_2)	-	1 mg/l
Cyanides (CN^-)	1 mg/l	0.1mg/l
Fluorides (F)	15 mg/l	25 mg/l
Nitrate (NO_3^-)	-	90 mg/l
Phosphate (PO_4^{3-})	-	5 mg/l
Sulphate (SO_4^{2-})	1,000 mg/l	1,000 mg/l
Sulphide (S^{2-})	1 mg/l	1 mg/l

APPENDIX E- KEY PROMINENT FEATURES ALONG THE ROAD CORRIDOR

- Appendix E1: Key Prominent Features in Saouiri Network System
- Appendix E2: Key Prominent Features in Mraijet 1 Network System
- Appendix E3: Key Prominent Features in Bourerij 1 Network System
- Appendix E4: Key Prominent Features in Bourerij 2 and Mraijet 2 Network System
- Appendix E5: Key Prominent Features in Makse 1 Network System
- Appendix E6: Key Prominent Features in Makse 2 Network System
- Appendix E7: Key Prominent Features in Qabb Elias 1 Network System
- Appendix E8: Key Prominent Features in Qabb Elias 2 Network System
- Appendix E9: Key Prominent Features in Taalabaya Network System
- Appendix E10: Key Prominent Features in Zebdol Network System
- Appendix E11: Key Prominent Features in Jdita Network System
- Appendix E12: Key Prominent Features in Chtaura Network System
- Appendix E13: Key Prominent Features in Majdel Anjar and Taalabaya Connection

*Clearer versions of the maps are provided on the attached CD-ROM.

Appendix E1: Key Prominent Features in Saouiri Network System

-300200 | -300000 | -299800 | -299600 | -299400 | -299200 | -299000

-47000

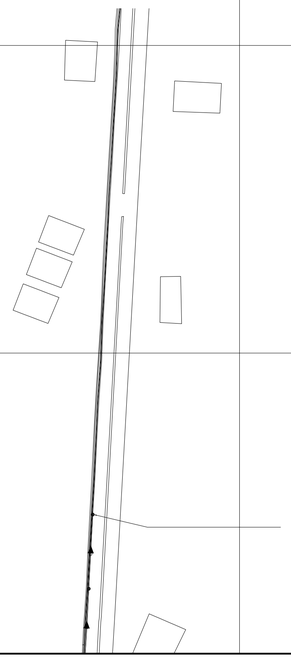
-47200

-47400

-47600

-47800

-48000



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6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1+2+3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

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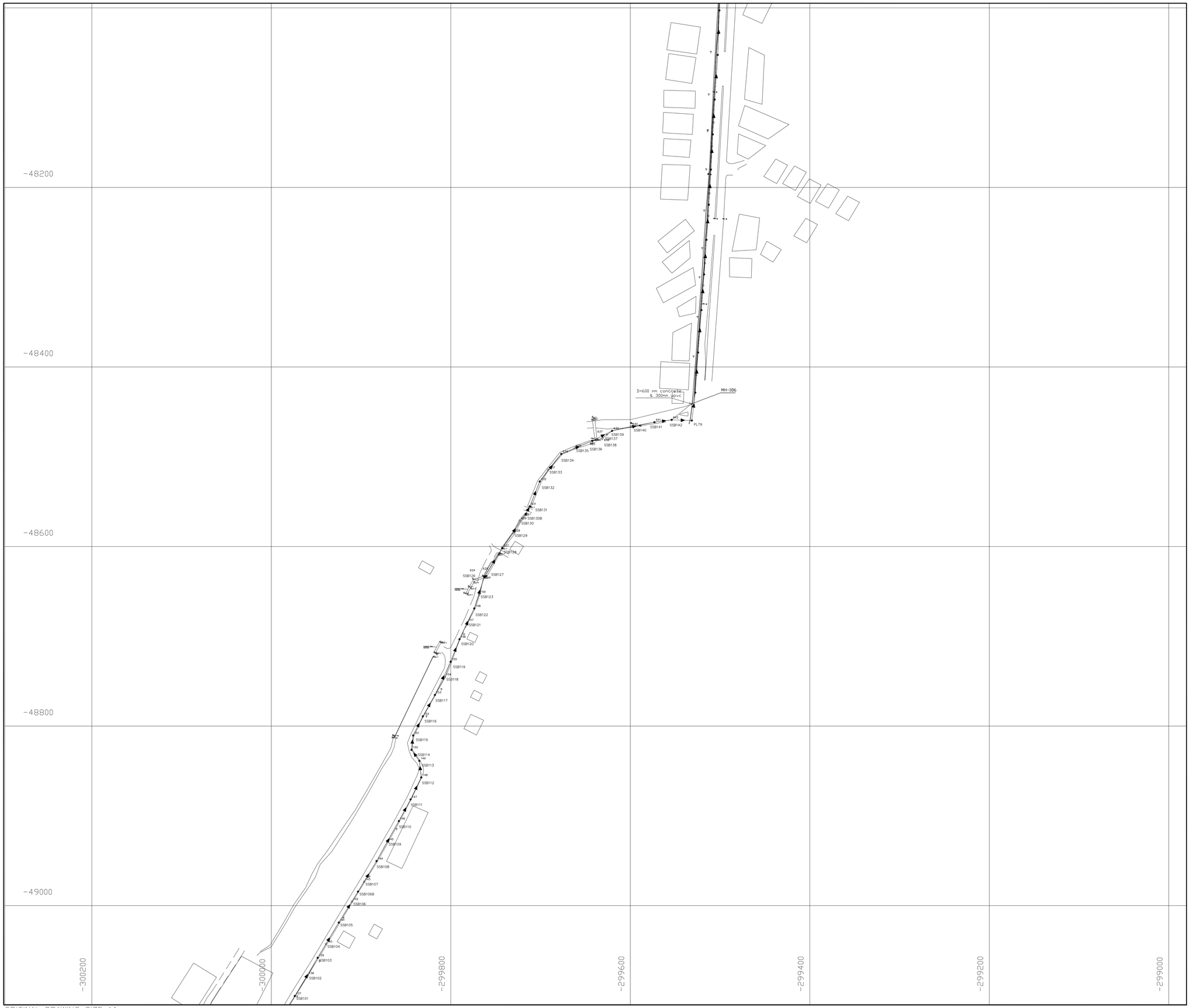
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

SAOUIRI CONVEYOR TOWARDS MAJDEL ANJAR	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	13/13	473WW-02-PL13

ORIGINAL DRAWING SIZE A1



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PLAN LEGEND

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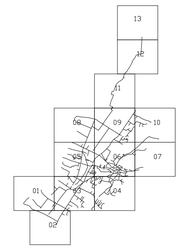
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

1-2-3 BUILDING	MANHOLE SEWER
bb3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS	MANHOLE WATER
UC: UNDER CONSTRUCTION	MANHOLE TELEPHONE
V: VILLA	MANHOLE NOT IDENTIFIED
PAVED ROAD	LIGHTING POLE
CONCRETE ROAD	ELECTRICAL / TELEPHONE POLE
TRACK/ SAND ROAD	TOPOGRAPHICAL STATION
REFERENCE LINE	ELECTRIC SUB STATION
CHANNEL	ELECTRIC POLE/TELEGRAPH POLE
TERRACE	STAKE POINT + STAKE NAME
FENCE	SPOT HEIGHT
STREAM/RIVER	PLOT No
CULVERT/BRIDGE	BOUNDARY
SPRING	CIRCONSCRIPTION BOUNDARY
WELL	CADASTRAL LIMITS
DECIDUOUS/PINE TREE	
TREE	
ROCKS	
DownHill	
HighHill	

KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

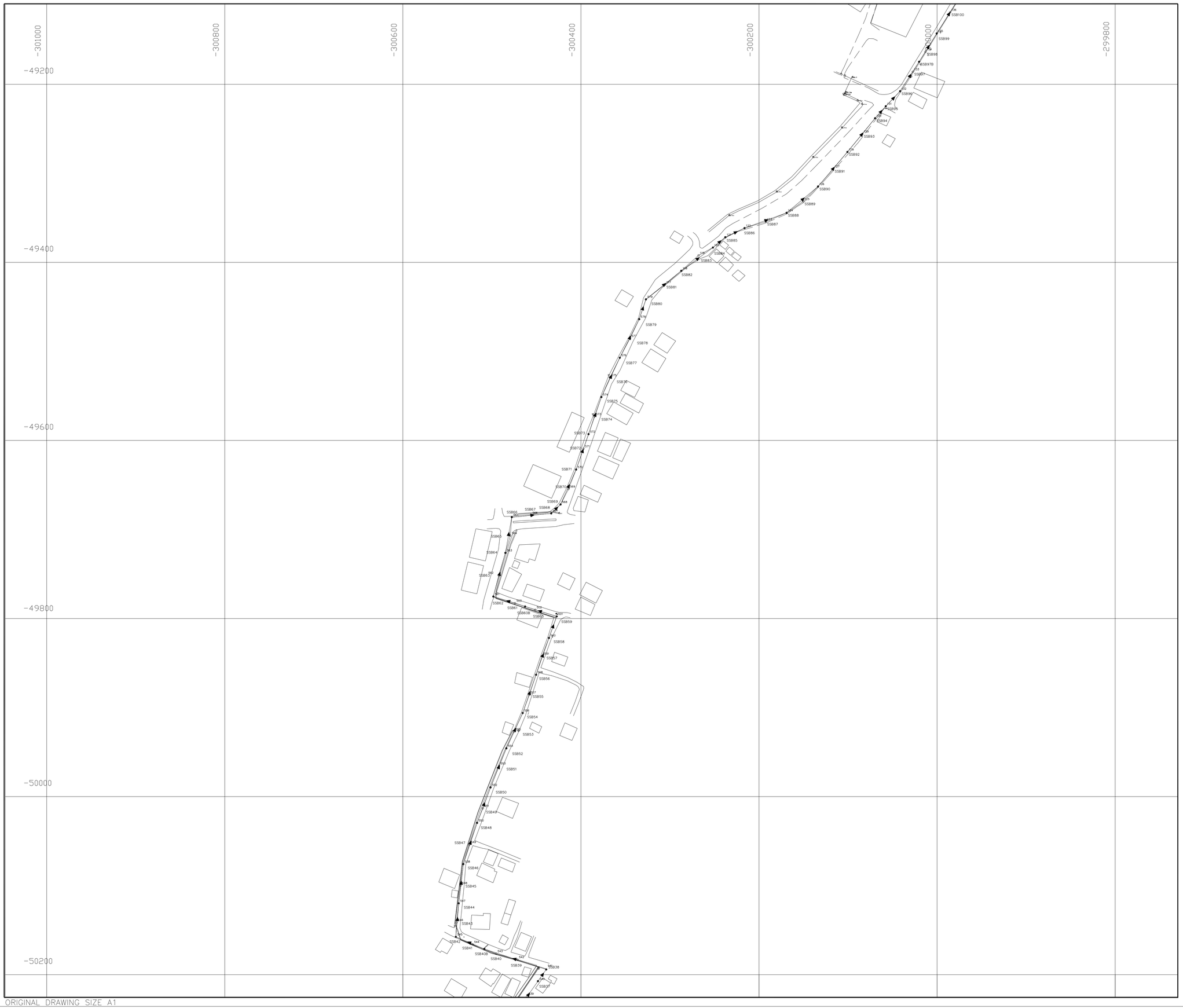
SAOUIRI CONVEYOR TOWARDS MAJDEL ANJAR

PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	12/13	473WW-02-PL12

ORIGINAL DRAWING SIZE A1



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- mh-s MANHOLE SEWER
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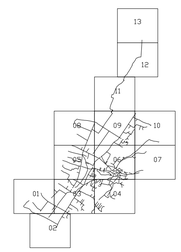
- MH MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 SPOT HEIGHT
- 1262 PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

KEY PLAN



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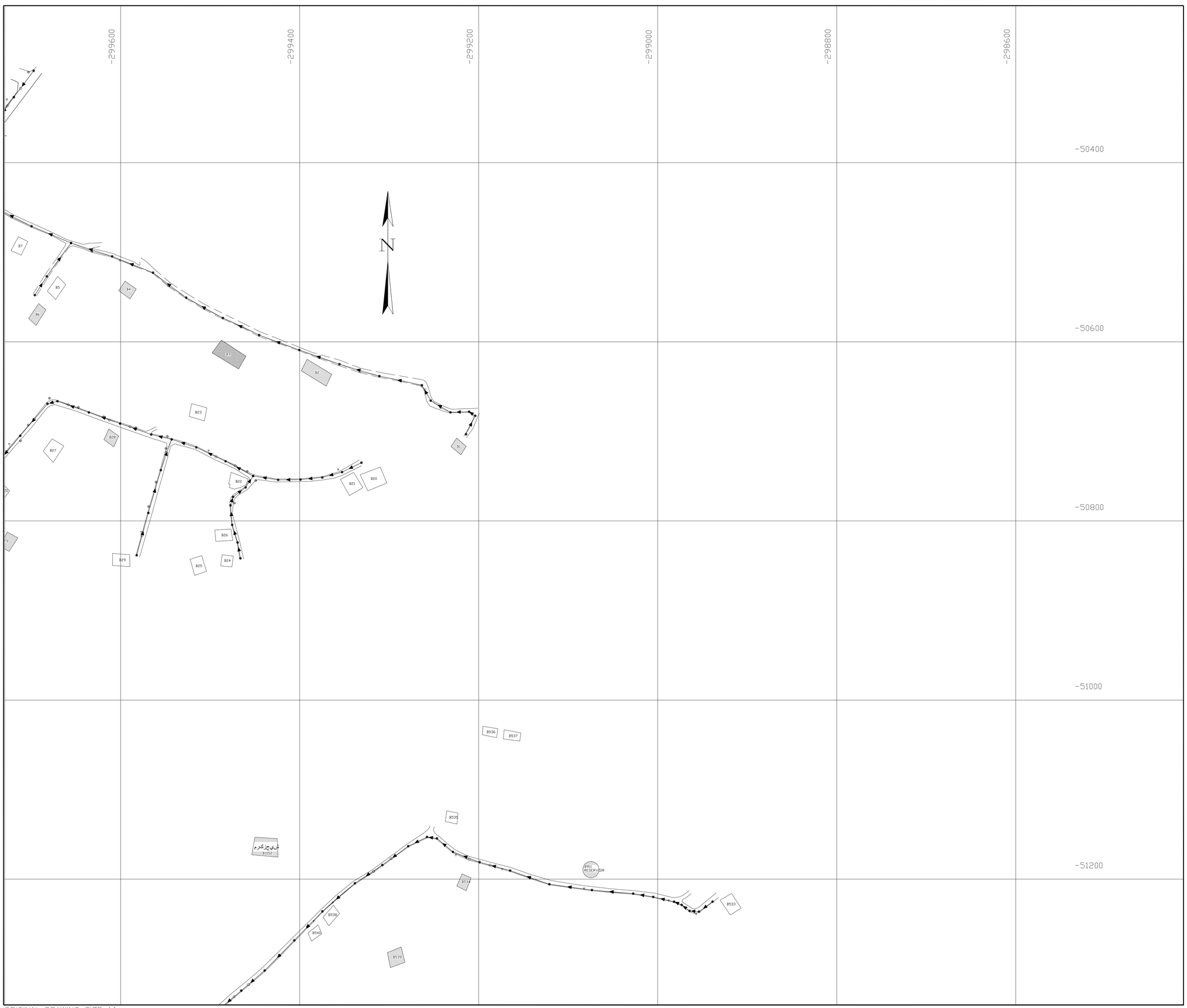
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

SAOUIRI CONVEYOR TOWARDS MAJDEL ANJAR	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	11/13	473WW-02-PL11

ORIGINAL DRAWING SIZE A1



NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3- WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5- THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

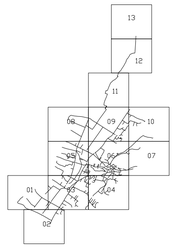
- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- mh-s MANHOLE SEWER
- mh-w MANHOLE WATER
- mh-t MANHOLE TELEPHONE
- MH MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 SPOT HEIGHT
- 1262 PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

N

KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

SAOUIRI WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	10/13	473WW-02-PL10

ORIGINAL DRAWING SIZE A1

NOTES:

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- 1-2-3 — BUILDING
- bb: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- channel — CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- Spr — SPRING
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- TREE
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- mh-w — MANHOLE WATER
- mh-t — MANHOLE TELEPHONE
- MH — MANHOLE NOT IDENTIFIED
- LIGHTING POLE
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- EL.S.S — ELECTRIC SUB STATION
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- CADASTRAL LIMITS

KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

SAOUIRI WASTEWATER NETWORK

PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	9/13	473WW-02-PL09

ORIGINAL DRAWING SIZE A1

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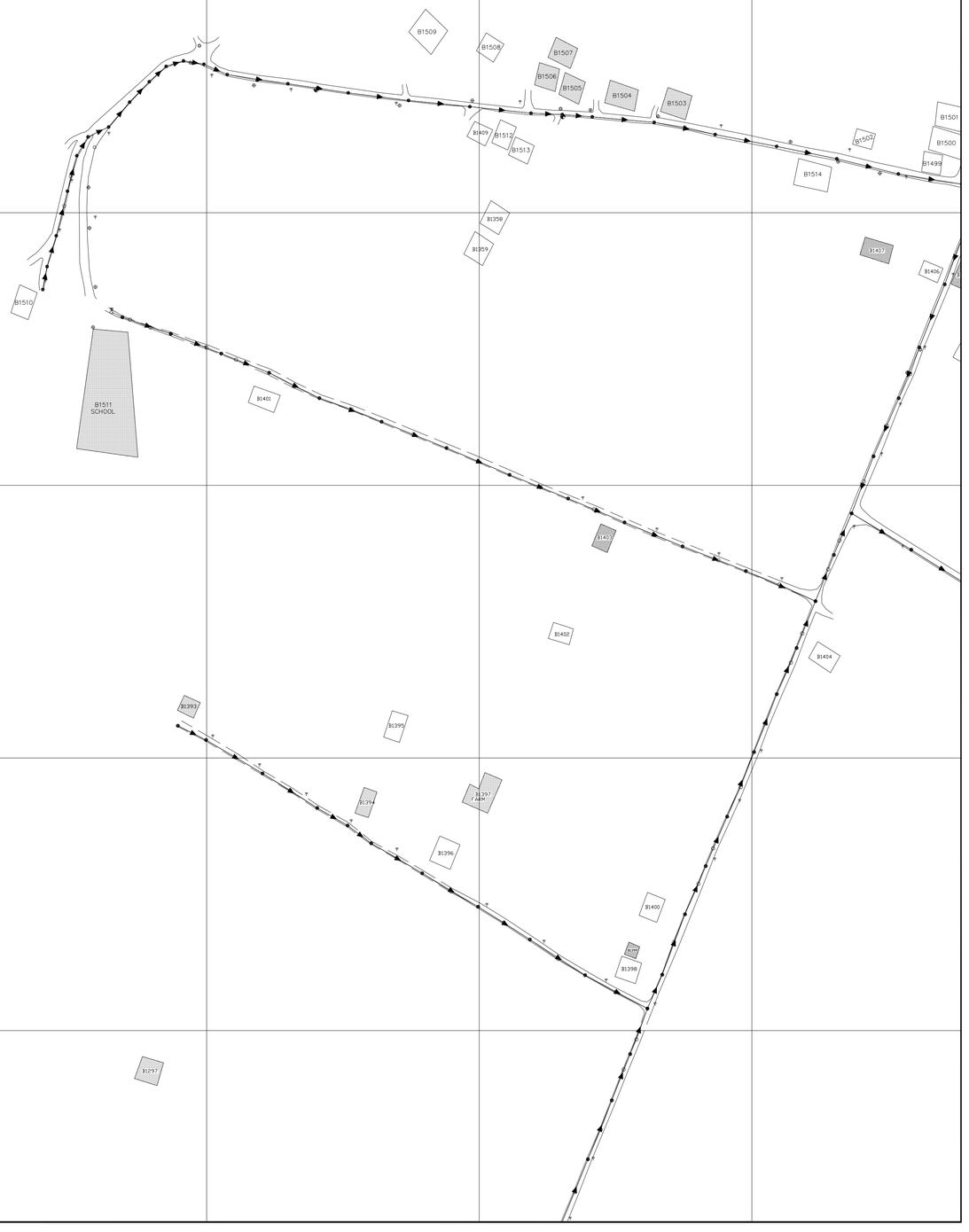
-50600

-50800

-51000

-51200



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PLAN LEGEND

SEWER NETWORK

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- ELECTRIC SUB STATION
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- PLOT No
- BOUNDARY
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- CADASTRAL LIMITS

KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

SAOUIRI WASTEWATER NETWORK

PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	8/13	473WW-02-PL08

ORIGINAL DRAWING SIZE A1

NOTES:

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PLAN LEGEND

SEWER NETWORK

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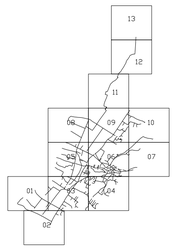
KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

SAOUIRI WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	7/13	473WW-02-PL07

ORIGINAL DRAWING SIZE A1

NOTES:

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PLAN LEGEND

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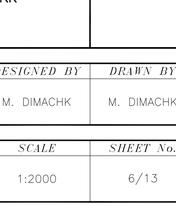
KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

SAOUIRI WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	6/13	473WW-02-PL06

ORIGINAL DRAWING SIZE A1

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-51800

-52000

-52200

-52400

-302200

-302000

-301800

-301600

-301400

-301200

N

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
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- EXISTING MANHOLE
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TOPOGRAPHICAL LEGEND

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KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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SAOUIRI WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	5/13	473WW-02-PL05

ORIGINAL DRAWING SIZE A1

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-53000

-53200

-53400

-301000 -300800 -300600 -300400 -300200 -300000 -299800

N

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PLAN LEGEND

SEWER NETWORK

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TOPOGRAPHICAL LEGEND

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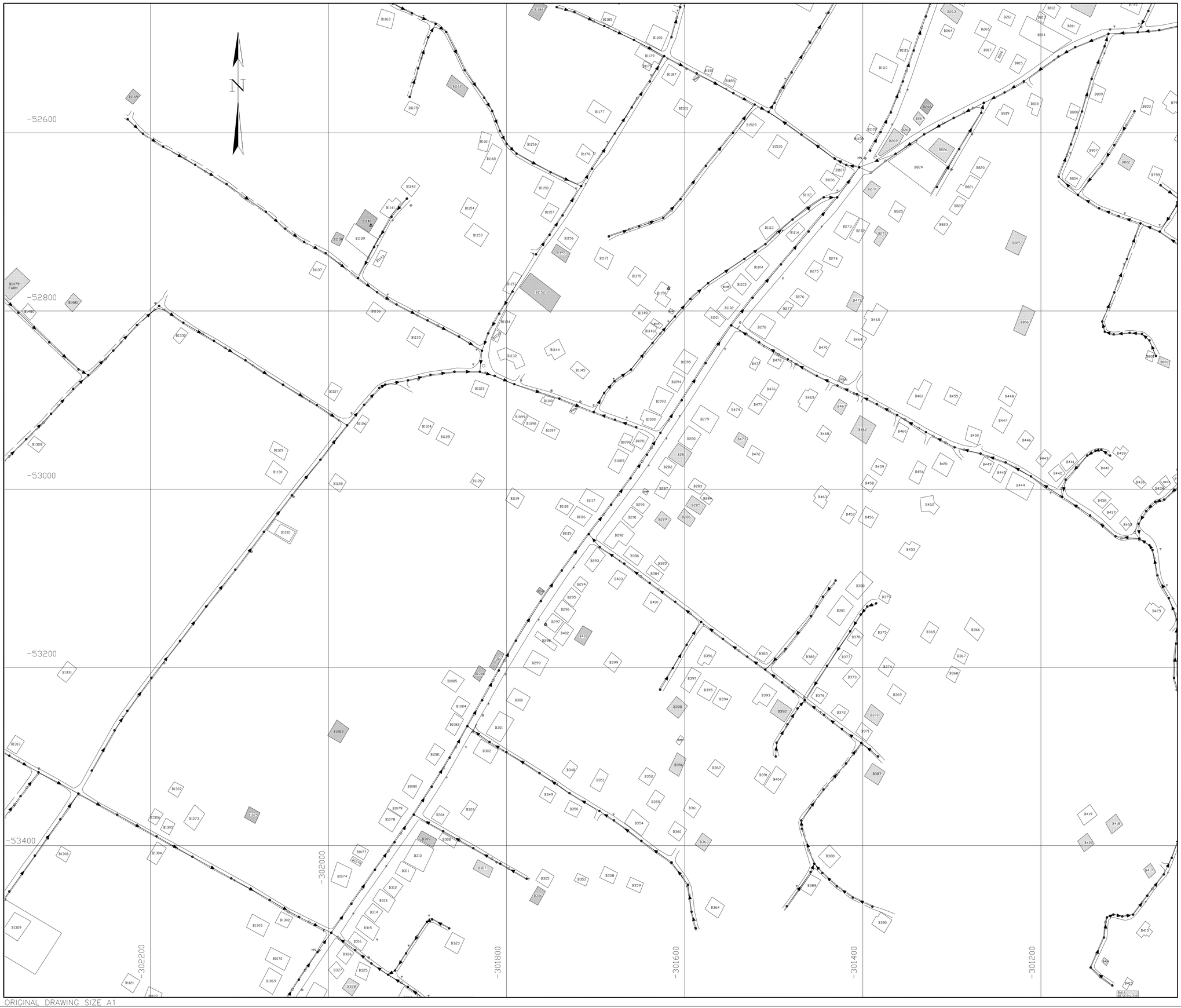
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	4/13	473WW-02-PL04

ORIGINAL DRAWING SIZE A1



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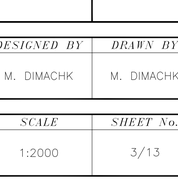
- CADASTRAL LIMITS

KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
JALL ED DIB – HAJAL Bldg
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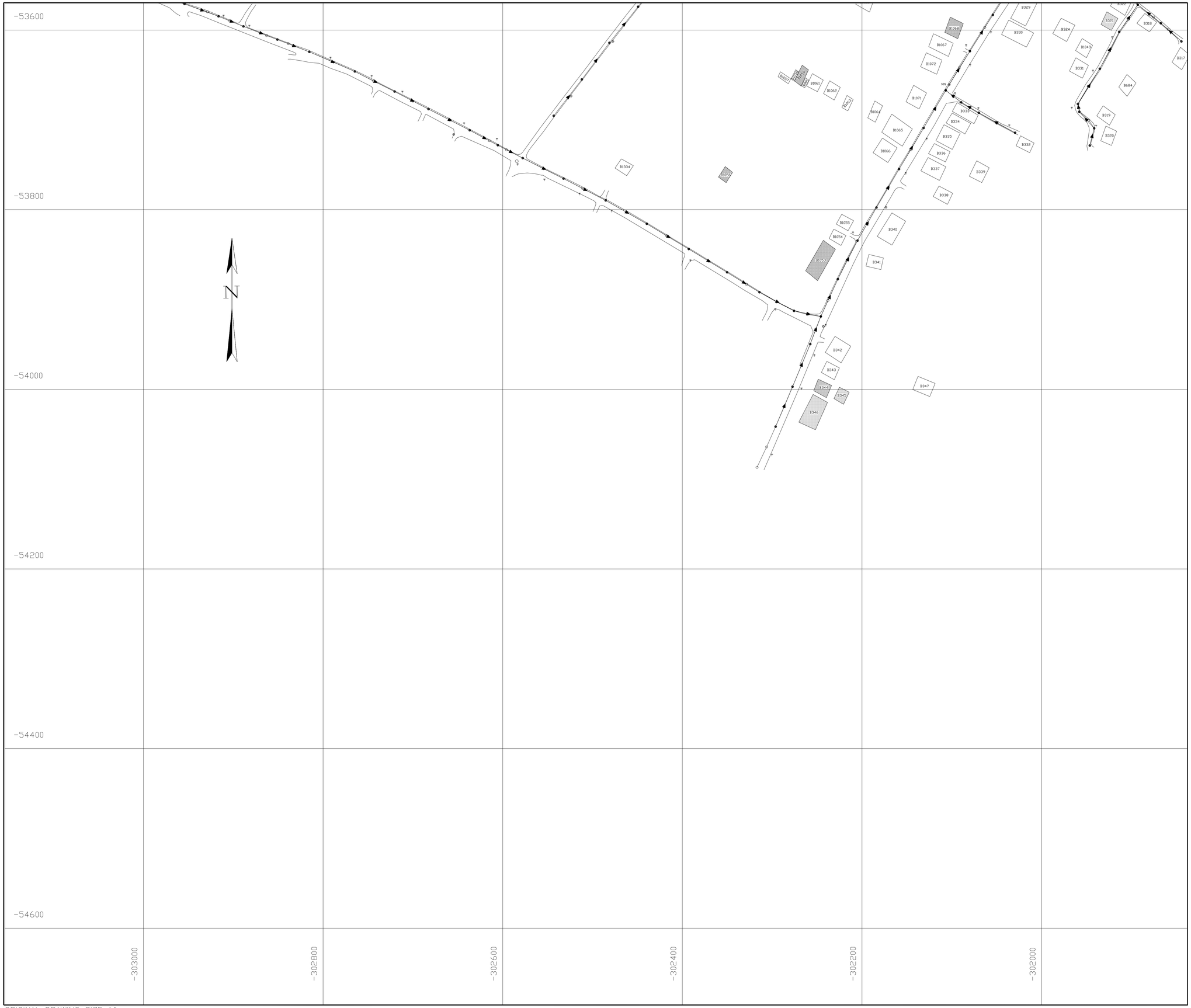
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

SAOUIRI WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	3/13	473WW-02-PL03

ORIGINAL DRAWING SIZE A1



NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3- WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5- THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

1-2-3 BUILDING	MANHOLE SEWER (mh-s)
bb: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS	MANHOLE WATER (mh-w)
U: UNDER CONSTRUCTION V: VILLA	MANHOLE TELEPHONE (mh-t)
PAVED ROAD	MANHOLE NOT IDENTIFIED (MH)
CONCRETE ROAD	LIGHTING POLE
TRACK/ SAND ROAD	ELECTRICAL / TELEPHONE POLE (EP/TP)
REFERENCE LINE	TOPOGRAPHICAL STATION
CHANNEL (channel)	ELECTRIC SUB STATION (EL.S.S)
TERRACE	ELECTRIC POLE/TELEGRAPH POLE
FENCE	STAKE POINT + STAKE NAME
STREAM/RIVER	SPOT HEIGHT (1160.12)
CULVERT/BRIDGE	PLOT No (1262)
SPRING (Spr)	BOUNDARY
WELL	CIRCONSCRIPTION BOUNDARY
DECIDUOUS/PINE TREE	CADASTRAL LIMITS
TREE	
ROCKS	
DownHill	
HighHill	

KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

SAOUIRI WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	2/13	473WW-02-PL02

ORIGINAL DRAWING SIZE A1

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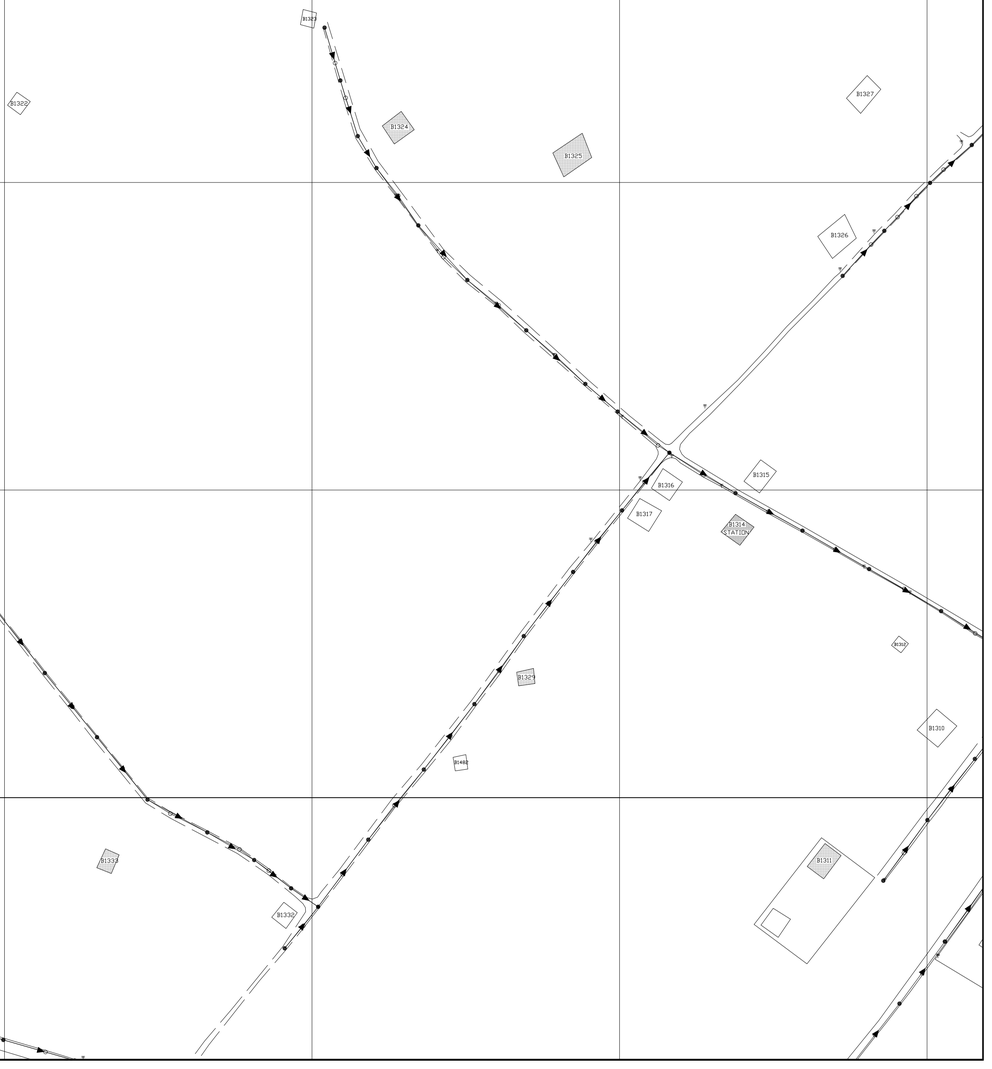
-53000

-53200

-53400



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PLAN LEGEND

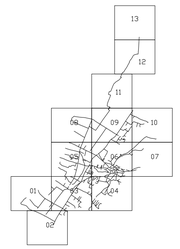
SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

1-2-3 BUILDING: 1-1 FLOOR+ 2 APARTMENTS + 3 SHOPS; UC UNDER CONSTRUCTION; V: VILLA	
PAVED ROAD	
CONCRETE ROAD	
TRACK/ SAND ROAD	
REFERENCE LINE	
channel CHANNEL	
TERRACE	
FENCE	
STREAM/RIVER	
CULVERT/BRIDGE	
Spr SPRING	
WELL	
DECIDUOUS/PINE TREE	
TREE	
ROCKS	
DownHill	
HighHill	
mh-s	MANHOLE SEWER
mh-w	MANHOLE WATER
mh-t	MANHOLE TELEPHONE
MH	MANHOLE NOT IDENTIFIED
	LIGHTING POLE
EP/TP	ELECTRICAL / TELEPHONE POLE
	TOPOGRAPHICAL STATION
EL.S.S	ELECTRIC SUB STATION
	ELECTRIC POLE/TELEGRAPH POLE
	STAKE POINT + STAKE NAME
1160.12	SPOT HEIGHT
1262	PLOT No
	BOUNDARY
	CIRCONSCRIPTION BOUNDARY
	CADASTRAL LIMITS

KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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SAOUIRI WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	1/13	473WW-02-PL01

ORIGINAL DRAWING SIZE A1

Bldg. Number	Type
B1	مصنع شامبو
B2	مصنع طيبة غذائية
B3	مصنع حديد
B4	مصنع خردوات حديد
B6	براد خضار
B15	قيدالإنشاء
B16	قيد الإنشاء
B18	مزرعة
B28	مزارع
B30	معمل قساطل
B32	معمل جييكو
B35	معمل النجار للبهارات
B36	مصنع مخلل
B38	مصنع كسارات حجر
B39	مصنع نايلون
B40	مصنع بلور
B42	مصنع علكة مهجور(مسكون)
B43	مصنع كسارة حجر
B48	مصنع غذائية
B49	مصنع كرتون
B50	مصنع رخام
B51	مصنع رخام
B53	جامع
B56	مصنع رخام
B57	مصنع رخام
B58	مصنع رخام
B60	قيدالإنشاء
B62	مصنع بلوك
B67	جامع
B72	مصنع غاز
B73	مصنع خردوات
B74	مصنع رخام
B75	مصنع رخام
B76	قيدالإنشاء
B79	مصنع حجر
B80	مصنع دلال كونتينار
B81	مصنع دلال كونتينار

B86	قيدالإنشاء
B87	مصنع جبنة
B89	مدرسة المرج
B93	مصنع مخلل
B96	مصنع بلوك
B97	مخيم نازحين عدد 5 خيمة
B98	مخيم نازحين عدد 15خيمة
B99	مخيم نازحين عدد 9خيمة
B100	مصنع الصقال كواتم صوت للمولدات
B101	مصنع خردوات
B102	مخيم نازحين عدد 45 خيمة
B103	مخيم نازحين عدد 13 خيمة
B105	مصنع قيد الانشاء
B107	مجمع كونتينارات
B109	مدرسة
B110	مصنع حلويات
B111	مصنع بلور مهجور
B113	قيدالإنشاء
B114	مصنع قهوة
B115	مدرسة
B116	مصنع جبنة مهجور
B117	الجامعةالعربية
B118	مصنع حجر
B119	مصنع حجر
B120	مول
B122	مصنع جبنة
B123	بنك بيروت
B124	قيد الإنشاء
B125	بنك الموارد
B127	محطة وقود
B129	قيدالإنشاء
B130	مصنع سيراميك فارغ
B131	مصنع بلاستيك
B132	مصنع غرف صغيرة
B133	مصنع سيراميك
B134	مصنع سيراميك
B135	مصنع حديد
B136	مصنع رمل

B139	مصنع تنك
B140	مصنع غاز
B141	مصنع زفت
B142	مصنع مهجور
B143	مصنع مهجور
B145	مخيم نازحين عدد 40 خيمة
B145	سنتر تجاري
B146	مؤسسة صميلي
B147	قيد الإنشاء
B148	قيد الإنشاء
B149	محطة وقود
B150	قيد الإنشاء
B151	كازينو
B152	معمل
B158	نازحين عدد 4خيمة
B159	محطة وقود
B160	قيد.الانشاء
B162	منشرة
B163	مجمع تجاري
B165	قيد الإنشاء
B169	سنتر تجاري
B173	مركز البلدية
B174	محطة وقود
B174	مكتب المختار
B175	معمل
B176	مجبل زفت
B178	مزرعة
B183	مخيم للنازحين
B184	مخيم نازحين عدد3
B186	مزرعة
B195	مخيم للنازحين
B196	مزرعة
B196	قيدالإنشاء
B197	مخيم نازحين عدد 18خيمة
B197	مزرعة
B198	مزرعة

B201	مصنع جبنة
B202	مصنع جبنة
B206	مزرعة
B207	مخيم نازحين 4 خيمة
B216	قيد الإنشاء
B231	خيمة نازحين عدد 2
B235	مزرعة بقر
B236	مصنع نايلون
B237	مصنع كرتون(ليبان ساك)
B238	مصنع حديد
B239	مخيم نازحين عدد 5 خيمة
B240	مصنع كونسروة
B242	مصنع بلوك
B247	مصنع بطاريات (العريبي)
B248	مصنع نحاس
B256	مصنع حديد
B257	مصنع حديد
B258	مخيم نازحين عدد 3 خيم
B259	مصنع بلوك
B260	مصنع حجر
B263	مصنع تجميع بلاستيك
B266	مخيم نازحين عدد 3خيم
B266	قيدالإنشاء
B267	قيدالإنشاء
B268	مصنع قساطل صحية
B269	مجمع صناعي
B270	مخيم نازحين عدد 40خيمة
B271	مزرعة
B281	قيد.الانشاء
B285	قيدالإنشاء
B286	قيدالإنشاء
B289	قيد.الانشاء
B306	محطةوقود
B307	مطعم.المحطة
B309	قيد الإنشاء
B321	قيدالإنشاء
B328	قيدالإنشاء
B344	قيد الإنشاء

B345	قيدالإنشاء
B346	قيد الإنشاء
B356	قيد الإنشاء
B363	قيدالإنشاء
B370	قيد الإنشاء
B387	قيد الإنشاء
B392	قيد الإنشاء
B398	قيد الإنشاء
B401	قيد الإنشاء
B407	مدرسة
B410	قيدالإنشاء
B411	قيدالإنشاء
B414	خيمة نازحين
B416	خزان-مياه
B417	قيدالإنشاء
B418	قيدالإنشاء
B420	قيدالإنشاء
B421	قيد الإنشاء
B431	قيد الإنشاء
B462	قيدالإنشاء
B466	غرفةكهرباء
B467	مقبرة
B471	ملعب
B473	قيدالإنشاء
B479	مقبرة
B481	قيد الإنشاء
B482	قيدالإنشاء
B485	قيدالإنشاء
B486	مزرعة
B487	قيدالإنشاء
B488	قيدالإنشاء
B494	قيدالإنشاء
B496	كراج
B505	قيد الإنشاء
B506	قيد الإنشاء
B507	قيد الإنشاء
B511	كراج

B512	قيدالإنشاء
B513	كراج
B514	قيد الإنشاء
B516	قيدالإنشاء
B517	قيد الإنشاء
B518	مزرعة
B519	قيدالإنشاء
B522	كراج
B524	قيد الإنشاء
B527	قيدالإنشاء
B531	قيدالإنشاء
B532	قيدالإنشاء
B534	قيدالإنشاء
B539	مزرعة
B543	مبرة
B550	مزرعة
B551	خيمة نازحين
B552	مزرعة
B607	مزرعة
B636	قيدالإنشاء
B665	جامع
B712	قيدالإنشاء
B717	قيدالإنشاء
B721	قيدالإنشاء
B765	قيدالإنشاء
B801	مزرعة
B802	قيدالإنشاء
B805	قيدالإنشاء
B806	مزرعة
B810	قيدالإنشاء
B826	نادي-رياضي
B830	قيدالإنشاء
B870	قيدالإنشاء
B911	خزان-مياه
B918	قيد الانشاء

B919	قيد الانشاء
B920	قيد الانشاء
B923	قيد الانشاء
B942	قيد الانشاء
B966	مصلى
B973	مزرعة
B1034	حظيرة
B1052	مركز جيش
B1053	قيد الإنشاء
B1056	قيد الإنشاء
B1059	هنغار
B1068	قيد الإنشاء
B1075	قيد الإنشاء
B1083	قيد الإنشاء
B1086	قيد الإنشاء
B1087	محطة وقود
B1088	قيد الإنشاء
B1138	قيد الإنشاء
B1140	قيد الإنشاء
B1152	قيد الإنشاء
B1155	قيد الإنشاء
B1162	مزرعة
B1165	قيد الإنشاء
B1166	قيد الإنشاء
B1167	قيد الإنشاء
B1168	قيد الإنشاء
B1169	قيد الإنشاء
B1172	قيد الإنشاء
B1182	قيد الإنشاء
B1186	قيد الإنشاء
B1189	قيد الإنشاء
B1191	قيد الإنشاء
B1192	قيد الإنشاء
B1193	قيد الإنشاء
B1194	قيد الإنشاء

B1211	قيد الإنشاء
B1214	قيد الإنشاء
B1218	مزرعة
B1228	مخيم نازحين عدد 23خيمة
B1233	قيد الإنشاء
B1235	قيد الإنشاء
B1236	قيد الإنشاء
B1241	قيد الإنشاء
B1242	قيد الإنشاء
B1243	قيد الإنشاء
B1245	قيد الإنشاء
B1250	مزرعة
B1255	قيد الإنشاء
B1256	قيد الإنشاء
B1257	قيد الإنشاء
B1258	قيد الإنشاء
B1259	قيد الإنشاء
B1260	قيد الإنشاء
B1261	قيد الإنشاء
B1266	قيد الإنشاء
B1267	قيد الإنشاء
B1271	قيد الإنشاء
B1273	قيد الإنشاء
B1280	محطة وقود
B1284	سنتر تجاري
B1291	مزرعة
B1294	مزرعة
B1297	قيد الإنشاء
B1300	قيد الإنشاء
B1301	قيد الإنشاء
B1311	فيلا+قيد الإنشاء
B1314	قيد الإنشاء
B1320	قيد الإنشاء
B1324	قيد الإنشاء
B1325	قيد الإنشاء

B1329	قيد الإنشاء
B1333	قيد الإنشاء
B1335	قيد الإنشاء
B1341	محطة وقود
B1353	قيد الإنشاء
B1364	قيد الإنشاء
B1365	قيد الإنشاء
B1367	قيد الإنشاء
B1392	مخيم نازحين عدد 15خيمة
B1393	قيد الإنشاء
B1394	قيد الإنشاء
B1397	مزرعة
B1399	قيد الإنشاء
B1403	قيد الإنشاء
B1407	قيد الإنشاء
B1410	قيد الإنشاء
B1411	قيد الإنشاء
B1414	مدرسة
B1420	قيد الإنشاء
B1422	مكتب اللواء أشرف ريفي
B1425	مدرسة
B1429	قيد الإنشاء
B1440	قيد الإنشاء
B1441	قيد الإنشاء
B1446	خيمة
B1469	قيد الإنشاء
B1470	قيد الإنشاء
B1479	مزرعة
B1481	قيد الإنشاء
B1490	قيد الانشاء
B1492	قيد الانشاء
B1496	قيد الانشاء
B1498	مقبرة
B1503	قيد الانشاء
B1504	قيد الانشاء

B1505	قيد الانشاء
B1506	قيد الانشاء
B1507	قيد الانشاء
B1511	مدرسة
B1516	قيد الانشاء
B1519	قيد الانشاء

Appendix E2: Key Prominent Features in Mraijet 1 Network System

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- Down Hill
- High Hill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

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FAX :(04) 712159

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

MRAIJAT (1) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-03-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	1/1	473WW-03-PL01

ORIGINAL DRAWING SIZE A1

Bldg. Number	Type
M31	كنيسة
M64	قيد الانشاء
M70	مركز البلدية
M97	محطة وقود
M103	سنتر تجاري
M257	قيد.الانشاء
M280	قيد.الانشاء
M297	معمل.كبيس
M301	قيد.الانشاء
M499	قيد.الانشاء
M503	قيد.الانشاء
M31	كنيسة
M64	قيد الانشاء
M70	مركز البلدية
M80	مطعم نبع الكازوز
M97	محطة وقود
M103	سنتر تجاري
M215	محطة قطار
M257	قيد.الانشاء
M280	قيد.الانشاء
M291	ملعب
M297	معمل.كبيس
M301	قيد.الانشاء
M308	مستودع.اخشاب
M499	قيد.الانشاء
M503	قيد.الانشاء

Appendix E3: Key Prominent Features in Bouerij 1 Network System

X = -308300 | X = -308100 | X = -307900 | X = -307700 | X = -307500 | X = -307300

Y=-36900

Y=-37100

Y=-37300

Y=-37500

Y=-37700

B504 B505 B506 B507

B524 B525 B517 B519 B518 B516 B262 B263 B260 B261 B258 B259 B264 B265 B266 B267 B268 B269 B270 B271 B116 B140

M10B M11 M10 M12 M13 M14 M15 M16 M17 M18 M19 M20 M20B M21 M22 M23 M24 M25 M26 M27 M28 M28B M29 M30 M31 M32 M33 M34 M35 M36 M37 M38 M39 M40 M40B M41 M42 M43 M44 M45 M46 M47 M48 M49 M50 M51 M52 M53 M54 M55 M56 M57 M58 M59 M60 M61 M62 M63 M64 M65 M66 M67 M68 M69 M70 M71 M72 M73 M74 M75 M76 M77 M78 M79 M80 M81 M82 M83 M84 M85 M86 M87 M88 M89 M90 M90B M91 M92 M93 M94 M95 M96 M97 M98 M99 M100 M100B M101 M102 M103 047 NA1' NA2' NA2B NA3' NA4 NA4B NA5 NA6' NA7 NA7B NA8

N

NOTES:

1– THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2– WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3– WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
4– WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5– THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6– ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

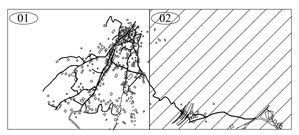
- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- bbb: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC UNDER CONSTRUCTION
- V: VILLA
- 1-2-3
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- mh–s MANHOLE SEWER
- mh–w MANHOLE WATER
- mh–t MANHOLE TELEPHONE
- MH MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 SPOT HEIGHT
- 1262 PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

N

KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

BOUAREJ (1) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW–04–PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	2/2	473WW–04–PL02

ORIGINAL DRAWING SIZE A1

X = -309700 | X = -309500 | X = -309300 | X = -309100 | X = -308900 | X = -308700 | X = -308500

Y=-36900

Y=-37100

Y=-37300

Y=-37500

Y=-37700

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3- WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5- THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

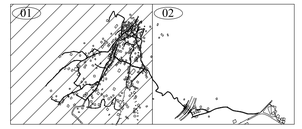
- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING (1-2-3 = 1 FLOOR+ 2 APARTMENTS + 3 SHOPS; U: UNDER CONSTRUCTION; V: VILLA)
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

N

KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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MINISTRY OF ENERGY AND WATER

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

BOUAREJ (1) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-04-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	1/2	473WW-04-PL01

ORIGINAL DRAWING SIZE A1

Bldg. Number	Type
B3	محطة وقود
B38	معمل
B39	معمل
B40	معمل
B42	معمل
B51	جامع
B60	مجمع تجاري
B62	معمل
B109	خيمةنازحين
B110	معمل أجبان وألبان
B111	معمل ألبان جابر
B118	مركزابحاث الجامعة العربية
B122	بنك bbac
B124	قيدالإنشاء
B125	محطة
B127	مصرف
B131	محطة وقود
B133	مدرسة
B147	سوبر ماركت
B260	قيدالإنشاء
B266	محطةوقود
B421	قيدالإنشاء
B471	قيدالإنشاء
B481	قيدالإنشاء
B506	قيدالإنشاء
B517	مزرعة
B522	مزرعة

Appendix E4: Key Prominent Features in Bouerij 2 and Mraijet 2 Network System

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3- WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5- THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELS.S ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 SPOT HEIGHT
- 1262 PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

BOUAREJ (2) & MRAIJAT (2) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-05-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	3/3	473WW-05-PL03

X = -308300
X = -308100
X = -307900
X = -307700
X = -307500
X = -307300
X = -307100

ORIGINAL DRAWING SIZE A1

Y=-38300

Y=-38500

Y=-38700

Y=-38900

Y=-39100

X = -309700 | X = -309500 | X = -309300 | X = -309100 | X = -308900 | X = -308700 | X = -308500

MH-60

MH-59

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
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6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

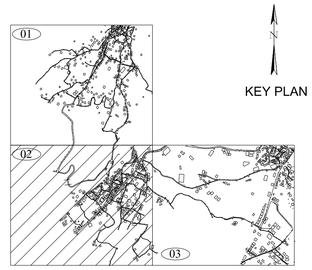
SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- 1-2-3 — BUILDING (1-2-3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS; UC: UNDER CONSTRUCTION; V: VILLA)
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- channel — CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- Spr — SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- mh-s — MANHOLE SEWER
- mh-w — MANHOLE WATER
- mh-t — MANHOLE TELEPHONE
- MH — MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP — ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S — ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 — SPOT HEIGHT
- 1262 — PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

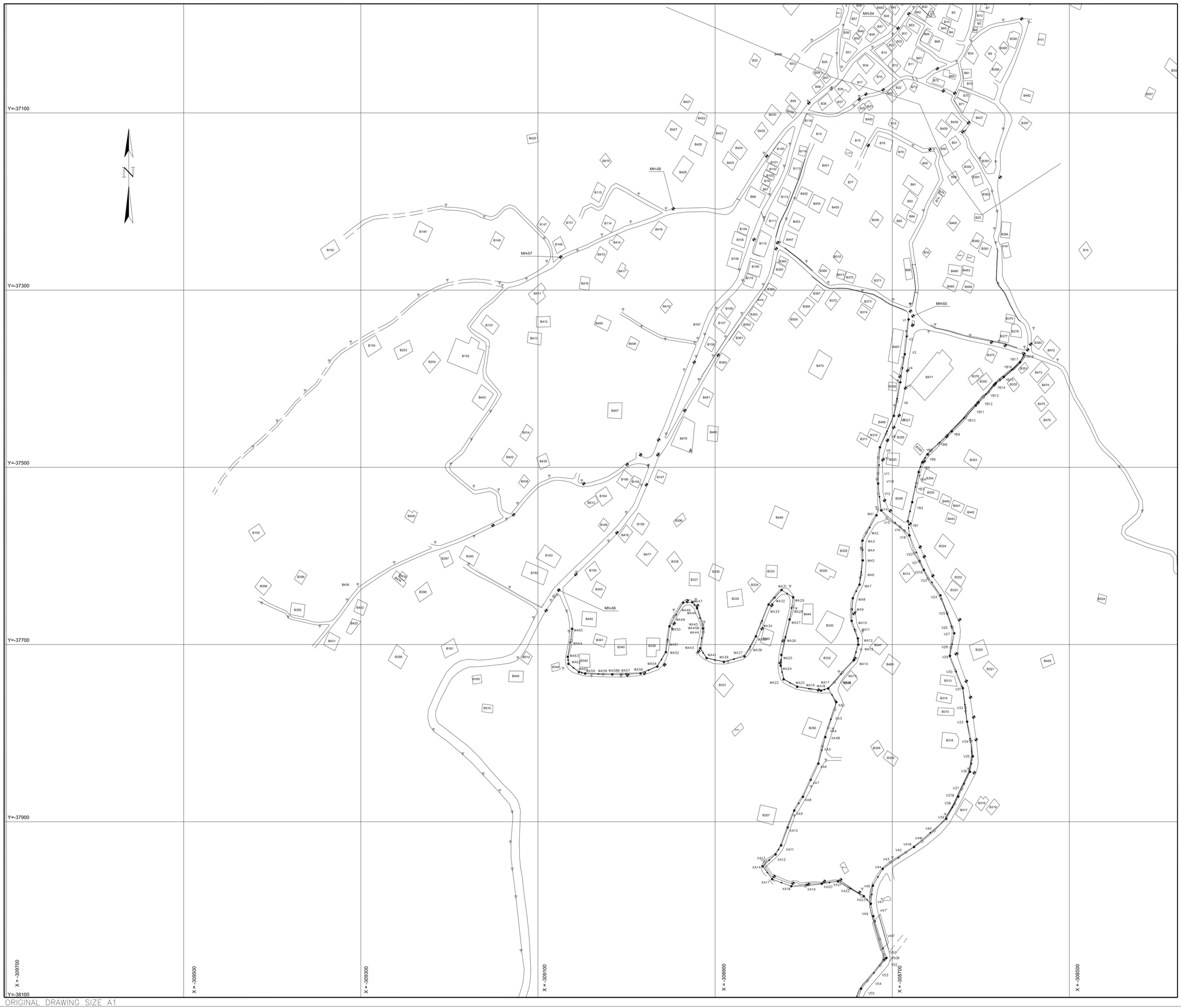
BOUAREJ (2) & MRAIJAT (2) WASTEWATER NETWORK

PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-05-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	2/3	473WW-05-PL02

ORIGINAL DRAWING SIZE A1



NOTES:

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
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- DECIDUOUS/PINE TREE
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- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

BOUAREJ (2) & MRAIJAT (2) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-05-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	1/3	473WW-05-PL01

ORIGINAL DRAWING SIZE A1

Bldg. Number	Type
MA340	قيد.الانشاء
MA341	قيد.الانشاء
MA342	قيد.الانشاء
MA343	قيد.الانشاء
MA344	جامع
MA348	قيد.الانشاء
MA359	قيد.الانشاء
MA376	مدرسة
MA384	محطةوقود
MA385	البلدية
MA405	جامع
MA434	قيد.الانشاء
MA438	مخيم-نازحين-عدد3خيمة
MA443	قيد.الانشاء
MA444	قيد.الانشاء
MA445	قيد.الانشاء
MA446	قيد.الانشاء
MA447	قيد.الانشاء
MA451	محطةوقود

Appendix E5: Key Prominent Features in Makse 1 Network System

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1+2+3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
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- MANHOLE TELEPHONE
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- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
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- PLOT No
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- CADASTRAL LIMITS

KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

MAKSE (1) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-06-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	2/2	473WW-06-PL02

ORIGINAL DRAWING SIZE A1

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
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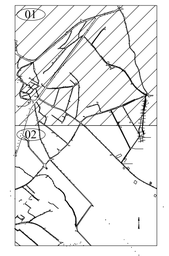
PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING (1-2-3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS; U: UNDER CONSTRUCTION; V: VILLA)
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
JALL ED DIB – HAJAL Bldg
P.O.BOX:70492 – ANTELIAS
PHONE:(04) 712157/712158 (03) 291016
FAX :(04) 712159

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

MAKSE (1) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-06-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	1/2	473WW-06-PL01

ORIGINAL DRAWING SIZE A1

Bldg. Number	Type
MA533	قيد.الانشاء
MA545	قيد.الانشاء
MA551	قيد.الانشاء
MA552	قيد.الانشاء
MA553	قيد.الانشاء
MA556	مصنع بلوك
MA590	خيمة نازحين
MA591	خيمة نازحين
MA627	قيد.الانشاء
MA671	قيد.الانشاء
MA703	مخيم-نازحين-عدد5خيمة
MA786	مصنع حليب
MA792	مزرعة
MA799	مدرسة نازحين سوريين

Appendix E6: Key Prominent Features in Makse 2 Network System

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3- WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5- THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

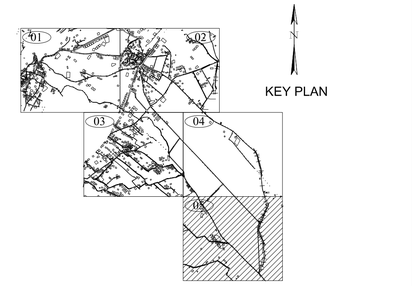
PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- mh-s: MANHOLE SEWER
- mh-w: MANHOLE WATER
- mh-t: MANHOLE TELEPHONE
- MH: MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP: ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S: ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12: SPOT HEIGHT
- 1262: PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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PHONE:(04) 712157/712158 (03) 291016
FAX :(04) 712159

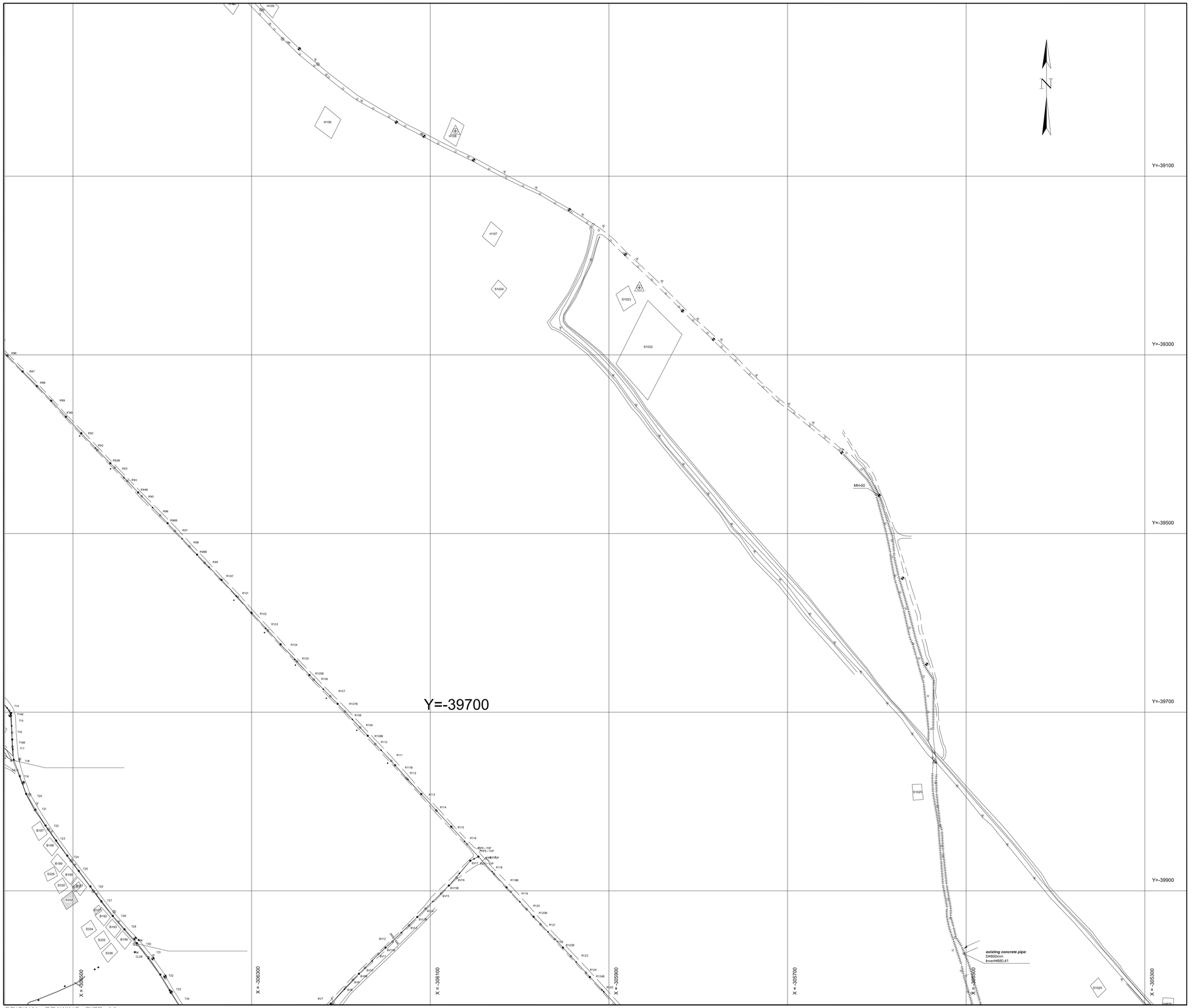
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

MAKSE (2) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-07-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	5/5	473WW-07-PL05

ORIGINAL DRAWING SIZE A1



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6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
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- ELECTRIC POLE/TELEGRAPH POLE
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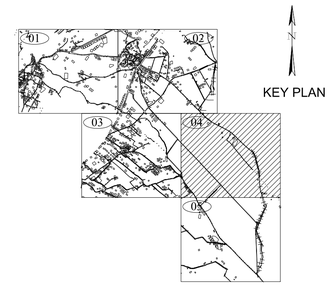
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

MAKSE (2) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-07-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	4/5	473WW-07-PL04

ORIGINAL DRAWING SIZE A1

NOTES:

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
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- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

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MINISTRY OF ENERGY AND WATER

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FAX :(04) 712159

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

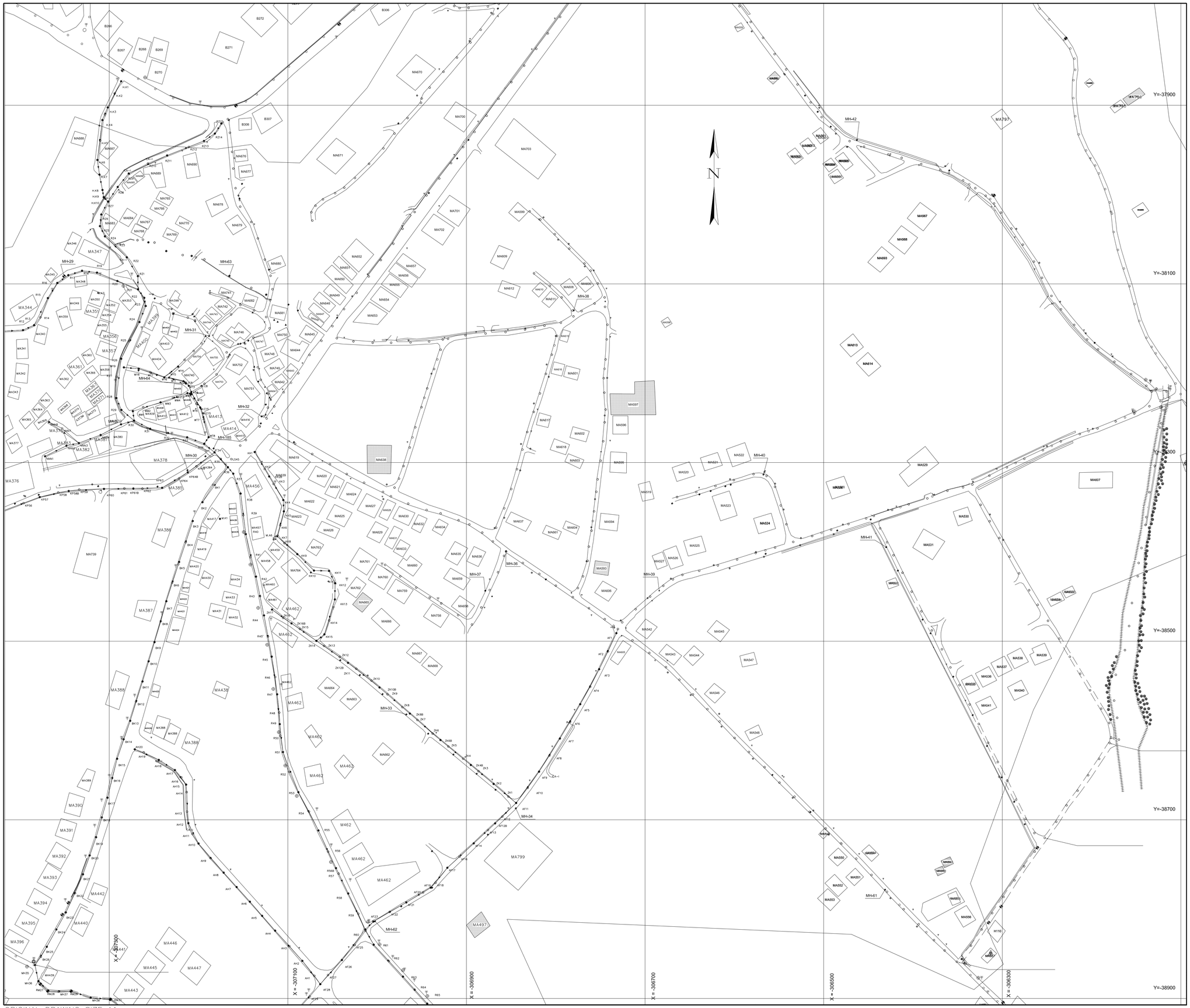
MAKSE (2) WASTEWATER NETWORK

PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-07-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	3/5	473WW-07-PL03

ORIGINAL DRAWING SIZE A1



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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3
- bb: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
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- ROCKS
- Down Hill
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- mh-s MANHOLE SEWER
- mh-w MANHOLE WATER
- mh-t MANHOLE TELEPHONE
- MH MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP ELECTRICAL / TELEPHONE POLE
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- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 SPOT HEIGHT
- 1262 PLOT No
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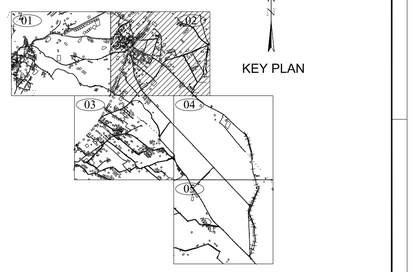
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

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FAX :(04) 712159

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

MAKSE (2) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-07-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	2/5	473WW-07-PL02

ORIGINAL DRAWING SIZE A1

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
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- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
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- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
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- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
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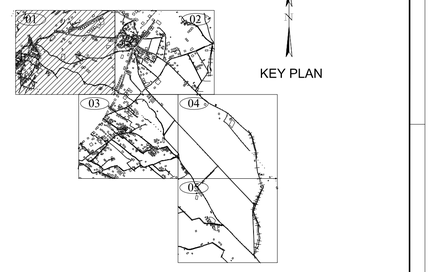
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

MAKSE (2) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-07-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
AUGUST 2018	1:2000	1/5	473WW-07-PL01

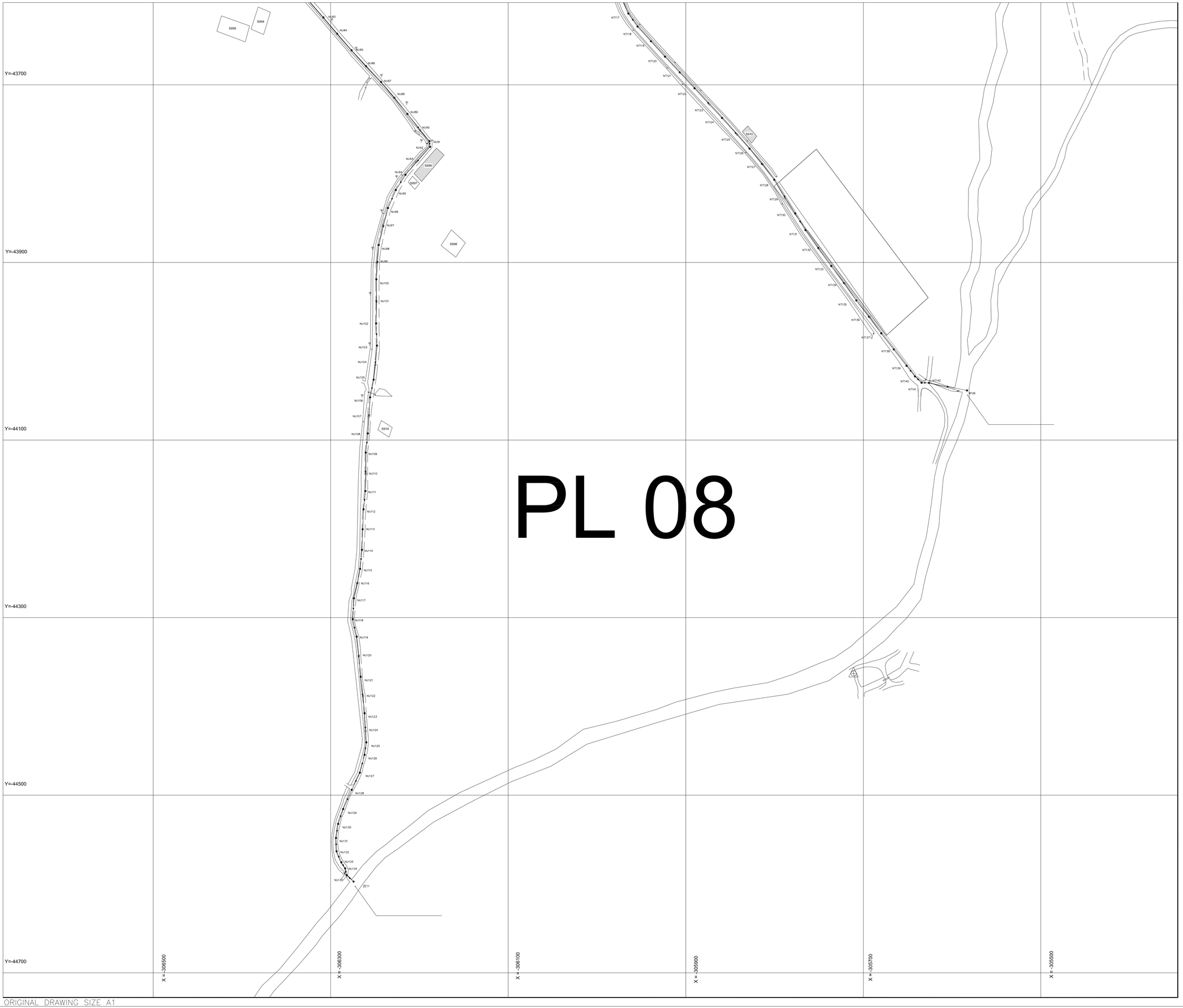
ORIGINAL DRAWING SIZE A1

Bldg. Number	Type
S176	محطة وقود
S228	قيد الإنشاء
S232	كنيسة
S237	قيد الإنشاء
S238	قيد الإنشاء
S241	قيد الإنشاء
S245	كنيسة
S255	قيد الإنشاء
S272	مزرعة
S285	مصنع رمل
S287	قيد الإنشاء
S288	مزرعة دواجن
S300	المدرسة الانجيلية
S310	قيد الإنشاء
S314	قيد الإنشاء
S325	مصنع بلاستيك
S332	قيد الإنشاء
S356	قيد الإنشاء
S359	قيد الإنشاء
S394	قيد الإنشاء
S403	قيد الإنشاء
S404	قيد الإنشاء
S409	قيد الإنشاء
S411	قيد الإنشاء
S412	قيد الإنشاء
S420	جامع
S421	مركز البلدية
S438	قيد الإنشاء
S466	جامع
S467	السفارة البرازيلية
S468	مدرسة
S516	قيد الإنشاء
S562	قيد الإنشاء
S572	مخيم نازحين عدد 5 خيم

S573	مخيم نازحين عدد 45 خيم
S581	مخيم نازحين عدد 32 خيمة
S582	مدرسة
S583	مخيم نازحين عدد 50 خيمة
S585	مخيم نازحين عدد 30 خيمة
S597	مصنع مواد غذائية
S621	قيد الإنشاء
S627	قيد الإنشاء
S628	قيد الإنشاء
S629	قيد الإنشاء
S642	مصنع لبنة
S657	جامع
S686	مخيم نازحين عدد 76خيمة
S687	مخيم نازحين عدد 136خيمة
S696	قيد الإنشاء
MA497	قيد.الانشاء
MA558	مصنع شتورة
MA560	خيمة نازحين
MA569	معمل شتورة
MA592	خيمة نازحين
MA593	قيد.الانشاء
MA597	مصنع فرط سيارات
MA638	جامع
MA640	مصنع رخام
MA691	خيمة نازحين
MA692	خيمة نازحين
MA695	محطة وقود
MA704	قيد.الانشاء
MA706	قيد.الانشاء
MA714	قيد.الانشاء
MA716	معمل تصليح كميونات
MA718	قيد.الانشاء
MA719	قيد.الانشاء
MA720	قيد.الانشاء
MA721	قيد.الانشاء
MA723	معمل زجاج
MA731	قيد.الانشاء

MA732	قيد.الانشاء
MA773	قيد.الانشاء
MA774	قيد.الانشاء
MA775	قيد.الانشاء
MA777	قيد.الانشاء
MA778	قيد.الانشاء
MA781	مزرعة
MA782	مزرعة
MA796	مزرعة

Appendix E7: Key Prominent Features in Qabb Elias 1 Network System



PL 08

NOTES:

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1+2+3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
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- TRACK/ SAND ROAD
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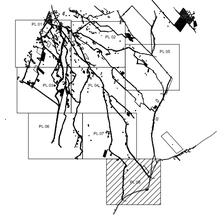
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
JALL ED DIB – HAJAL Bldg
P.O.BOX:70492 – ANTELIAS
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FAX :(04) 712159

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

QABBELIAS TO ITALIAN	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-08-PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	8/8	473WW-08-PL08

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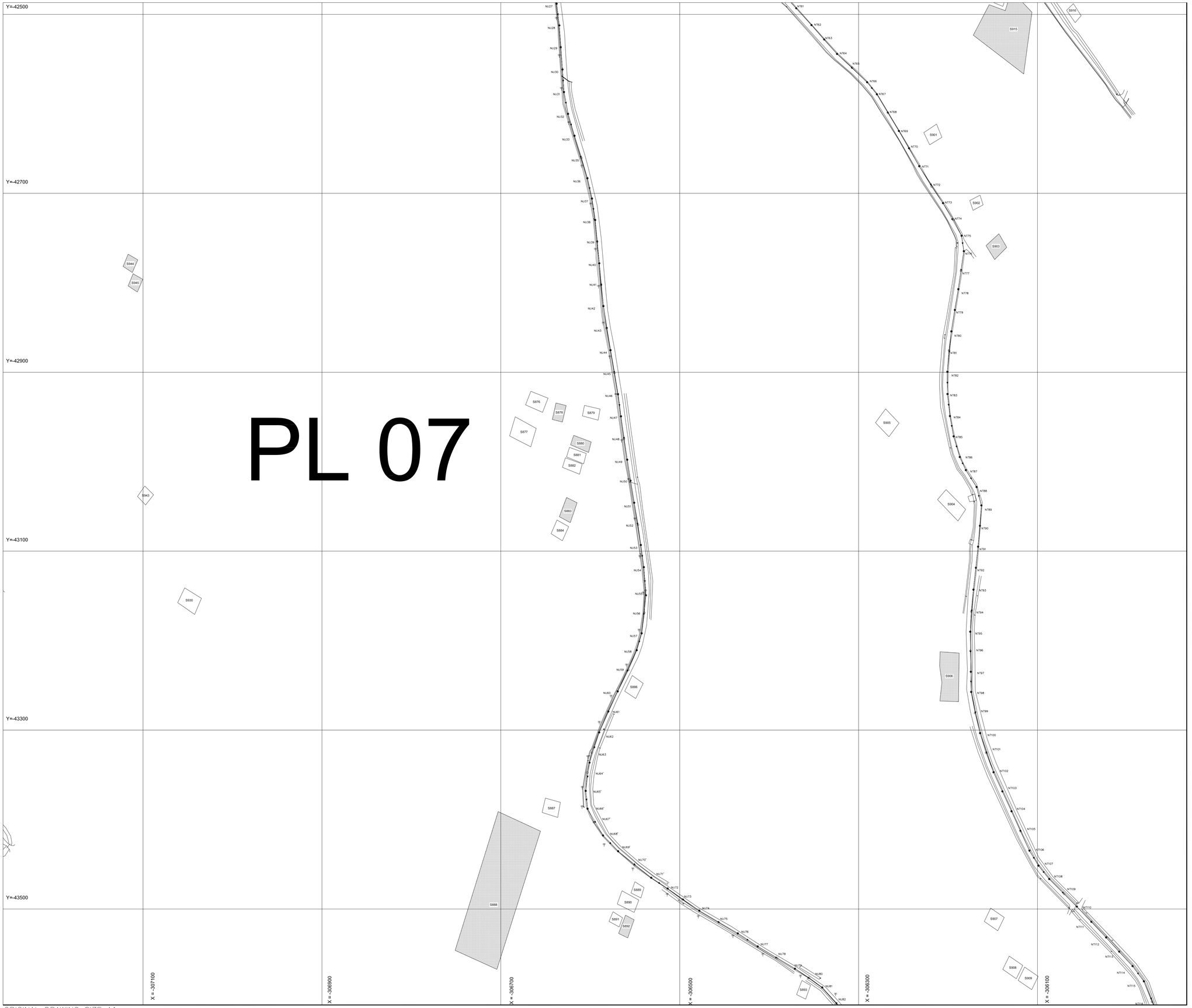

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6– ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

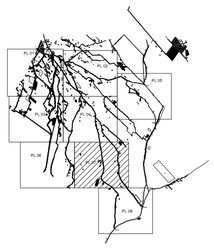
PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

1-2-3	BUILDING
	bb1: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
	U: UNDER CONSTRUCTION
	V: VILLA
	PAVED ROAD
	CONCRETE ROAD
	TRACK/ SAND ROAD
	REFERENCE LINE
channel	CHANNEL
	TERRACE
	FENCE
	STREAM/RIVER
Spr	CULVERT/BRIDGE
	SPRING
	WELL
	DECIDUOUS/PINE TREE
	TREE
	ROCKS
	DownHill
	HighHill
mh–s	MANHOLE SEWER
mh–w	MANHOLE WATER
mh–t	MANHOLE TELEPHONE
MH	MANHOLE NOT IDENTIFIED
	LIGHTING POLE
EP/TP	ELECTRICAL / TELEPHONE POLE
	TOPOGRAPHICAL STATION
EL.S.S	ELECTRIC SUB STATION
	ELECTRIC POLE/TELEGRAPH POLE
	STAKE POINT + STAKE NAME
1160.12	SPOT HEIGHT
1262	PLOT No
	BOUNDARY
	CIRCONSCRIPTION BOUNDARY
	CADASTRAL LIMITS



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QABBELIAS TO ITALIAN	PLAN

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473WW–08–PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	7/8	473WW–08–PL07

ORIGINAL DRAWING SIZE A1

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Y=-42900

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Y=-43300

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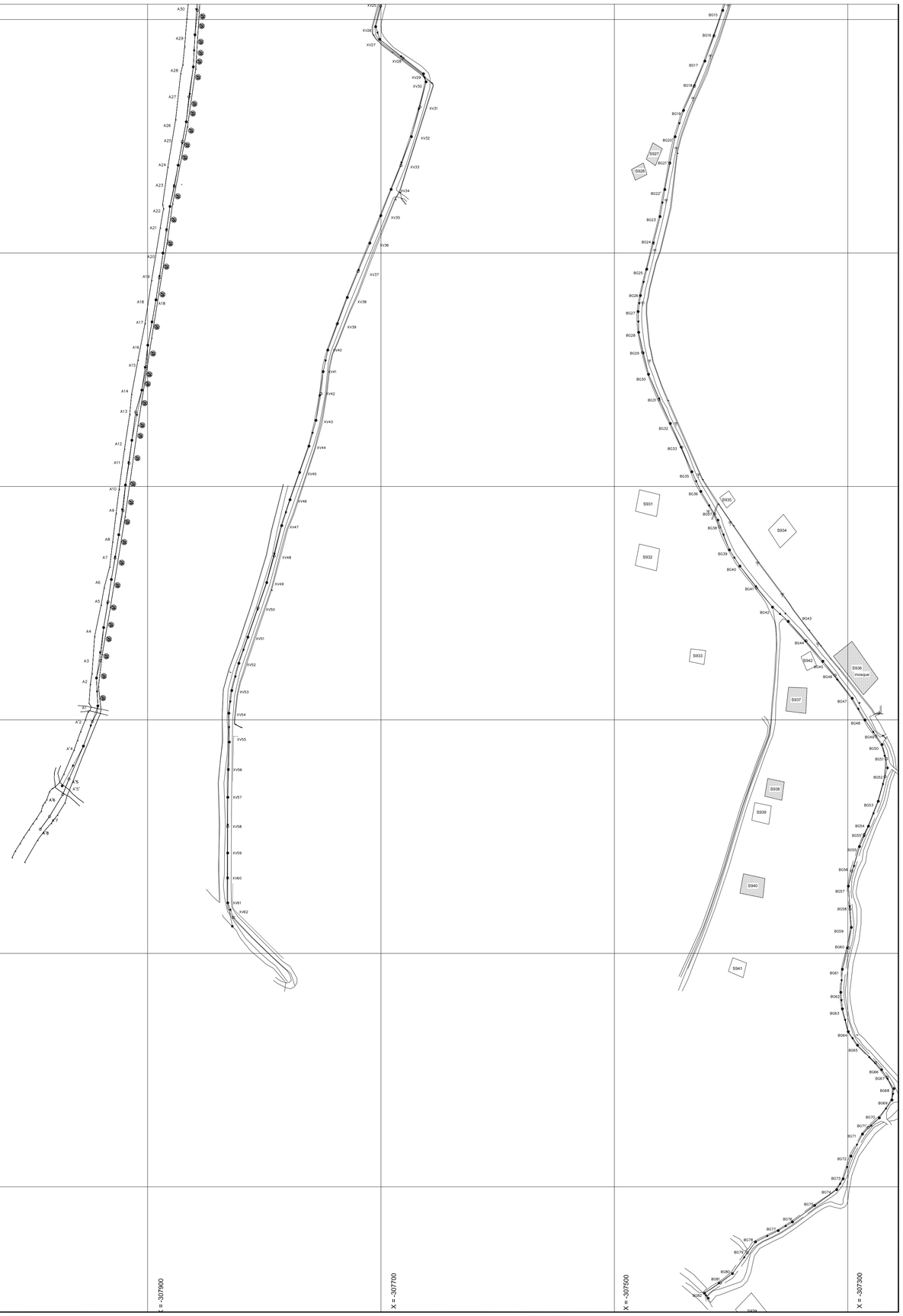
PL 06



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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

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QABBELIAS TO ITALIAN	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-08-PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	6/8	473WW-08-PL06

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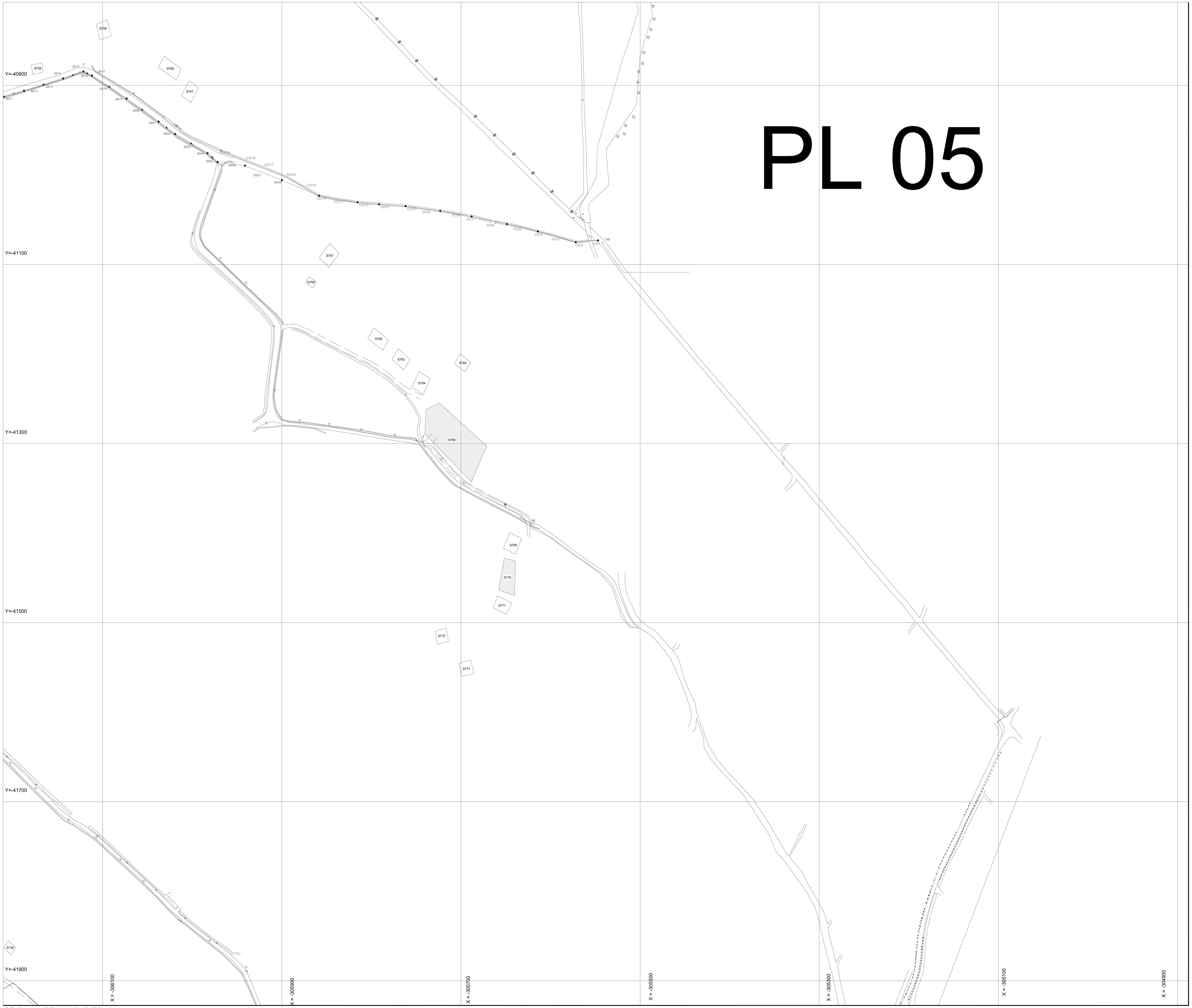

ORIGINAL DRAWING SIZE A1

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
  - 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
  - U: UNDER CONSTRUCTION
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- PAVED ROAD
- CONCRETE ROAD
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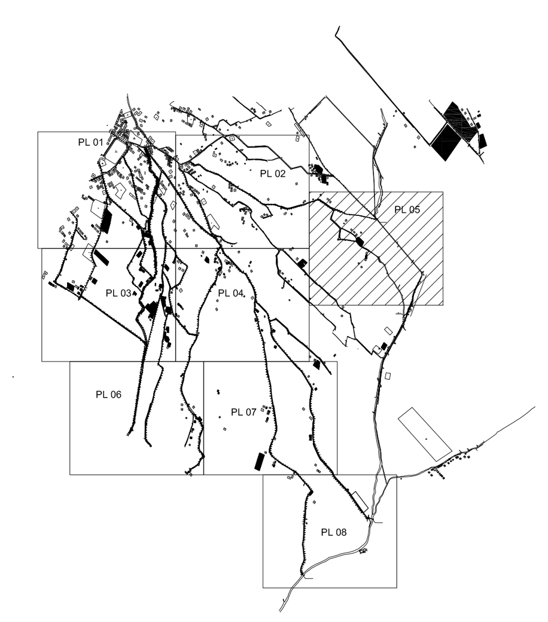
- DownHill
- High-Hill
- mh-s MANHOLE SEWER
- mh-w MANHOLE WATER
- mh-t MANHOLE TELEPHONE
- MH MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 SPOT HEIGHT
- 1262 PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



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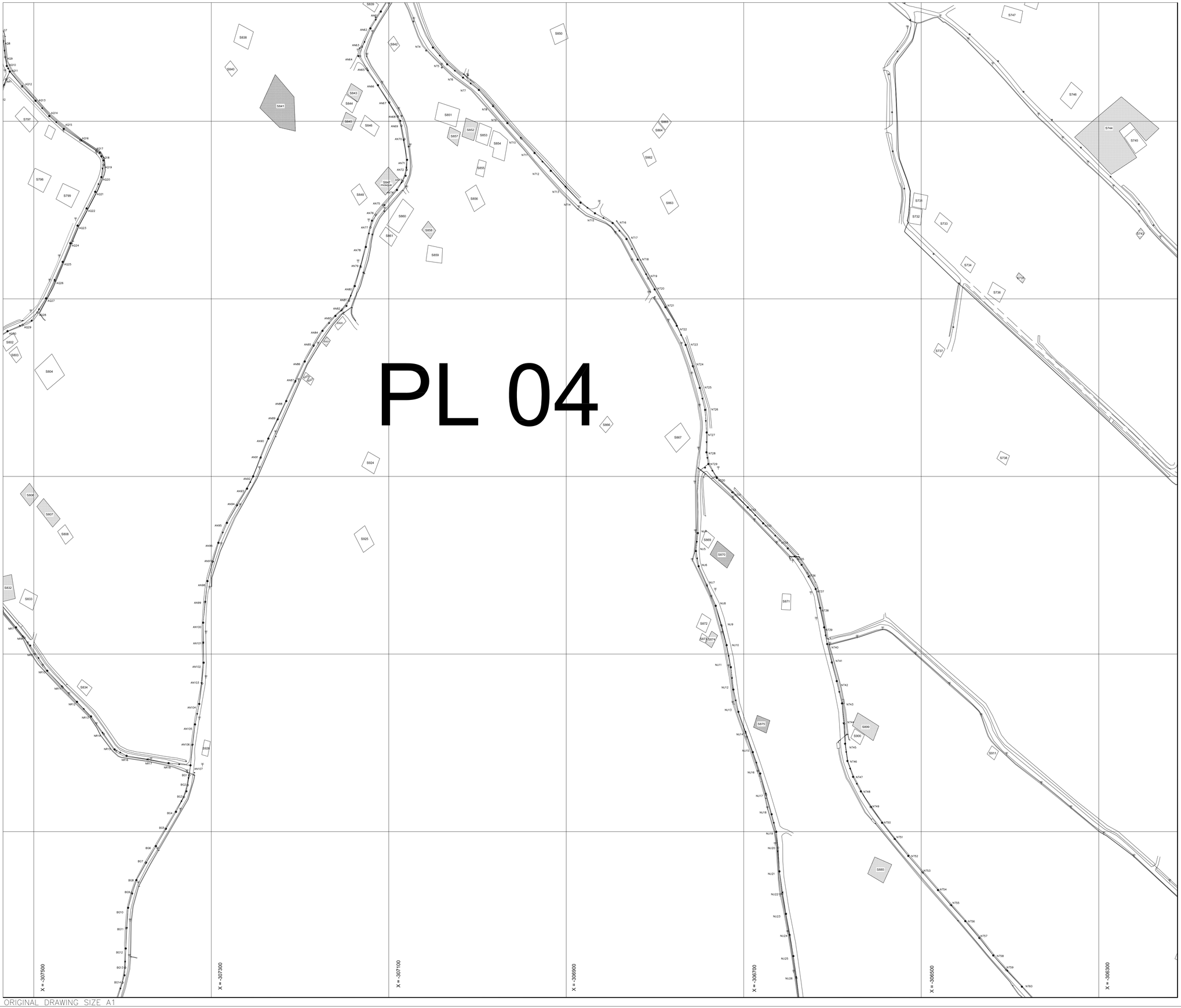
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

QABBELIAS TO ITALIAN	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-08-PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	5/8	473WW-08-PL05

PL 04



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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
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TOPOGRAPHICAL LEGEND

- BUILDING
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Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

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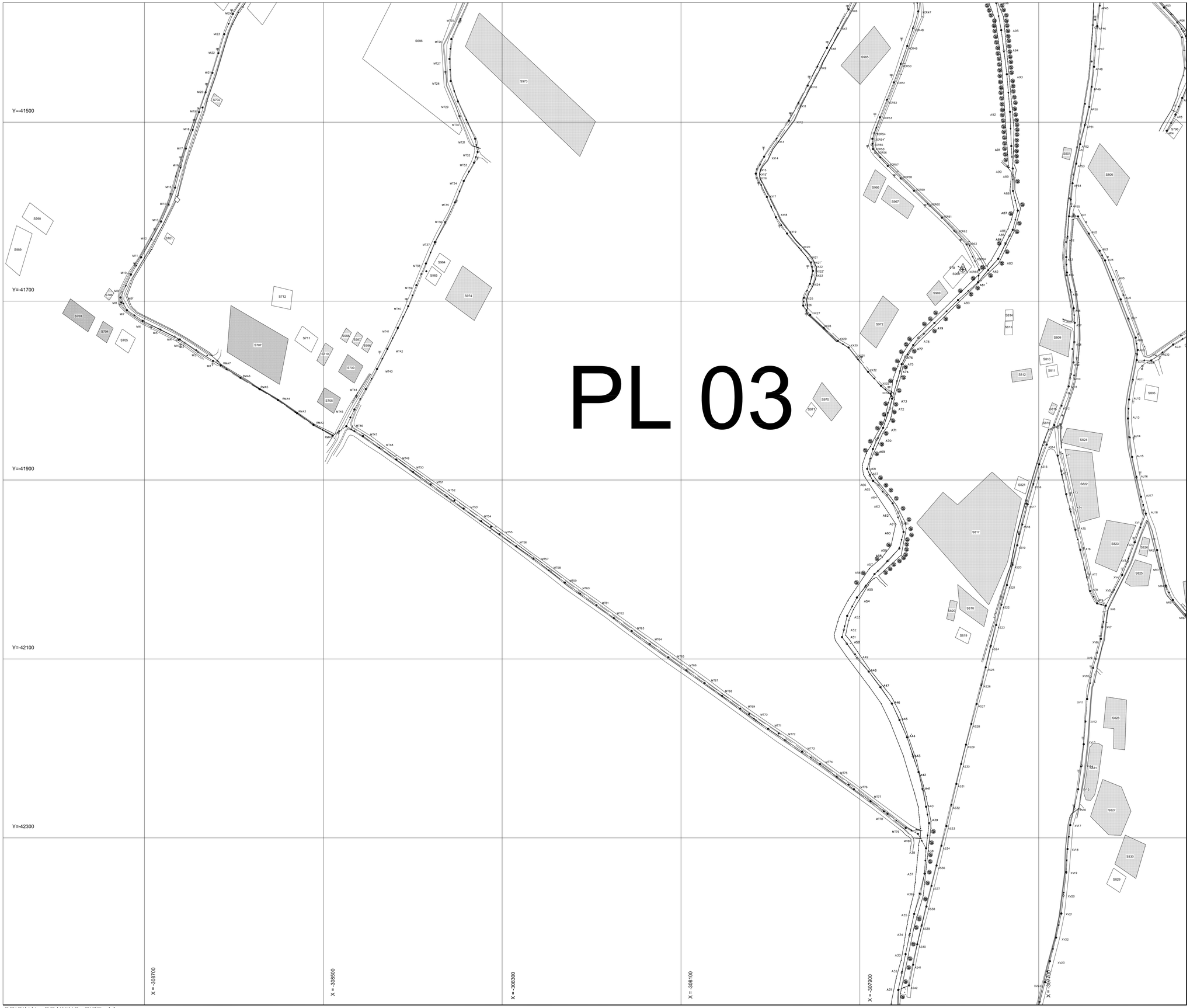
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

QABBELIAS TO ITALIAN	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-08-PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	4/8	473WW-08-PL04

ORIGINAL DRAWING SIZE A1



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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
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- EXISTING MANHOLE
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TOPOGRAPHICAL LEGEND

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- HighHill
- MANHOLE SEWER
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- MANHOLE TELEPHONE
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- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
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- SPOT HEIGHT
- PLOT No
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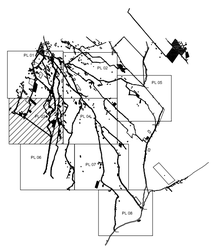
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

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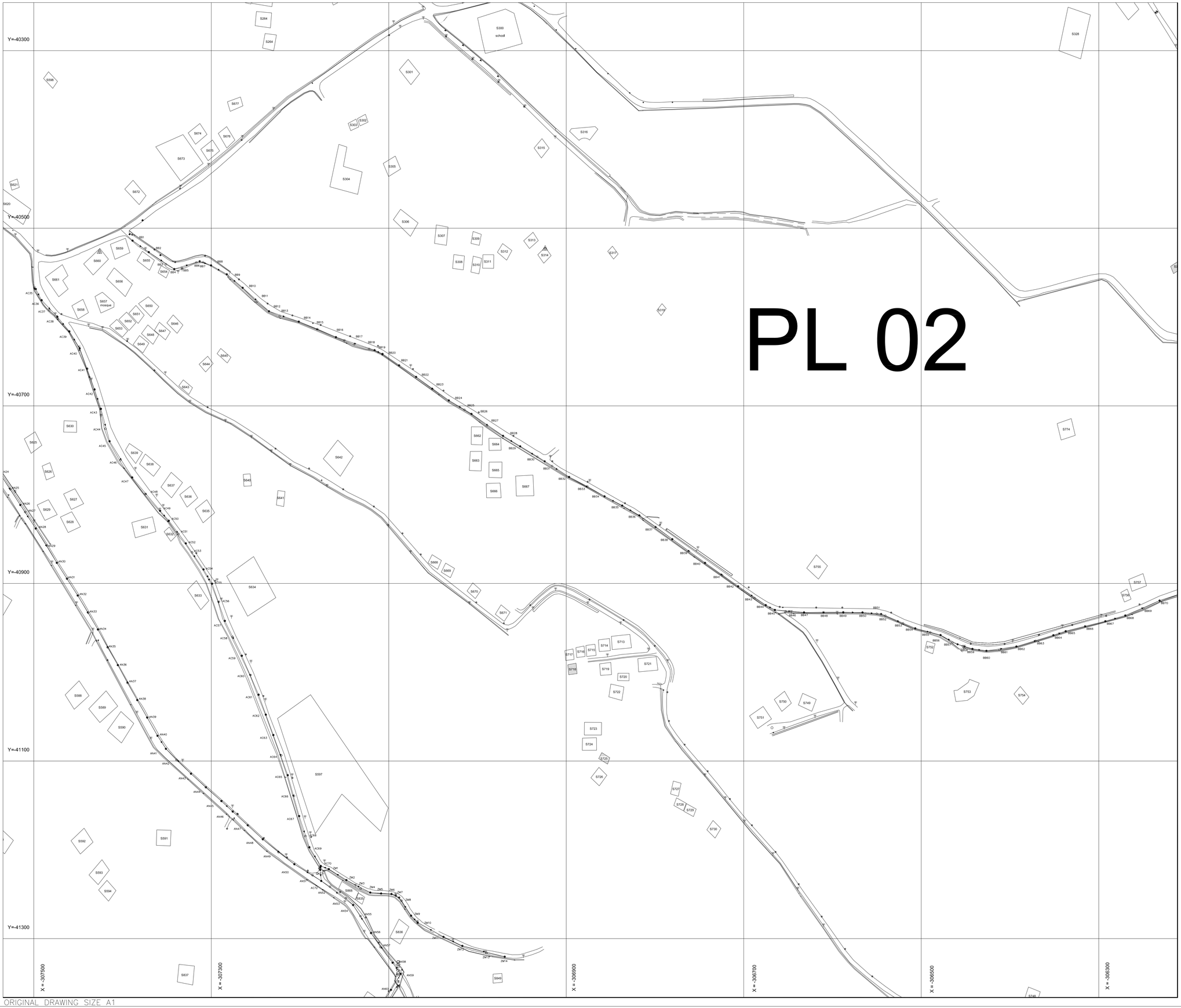
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

QABBELIAS TO ITALIAN	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-08-PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	3/8	473WW-08-PL03

ORIGINAL DRAWING SIZE A1



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PLAN LEGEND

SEWER NETWORK

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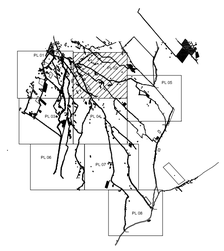

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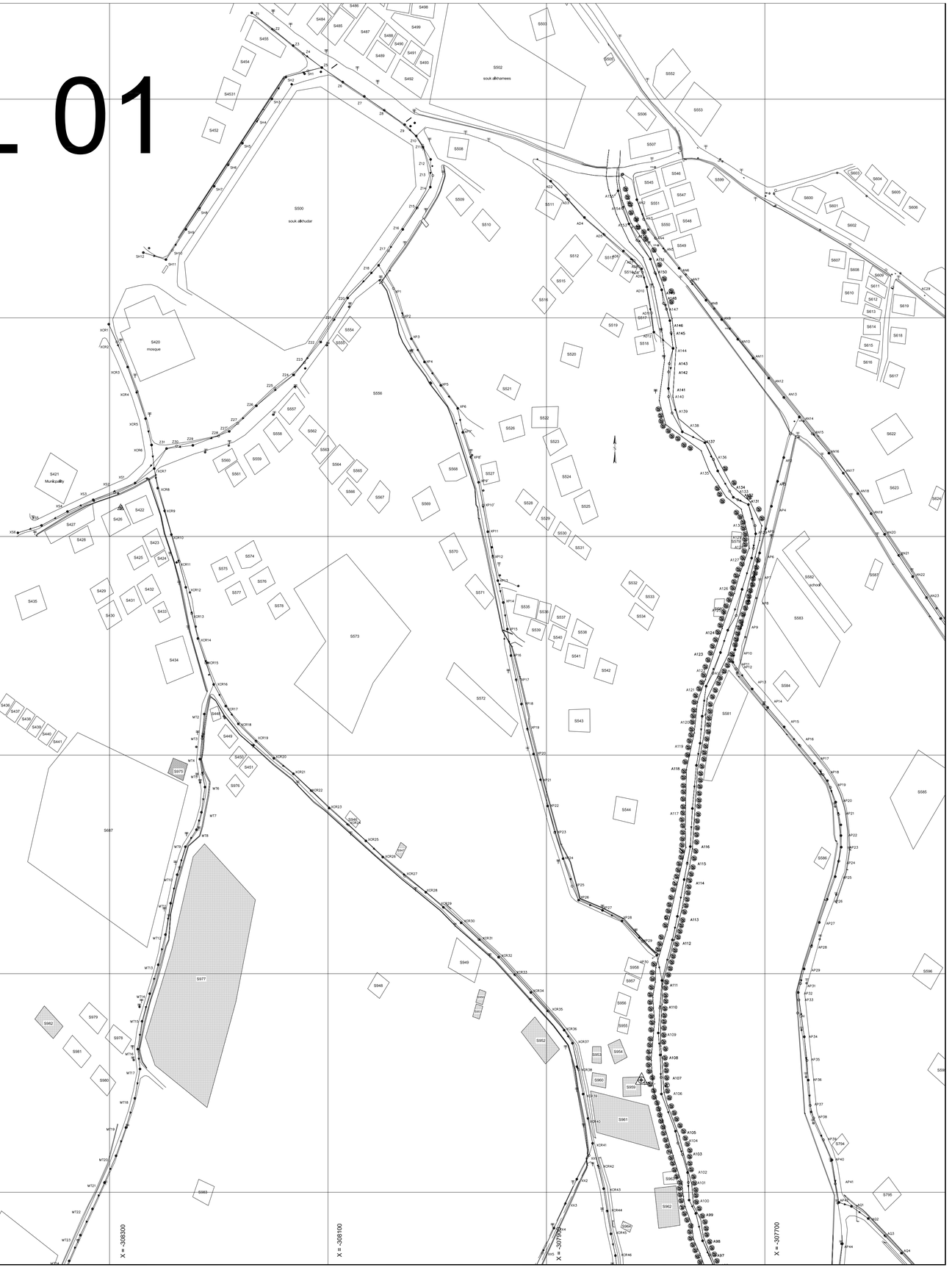
QABBELIAS TO ITALIAN	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-08-PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	2/8	473WW-08-PL02

ORIGINAL DRAWING SIZE A1

PL 01



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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- 1-2-3 — BUILDING; hb3:1 FLOOR+ 2 APARTMENTS + 3 SHOPS; UC: UNDER CONSTRUCTION; V: VILLA
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- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- channel — CHANNEL
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- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
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- mh-w — MANHOLE WATER
- mh-t — MANHOLE TELEPHONE
- MH — MANHOLE NOT IDENTIFIED
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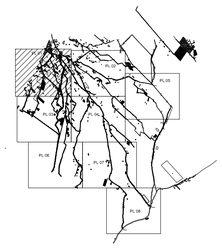
- CADASTRAL LIMITS



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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

QABBELIAS TO ITALIAN	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-08-PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	1/8	473WW-08-PL01

ORIGINAL DRAWING SIZE A1

Bldg. Number	Type
S703	قيد الإنشاء
S704	قيد الإنشاء
S707	مزرعة خيل
S708	قيد الإنشاء
S709	قيد الإنشاء
S718	قيد الإنشاء
S725	مزرعة
S744	مزرعة
S766	مخيم نازحين عدد 27خيمة
S770	مزرعة
S778	مزرعة
S781	قيد الإنشاء
S783	مخيم نازحين عدد 22خيمة
S788	مخيم نازحين عدد 27خيمة
S790	مزرعة
S792	مزرعة
S793	مزرعة
S800	مخيم نازحين عدد 9خيمة
S806	قيد الإنشاء
S807	قيد الإنشاء
S809	مزرعة
S812	مزرعة
S817	مصنع بلاستيك
S818	مخيم نازحين عدد 7خيم
S820	مزرعة
S822	مزرعة
S823	مزرعة
S824	مخيم نازحين عدد5خيم
S825	مزرعة
S827	مزرعة
S830	مزرعة
S831	مخيم نازحين عدد5خيم
S832	مصنع قمح
S841	مخيم نازحين عدد 4 خيم

S843	قيد الإنشاء
S845	قيد الإنشاء
S847	جامع
S852	قيد الإنشاء
S858	قيد الإنشاء
S870	مزرعة
S875	قيد الإنشاء
S880	مزرعة
S883	مزرعة
S885	قيد الإنشاء
S888	مصنع قرميد
S892	مزرعة
S896	مزرعة
S903	قيد الإنشاء
S906	خيم نازحين عدد 4
S915	مزرعة
S936	جامع
S937	قيد الإنشاء
S938	قيد الإنشاء
S940	قيد الإنشاء
S944	قيد الإنشاء
S945	قيد الإنشاء
S952	قيد الإنشاء
S953	قيد الإنشاء
S954	قيد الإنشاء
S959	قيد الإنشاء
S960	قيد الإنشاء
S961	مصنع حجر
S962	مزرعة
S965	مزرعة
S966	قيد الإنشاء
S967	مزرعة
S969	مزرعة
S970	مزرعة
S972	مزرعة

S973	مخيم نازحين عدد 36 خيم
S974	مخيم نازحين عدد 30 خيم
S975	قيد الإنشاء
S977	مخيم نازحين عدد 70 خيم
S982	قيد الإنشاء
S991	مصنع الفا-غذائية
S992	مصنع عصير
S993	مخيم نازحين عدد 9 خيم
S994	مصنع حبوب
S1002	خيم عدد 3
S702	خيمة
S703	قيد الإنشاء
S704	قيد الإنشاء
S706	خيمة
S707	مزرعة خيل
S708	قيد الإنشاء
S709	قيد الإنشاء
S710	خيمة
S735	خيمة
S743	خيمة
S744	مزرعة
S770	مزرعة
S793	مزرعة
S800	مخيم نازحين عدد 9خيمة
S801	غرفة كونتينر
S806	قيد الإنشاء
S807	قيد الإنشاء
S809	مزرعة
S812	مزرعة
S815	خيمة
S817	مصنع بلاستيك
S818	مخيم نازحين عدد 7خيم
S820	مزرعة
S822	مزرعة
S823	مزرعة

S824	مخيم نازحين عدد5خيم
S825	مزرعة
S826	خيمة
S827	مزرعة
S828	خيمة
S830	مزرعة
S831	مخيم نازحين عدد5خيم
S832	مصنع قمح
S841	مخيم نازحين عدد 4 خيم
S843	قيد الإنشاء
S845	قيد الإنشاء
S847	جامع
S852	قيد الإنشاء
S857	كراج
S858	قيد الإنشاء
S870	مزرعة
S874	براد خضار وفواكه
S875	قيد الإنشاء
S878	خيمة
S880	مزرعة
S883	مزرعة
S885	قيد الإنشاء
S888	مصنع قرميد
S892	مزرعة
S896	مزرعة
S899	خيمة عدد 2
S903	قيد الإنشاء
S906	خيم نازحين عدد 4
S910	خيمة
S915	مزرعة
S921	خيمة
S927	خيمة
S928	خيمة
S936	جامع
S937	قيد الإنشاء

S938	قيد الإنشاء
S940	قيد الإنشاء
S944	قيد الإنشاء
S945	قيد الإنشاء
S947	خيمة
S950	خيمة
S951	خيمة
S952	قيد الإنشاء
S953	قيد الإنشاء
S954	قيد الإنشاء
S959	قيد الإنشاء
S960	قيد الإنشاء
S961	مصنع حجر
S962	مزرعة
S964	خيمة
S965	مزرعة
S966	قيد الإنشاء
S967	مزرعة
S969	مزرعة
S970	مزرعة
S972	مزرعة
S973	مخيم نازحين عدد 36 خيم
S974	مخيم نازحين عدد 30 خيم
S975	قيد الإنشاء
S977	مخيم نازحين عدد 70 خيم
S982	قيد الإنشاء
S986	خيمة
S987	خيمة
S988	خيمة
S991	مصنع الفا-غذائية
S992	مصنع عصير
S993	مخيم نازحين عدد 9 خيم
S994	مصنع حبوب
S1002	خيم عدد 3

Appendix E8: Key Prominent Features in Qabb Elias 2 Network System

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3- WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5- THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-FLOOR+ 2 APARTMENTS + 3 SHOPS
- UNDER CONSTRUCTION
- VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

QABBELIAS (2) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-09-PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	3/3	473WW-09-PL03

ORIGINAL DRAWING SIZE A1

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
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6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- bbb: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

QABBELIAS (2) WASTEWATER NETWORK

PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-09-PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	2/3	473WW-09-PL02

ORIGINAL DRAWING SIZE A1

Y=-39300

Y=-39500

Y=-39700

Y=-39900

Y=-40100

Y=-40300

X = -307900

X = -307700

X = -307500

X = -307300

X = -307100

X = -306900

MH-25

MH-24

MH-18

MH-17

MH-16

MH-22

MH-23

MH-26

MH-20

MH-27

MH-5

MH-1

mosque

church

school

school

souk alhamees

ORIGINAL DRAWING SIZE A1

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
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6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- 1-2-3 — BUILDING: 1-2-3 = 1 FLOOR+ 2 APARTMENTS + 3 SHOPS; UC UNDER CONSTRUCTION; V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- channel — CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- Spr — SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- mh-s — MANHOLE SEWER
- mh-w — MANHOLE WATER
- mh-t — MANHOLE TELEPHONE
- MH — MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP — ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S — ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 — SPOT HEIGHT
- 1262 — PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

QABBELIAS (2) WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-09-PL	S. SAAD	S. SAAD	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JUNE 2018	1:2000	1/3	473WW-09-PL01

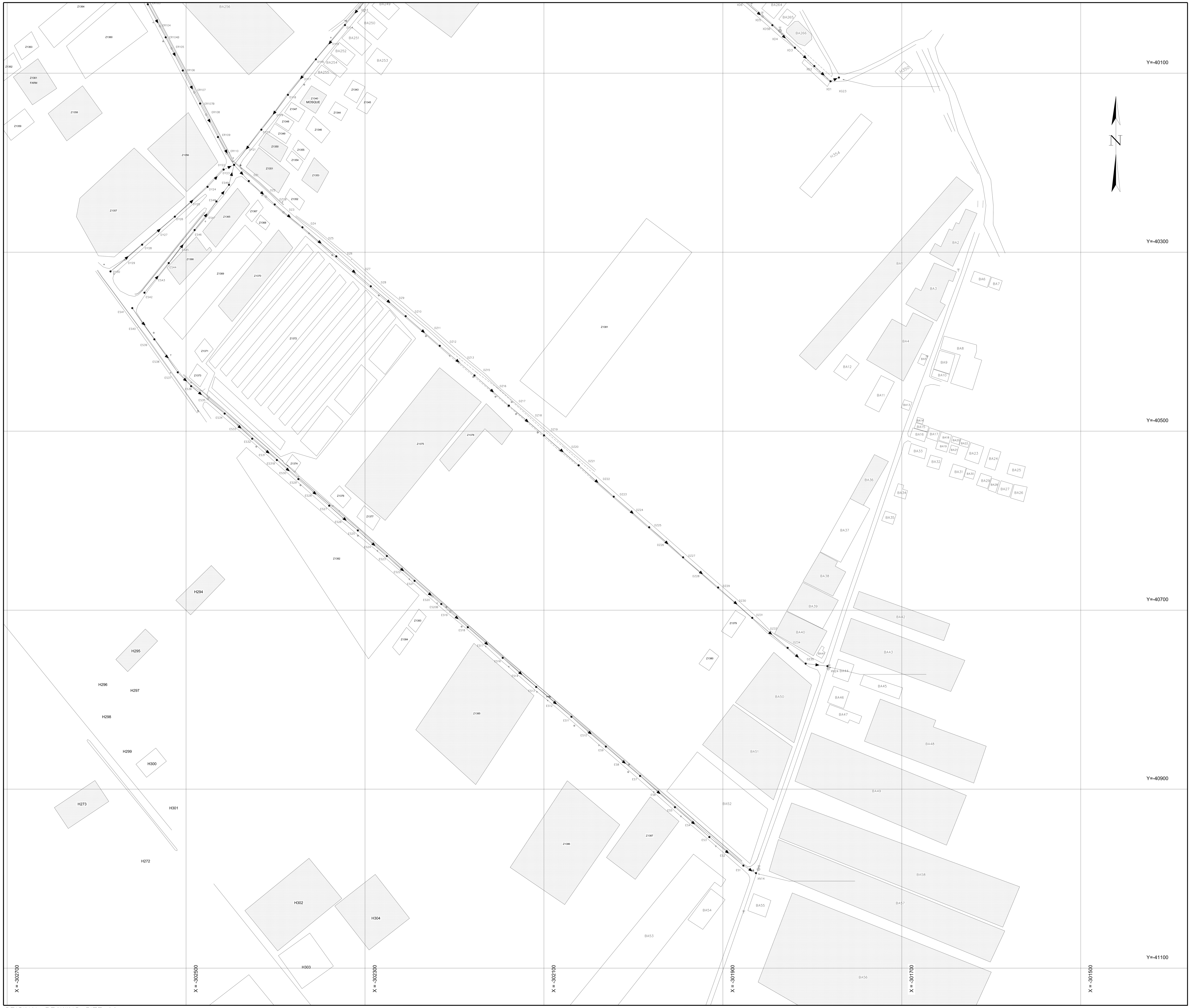
Bldg. Number	Type
S22	مزرعة
S23	مصنع رمل
S68	قيد الإنشاء
S70	قيد الإنشاء
S90	شقق أوتيل
S94	قيد الإنشاء
S102	جامع
S112	قيد الإنشاء
S115	قيد الإنشاء
S129	مخيم نازحين عدد 4 خيم
S145	قيد الإنشاء
S157	مخيم نازحين عدد 9 خيم
S158	خيمة
S159	خيمة
S160	مخيم نازحين عدد 5 خيم
S171	قيد الإنشاء
S176	محطة وقود
S181	بناء مكاتب
S194	ملعب
S204	ملعب خاص
S222	مزارع مهجورة
S228	قيد الإنشاء
S232	كنيسة
S237	قيد الإنشاء
S238	قيد الإنشاء
S241	قيد الإنشاء
S245	كنيسة
S251	كراج
S255	قيد الإنشاء
S259	مدجنة
S272	مزرعة
S278	شركة الرائد-آليات
S285	مصنع رمل
S287	قيد الإنشاء

S288	مزرعة دواجن
S296	خيمة
S297	خيمة
S300	المدرسة الانجيلية
S310	قيد الإنشاء
S314	قيد الإنشاء
S317	خيمة
S318	خيمة
S325	مصنع بلاستيك
S328	مطحنة
S332	قيد الإنشاء
S333	مشتل زراعي
S337	خيمة
S338	خيمة
S339	خيمة
S356	قيد الإنشاء
S359	قيد الإنشاء
S394	قيد الإنشاء
S403	قيد الإنشاء
S404	قيد الإنشاء
S409	قيد الإنشاء
S411	قيد الإنشاء
S412	قيد الإنشاء
S420	جامع
S421	مركز البلدية
S438	قيد الإنشاء
S466	جامع
S467	السفارة البرازيلية
S468	مدرسة
S500	سوق الخضار
S502	سوق الخميس
S516	قيد الإنشاء
S562	قيد الإنشاء
S572	مخيم نازحين عدد 5 خيم
S573	مخيم نازحين عدد 45 خيم

S579	خيمة
S580	خيمة
S581	مخيم نازحين عدد 32 خيمة
S582	مدرسة
S583	مخيم نازحين عدد 50 خيمة
S585	مخيم نازحين عدد 30 خيمة
S586	خيمة
S597	مصنع مواد غذائية
S621	قيد الإنشاء
S622	مطعم
S627	قيد الإنشاء
S628	قيد الإنشاء
S629	قيد الإنشاء
S634	براد خضار وفواكه
S640	خيمة
S641	خيمة
S642	مصنع لبنة
S657	جامع
S673	نادي رياضة
S686	مخيم نازحين عدد 76خيمة
S687	مخيم نازحين عدد 136خيمة
S696	قيد الإنشاء
S718	قيد الإنشاء
S720	خيمة
S725	مزرعة
S766	مخيم نازحين عدد 27خيمة
S768	خيمة
S776	خيمة
S778	مزرعة
S781	قيد الإنشاء
S783	مخيم نازحين عدد 22خيمة
S788	مخيم نازحين عدد 27خيمة
S790	مزرعة
S791	محل كسر سيارات
S792	مزرعة

S836	كراج
S1022	مرملة
S1023	قيد الإنشاء

Appendix E9: Key Prominent Features in Taalabaya Network System



ORIGINAL DRAWING SIZE A1

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3- WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
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6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

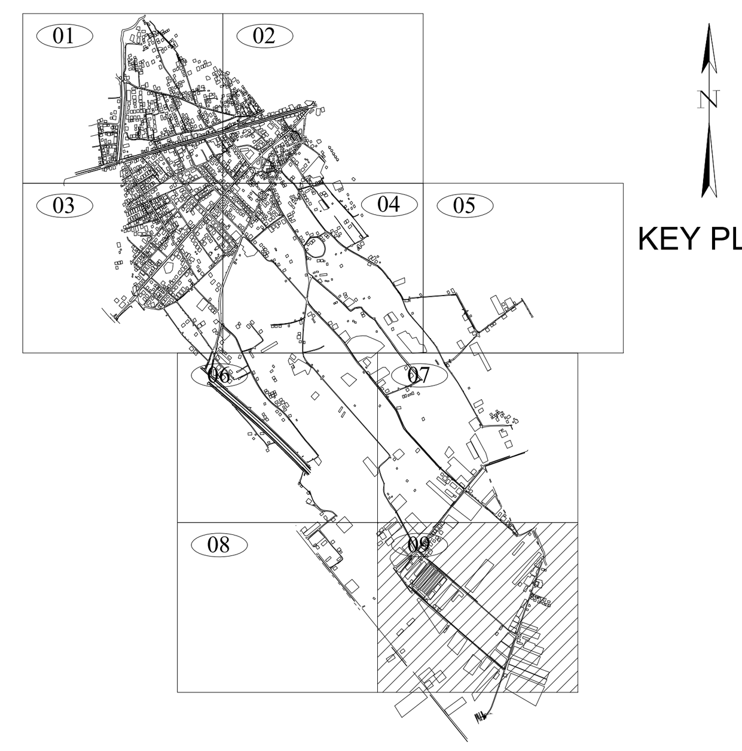
PLAN LEGEND

SEWER NETWORK

►	EXISTING WASTEWATER LINE	EXISTING MANHOLE
►	PROPOSED WASTEWATER LINE	PROPOSED MANHOLE
►►►	PROPOSED WASTEWATER LIFT LINE	

TOPOGRAPHICAL LEGEND

1-2-3	BUILDING 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS U: UNDER CONSTRUCTION V: VILLA	mh-s	MANHOLE SEWER
	PAVED ROAD	mh-w	MANHOLE WATER
	CONCRETE ROAD	mh-t	MANHOLE TELEPHONE
	TRACK/ SAND ROAD	MH	MANHOLE NOT IDENTIFIED
	REFERENCE LINE		LIGHTING POLE
channel	CHANNEL	EP/TP	ELECTRICAL / TELEPHONE POLE
	TERRACE		TOPOGRAPHICAL STATION
	FENCE	EL.S.S	ELECTRIC SUB STATION
	STREAM/RIVER		ELECTRIC POLE/TELEGRAPH POLE
	CULVERT/BRIDGE		STAKE POINT + STAKE NAME
Spr	SPRING	1160.12	SPOT HEIGHT
	WELL	1262	PLOT No
	DECIDUOUS/PINE TREE		BOUNDARY
	TREE		CIRCONSCRIPTION BOUNDARY
	ROCKS		CADASTRAL LIMITS
	DownHill High-Hill		



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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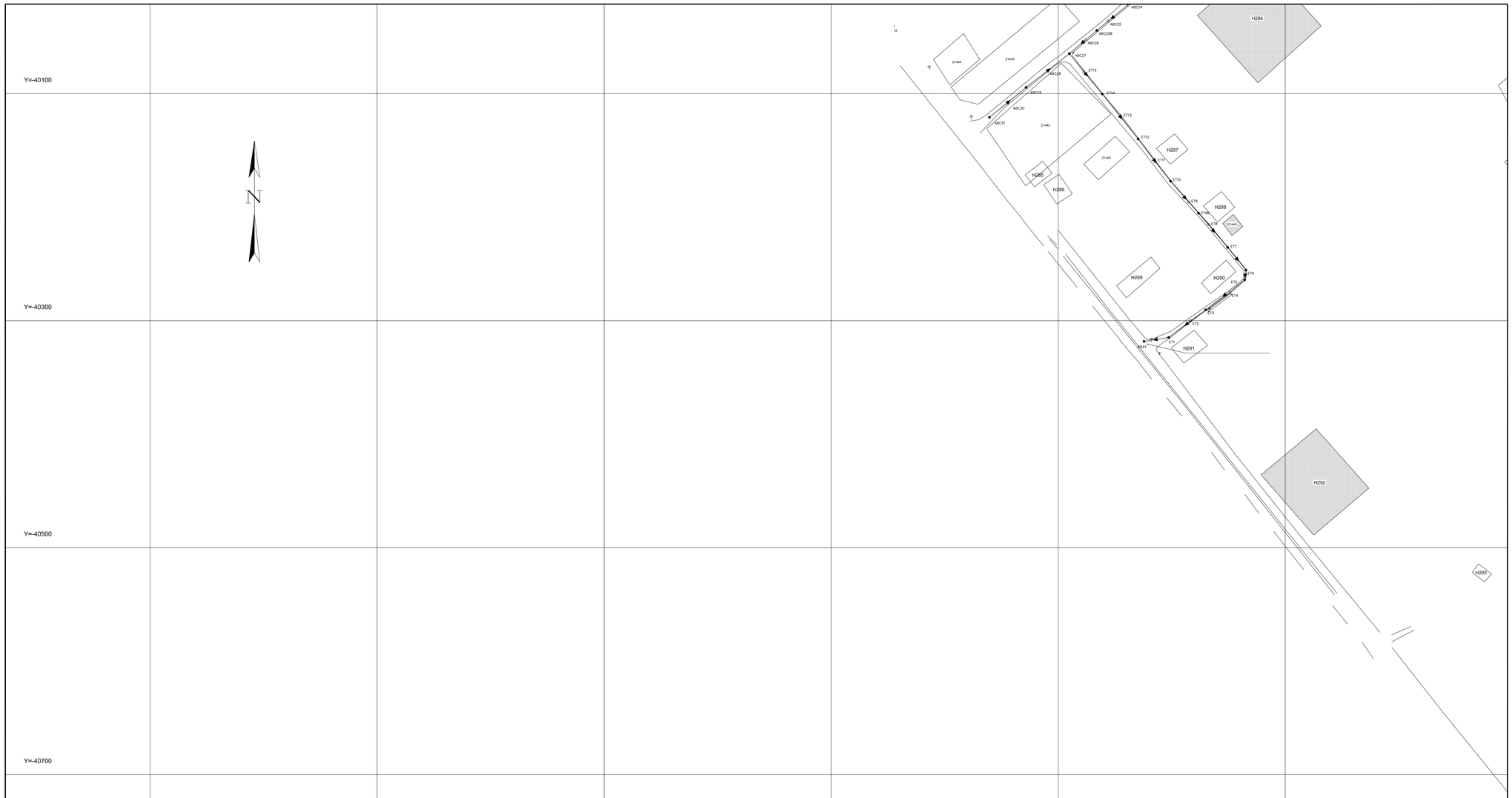
FAX :(04) 712159

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

TAALABAYA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-10-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
DECEMBER 2018	1:2000	9/9	473WW-10-PL09



NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3- WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5- THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

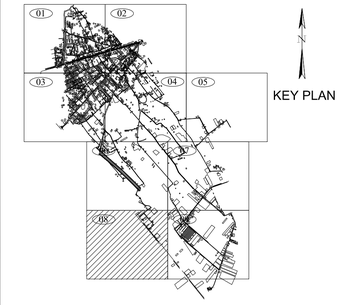
PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	ChK'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
JALL ED DIB – HAJAL Bldg
P.O.BOX:70492 – ANTELIAS
PHONE:(04) 712157/712158 (03) 291016
FAX :(04) 712159

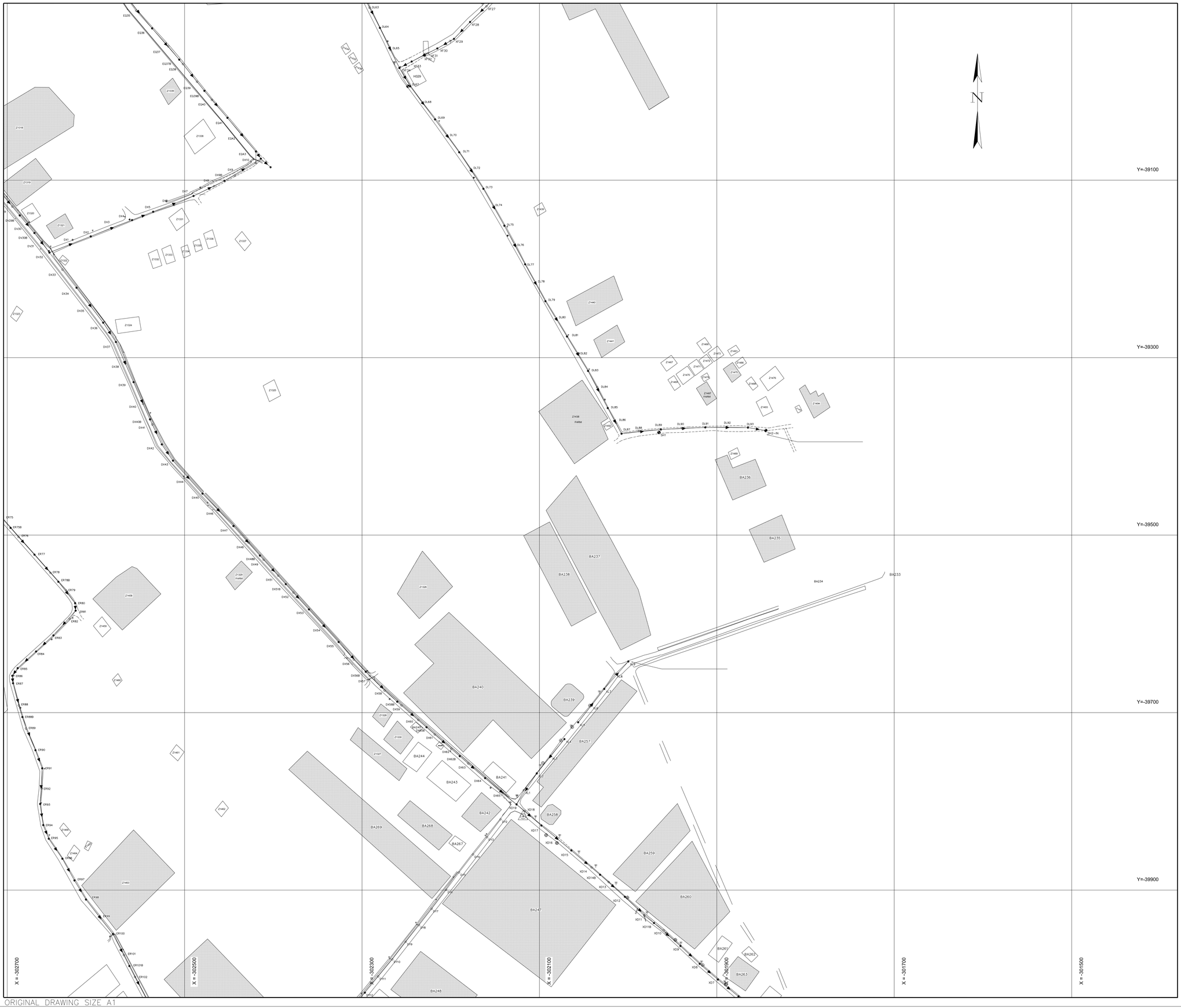
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

TAALABAYA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-10-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
DECEMBER 2018	1:2000	8/9	473WW-10-PL08

ORIGINAL DRAWING SIZE A1



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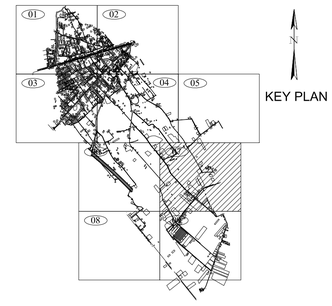
PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- 1-2-3 — BUILDING (bb3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS; U: UNDER CONSTRUCTION; V: VILLA)
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- channel — CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- Spr — SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- mh-s — MANHOLE SEWER
- mh-w — MANHOLE WATER
- mh-t — MANHOLE TELEPHONE
- MH — MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP — ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S — ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 — SPOT HEIGHT
- 1262 — PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON
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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

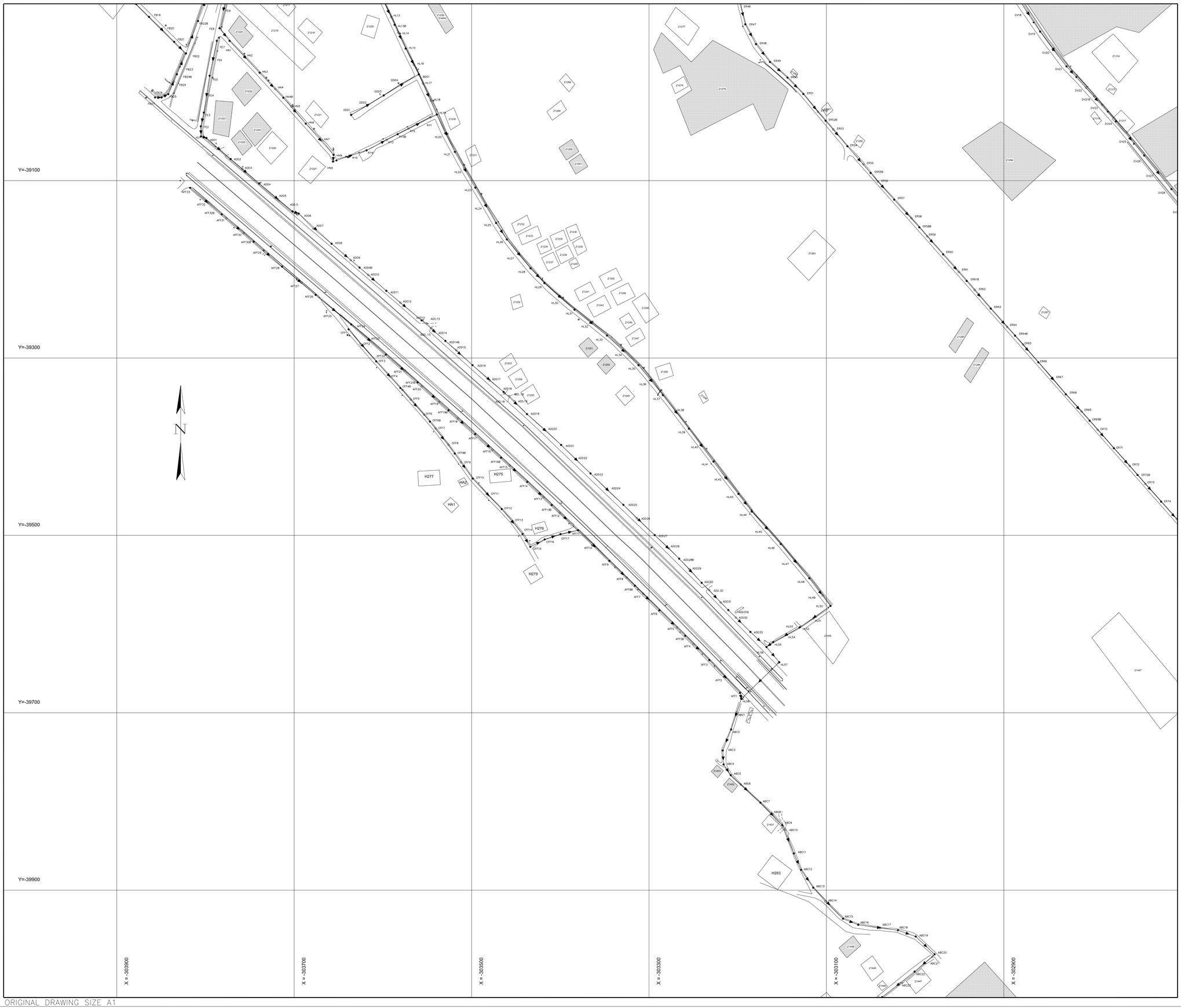
TAALABAYA WASTEWATER NETWORK

PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-10-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
DECEMBER 2018	1:2000	7/9	473WW-10-PL07

ORIGINAL DRAWING SIZE A1



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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

- 1-2-3 — BUILDING
- bb1-1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC UNDER CONSTRUCTION
- V VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- channel — CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- Spr — CULVERT/BRIDGE
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- DownHill
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- mh-s — MANHOLE SEWER
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- mh-t — MANHOLE TELEPHONE
- MH — MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP — ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S — ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 — SPOT HEIGHT
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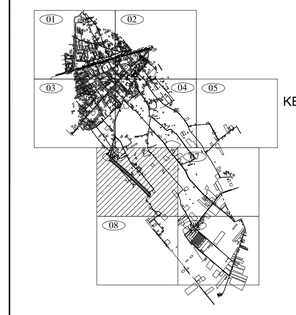
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

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MINISTRY OF ENERGY AND WATER

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

TAALABAYA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-10-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
DECEMBER 2018	1:2000	6/9	473WW-10-PL06

ORIGINAL DRAWING SIZE A1

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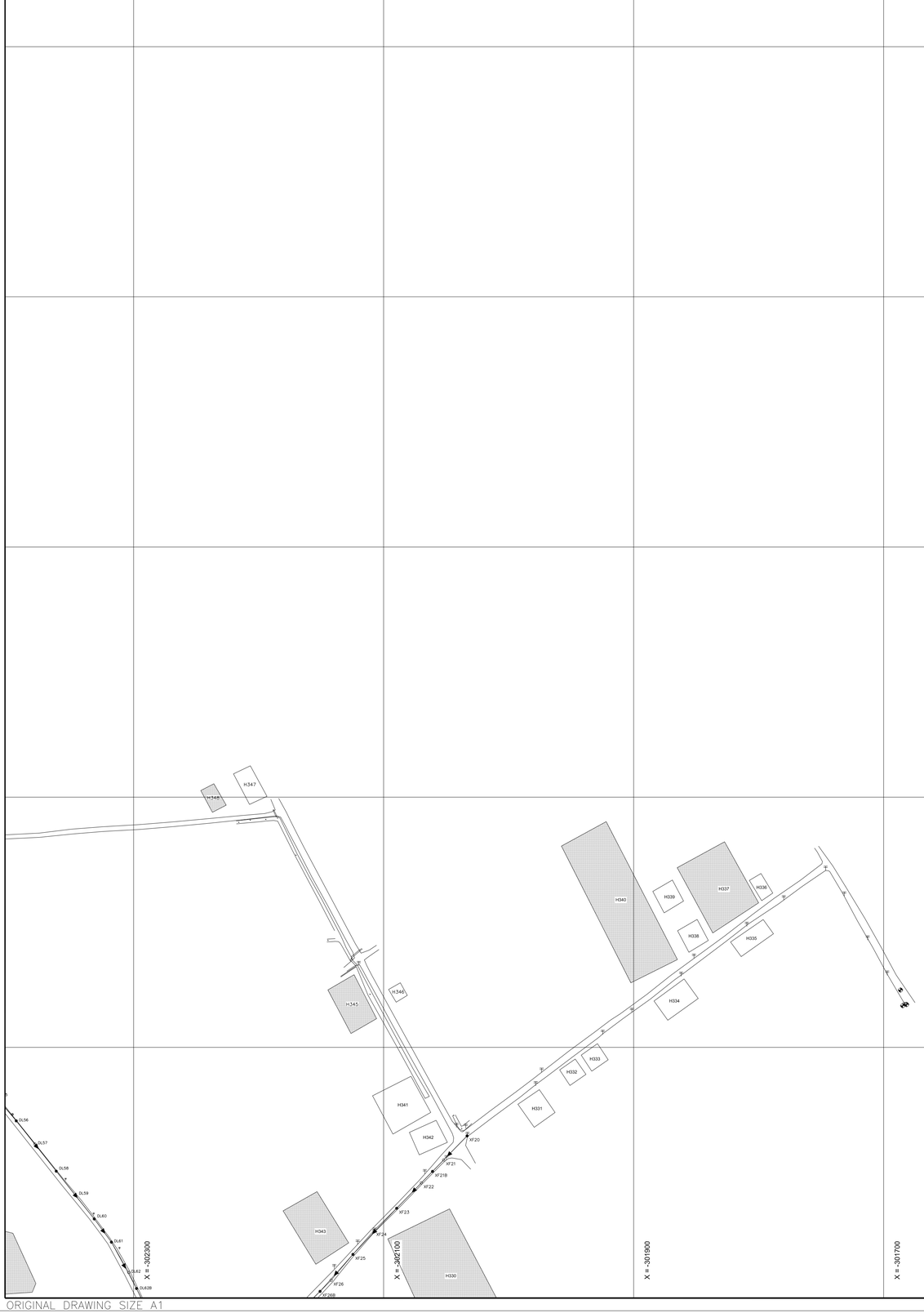

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
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- DownHill
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- mh-s MANHOLE SEWER
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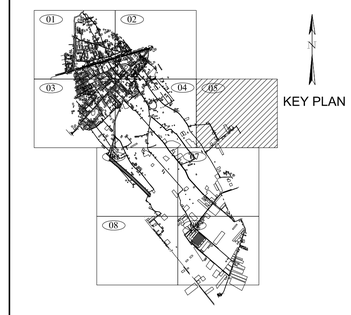
- LIGHTING POLE
- EP/TP ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 SPOT HEIGHT
- 1262 PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

TAALABAYA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-10-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
DECEMBER 2018	1:2000	5/9	473WW-10-PL05

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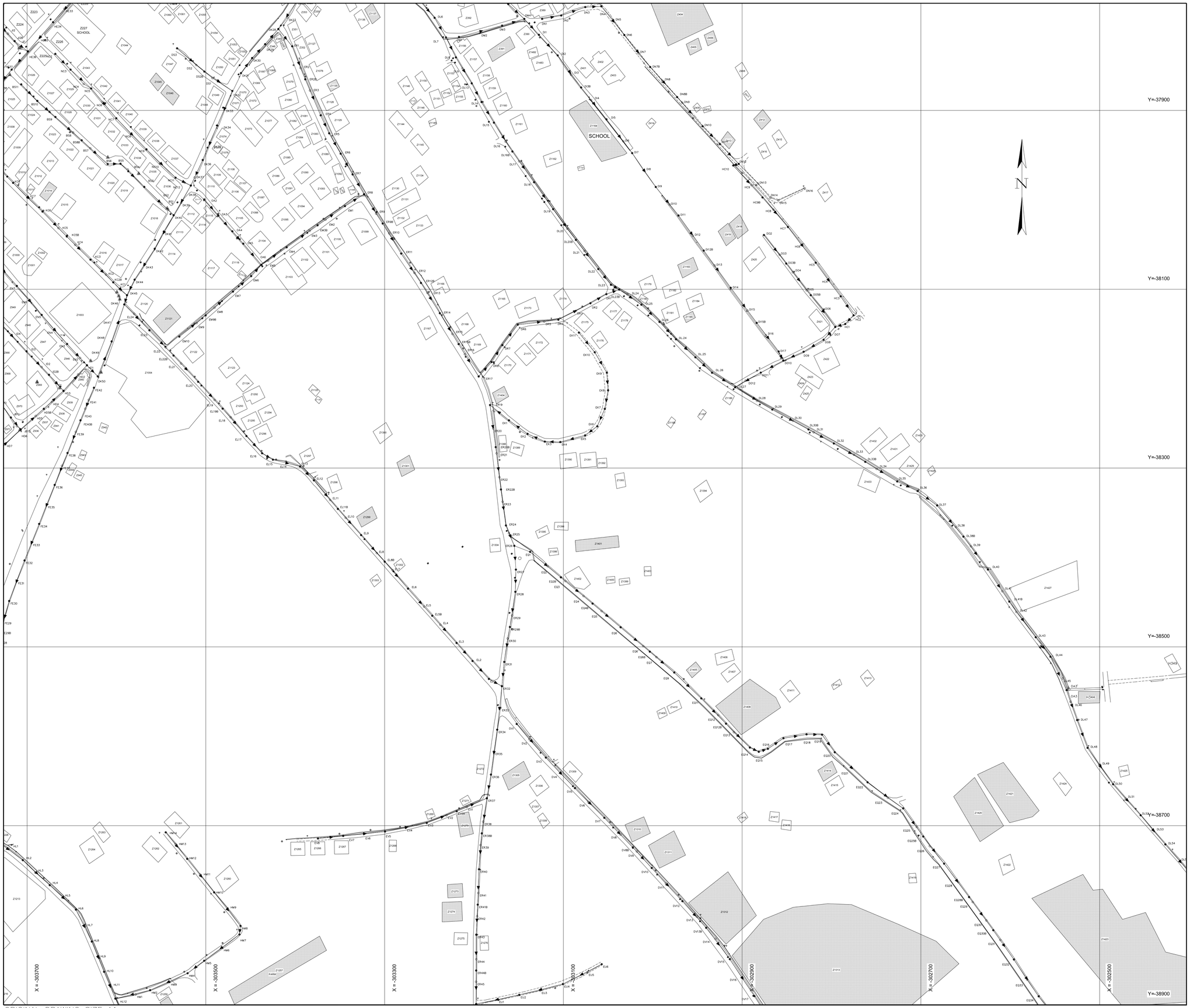

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

- BUILDING
- bb2=1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U= UNDER CONSTRUCTION
- V= VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
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- LIGHTING POLE
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- PLOT No
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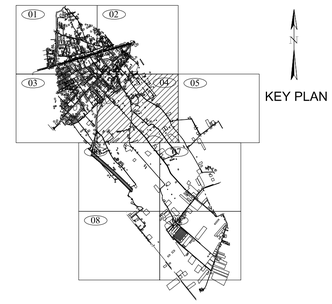
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drawn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

TAALABAYA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-10-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
DECEMBER 2018	1:2000	4/9	473WW-10-PL04

ORIGINAL DRAWING SIZE A1

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Y=-38100

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Y=-38700

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X = 304700

X = 304500

X = 304300

X = 304100

X = 303900

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

- 1-2-3 — BUILDING
- hb3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
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- REFERENCE LINE
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- FENCE
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- STAKE POINT + STAKE NAME
- 1160.12 — SPOT HEIGHT
- 1262 — PLOT No
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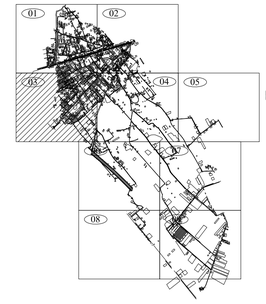

KEY PLAN

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

TAALABAYA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-10-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
DECEMBER 2018	1:2000	3/9	473WW-10-PL03

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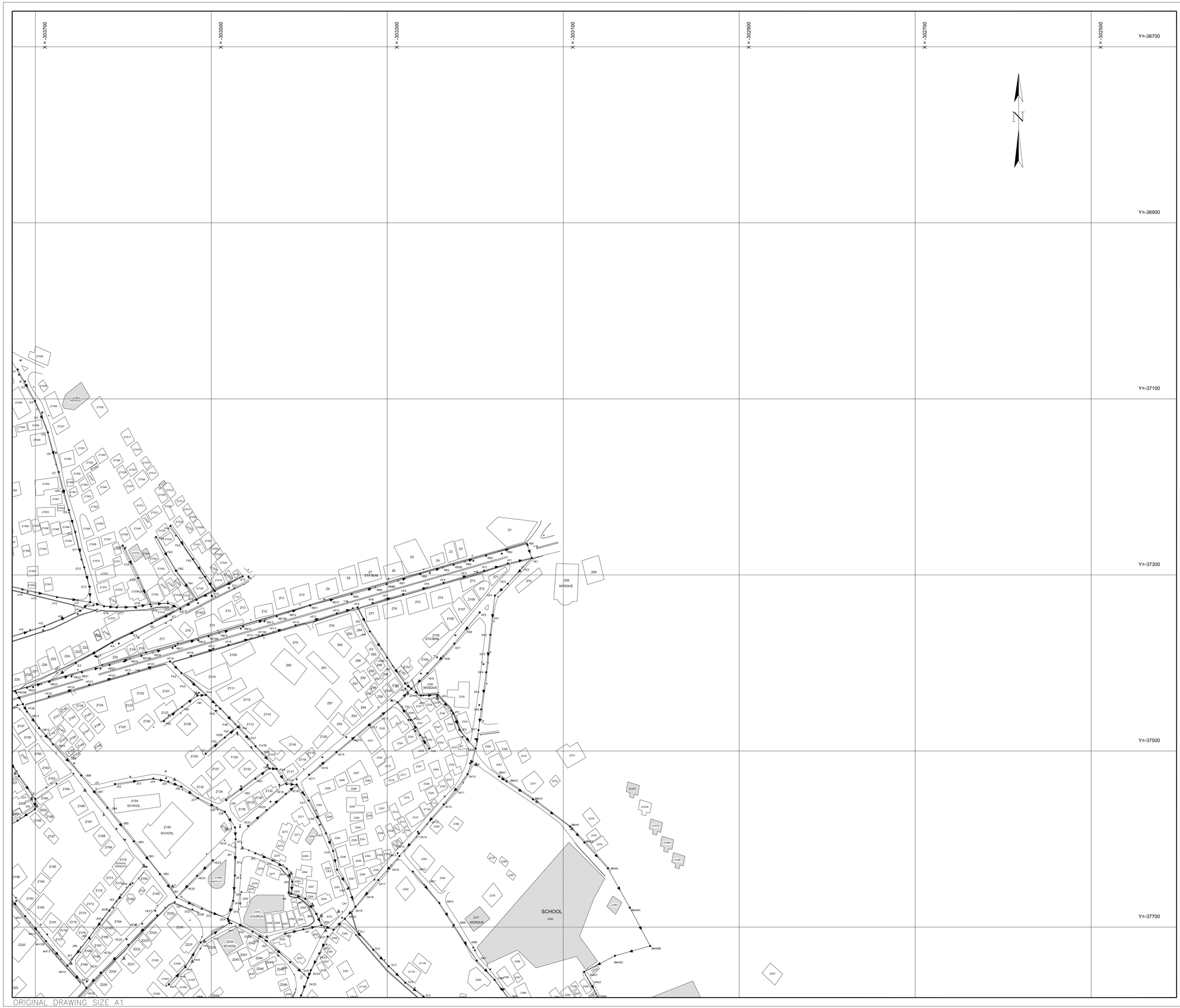

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
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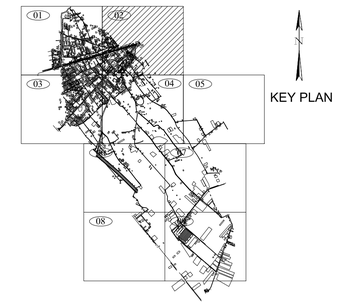
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

TAALABAYA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-10-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
DECEMBER 2018	1:2000	2/9	473WW-10-PL02

ORIGINAL DRAWING SIZE A1

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3- WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5- THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

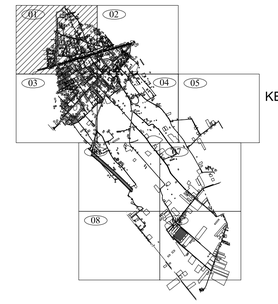
PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

- BUILDING
- bb3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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FAX :(04) 712159

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

TAALABAYA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-10-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
DECEMBER 2018	1:2000	1/9	473WW-10-PL01

ORIGINAL DRAWING SIZE A1

Bldg. Number	Type
BA1	مصنع شامبو
BA2	مصنع طيبة غذائية
BA3	مصنع حديد
BA4	مصنع خردوات حديد
BA36	مصنع مخلل
BA38	مصنع كسارات حجر
BA39	مصنع نايلون
BA40	مصنع بلور
BA42	مصنع علكة مهجور(مسكون)
BA43	مصنع كسارة حجر
BA48	مصنع غذائية
BA49	مصنع كرتون
BA50	مصنع رخام
BA51	مصنع رخام
BA56	مصنع رخام
BA57	مصنع رخام
BA58	مصنع رخام
BA235	مزرعة بقر
BA236	مصنع نايلون
BA237	مصنع كرتون(ليبان ساك)
BA238	مصنع حديد
BA239	مخيم نازحين عدد 5 خيمة
BA240	مصنع كونسروة
BA242	مصنع بلوك
BA247	مصنع بطاريات (العريبي)
BA248	مصنع نحاس
BA256	مصنع حديد
BA257	مصنع حديد
BA258	مخيم نازحين عدد 3 خيم
BA259	مصنع بلوك
BA260	مصنع حجر
BA263	مصنع تجميع بلاستيك
BA266	مخيم نازحين عدد 3خيم
BA268	مصنع قساطل صحية
BA269	مجمع صناعي
Z7	محطة وقود
Z39	محطة وقود
Z42	سنتر تجاري

Z69	جامع
Z80	سنتر تجاري
Z105	محطة وقود
Z110	سنتر تجاري
Z133	قيد الإنشاء
Z154	مدرسة ثانوية
Z155	مدرسة متوسطة
Z170	مدرسة مهجورة
Z210	سنتر تجاري
Z227	مدرسة النشئ
Z239	مدرسة الثقافة
Z254	كنيسة
Z266	قيد الإنشاء
Z377	جامع
Z382	مدرسة
Z383	قيد الإنشاء
Z391	قيد الإنشاء
Z404	مخيم نازحين عدد 15 خيمة
Z405	قيد الإنشاء
Z406	قيد الإنشاء
Z412	قيد الإنشاء
Z413	قيد الإنشاء
Z418	مصنع حلويات
Z419	قيد الإنشاء
Z438	الجمعية الرهبانية
Z521	حسينية وجامع
Z623	مدرسة
Z637	مدرسة
Z646	جامع +3محلات
Z671	عيادة
Z704	معمل بلاط مهجور
Z706	قيد الإنشاء
Z756	قيد الإنشاء
Z848	قيد الإنشاء
Z863	مدرسة

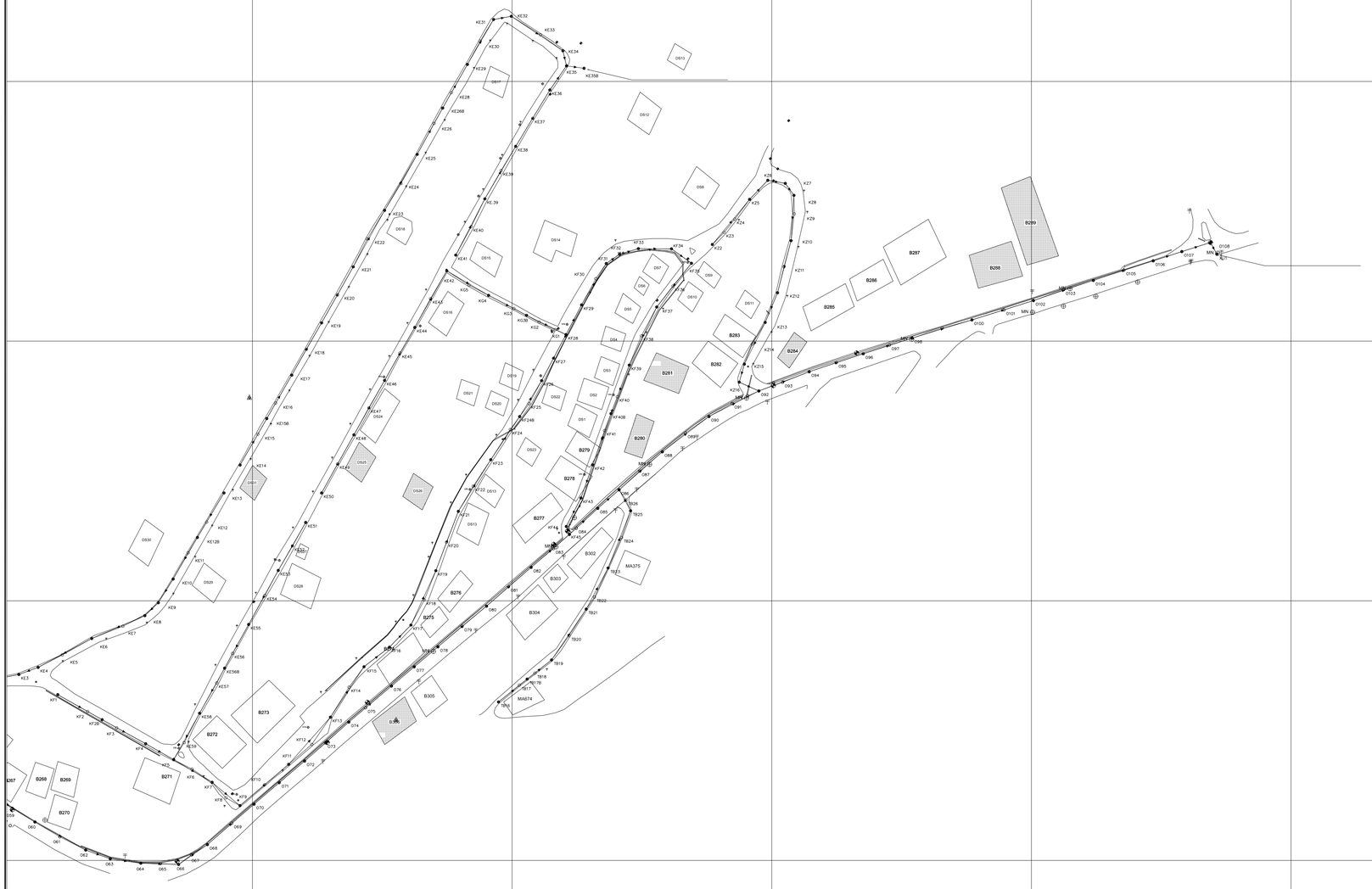
Z885	جامع
Z889	قيد الإنشاء
Z894	قيد الإنشاء
Z900	كنيسة
Z918	قيد الإنشاء
Z926	قيد الإنشاء
Z960	محطة وقود +مغسل
Z1014	قيد الإنشاء
Z1045	قيد الإنشاء
Z1046	قيد الإنشاء
Z1066	البلدية
Z1121	قيد الإنشاء
Z1135	قيد الإنشاء
Z1137	قيد الإنشاء
Z1164	مدرسة
Z1183	قيد الإنشاء
Z1185	قيد الإنشاء
Z1194	قيد الإنشاء
Z1215	محطة وقود +مغسل
Z1220	قيد الإنشاء
Z1222	قيد الإنشاء
Z1223	قيد الإنشاء
Z1224	قيد الإنشاء
Z1225	قيد الإنشاء
Z1250	قيد الإنشاء
Z1251	قيد الإنشاء
Z1257	مزرعة
Z1258	مزرعة
Z1270	مزرعة
Z1273	قيد الإنشاء
Z1274	قيد الإنشاء
Z1278	مخيم نازحين عدد 150 خيمة
Z1284	مزرعة خيل
Z1285	خيم عدد 3
Z1286	خيم عدد 3

Z1290	قيد الإنشاء
Z1291	قيد الإنشاء
Z1299	قيد الإنشاء
Z1301	قيد الإنشاء
Z1305	هنغار ملابس
Z1310	مصنع بلاط
Z1311	معمل غاز
Z1312	مصنع حجر
Z1313	مصنع بلاط وحجر
Z1318	مصنع سيراميك
Z1319	مصنع حجر
Z1321	هنغارتصليح كهرباء سيارات
Z1326	معمل تكرير
Z1327	مصنع بلاستيك
Z1328	قيد الإنشاء
Z1329	مزرعة
Z1330	مخيم نازحين عدد 8 خيم
Z1339	قيد الإنشاء
Z1340	جامع
Z1350	مصنع سيراميك
Z1351	مصنع رخام
Z1353	مصنع حجر
Z1356	مصنع حجر
Z1357	مخيم نازحين عدد 40 خيمة
Z1358	مصنع حجر
Z1361	مزرعة خيل
Z1365	مصنع رخام
Z1366	مصنع حجر
Z1370	مصنع سيراميك
Z1375	مصنع حجر
Z1378	مصنع عرق
Z1385	مصنع مرتديلا
Z1386	مصنع ماء
Z1387	مصنع حجر
Z1401	مصنع حجر

Z1404	قيد الإنشاء
Z1405	قيد الإنشاء
Z1408	مصنع حجر
Z1414	قيد الإنشاء
Z1420	هنغار تصليح شاحنات
Z1421	مصنع حجر
Z1423	مصنع رمل وبلوك
Z1438	مزرعة بقر
Z1440	مصنع بويا
Z1441	مخيم نازحين عدد 7 خيم
Z1446	هنغار
Z1449	قيد الإنشاء
Z1452	قيد الإنشاء
Z1453	قيد الإنشاء
Z1458	مخيم نازحين عدد 14 خيمة
Z1463	مخيم نازحين عدد 33 خيمة
Z1475	قيد الإنشاء
Z1477	قيد الإنشاء
Z1479	قيد الإنشاء
Z1480	قيد الإنشاء
Z1481	قيد الإنشاء
Z1487	مزرعة
Z1494	مصنع تكرير مازوت
Z1544	قيد الإنشاء
Z1553	جامع
Z1576	قيد الإنشاء
Z1652	قيد الإنشاء
Z1653	قيد الإنشاء
Z1654	قيد الإنشاء
Z1658	جامع
Z1675	قيد الإنشاء
Z1676	قيد الإنشاء
Z1678	قيد الإنشاء
Z1693	قيد الإنشاء
Z1708	هنغار
Z1710	قيد الإنشاء

Z1721	قيد الإنشاء
Z1725	قيد الإنشاء
Z1731	قيد الإنشاء
Z1732	قيد الإنشاء
Z1758	قيد الإنشاء
Z1783	قيد الإنشاء
Z1819	قيد الإنشاء
Z1822	قيد الإنشاء
Z1841	قيد الإنشاء
Z1891	قيد الإنشاء
Z1893	قيد الإنشاء
Z1918	قيد الإنشاء
Z1919	قيد الإنشاء
U890	قيد الإنشاء
U907	قيد الإنشاء
U912	محطة وقود
U948	قيد الإنشاء
H273	سنتر تجاري
H284	مستشفى
H292	معمل حجر
H294	هنغار
H295	هنغار
H302	براد
H304	براد
H306	براد
H310	جامعة
H330	مخيم للنازحين
H337	مخيم للنازحين
H340	براد خضار
H343	مخيم للنازحين
H344	مزرعة
H345	مخيم للنازحين عدد 12
H348	مخيم للنازحين عدد 4

Appendix E10: Key Prominent Features in Zebdol Network System



NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
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6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

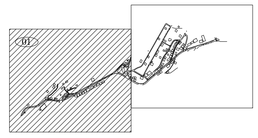
- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- 1-2-3 — BUILDING (1: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS; UC: UNDER CONSTRUCTION; V: VILLA)
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- channel — CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- Spr — SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- mh-s — MANHOLE SEWER
- mh-w — MANHOLE WATER
- mh-t — MANHOLE TELEPHONE
- MH — MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP — ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S — ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 — SPOT HEIGHT
- 1262 — PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

N

KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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FAX :(04) 712159

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

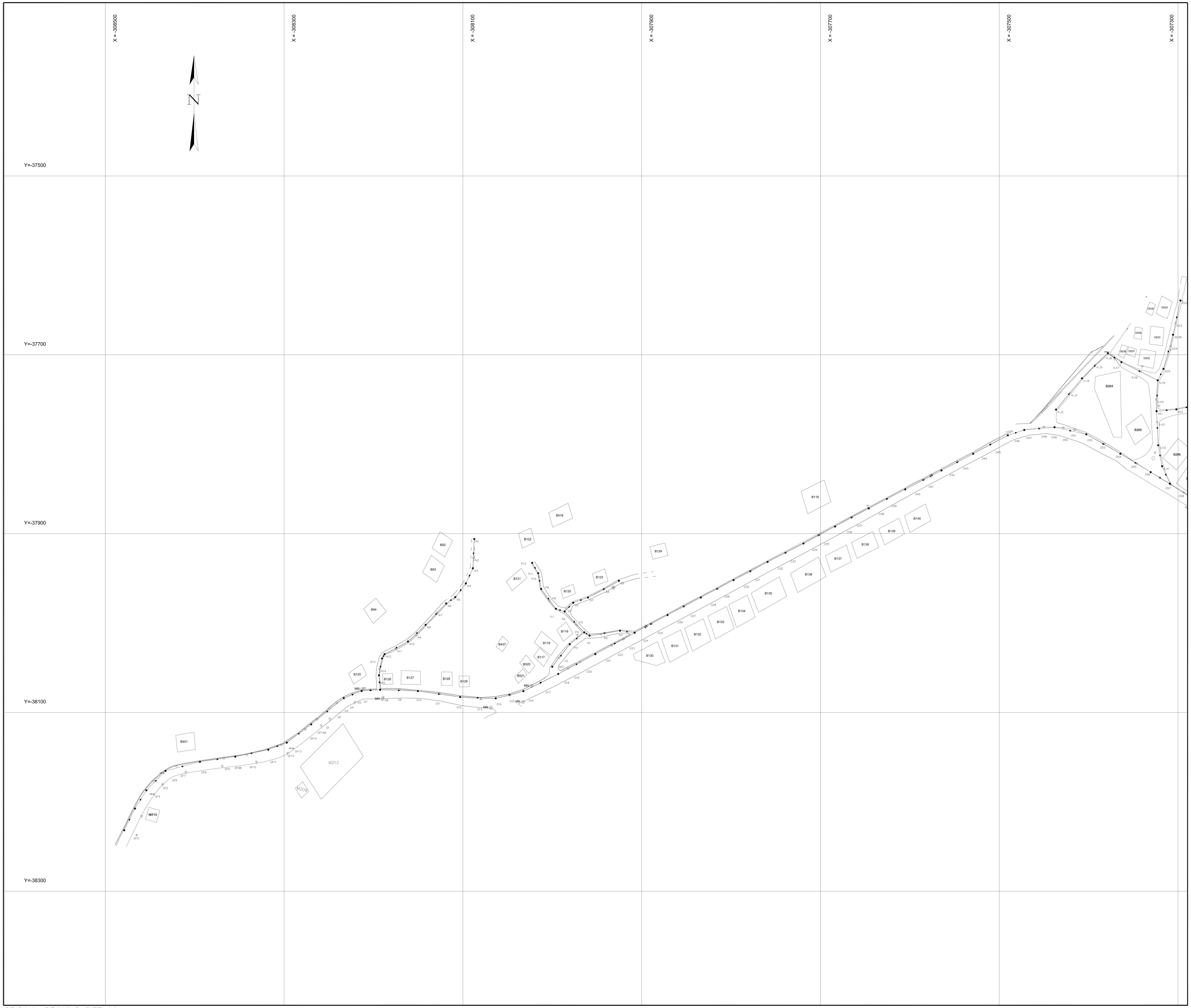
ZEBDOL WASTEWATER NETWORK

PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-11-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JANUARY 2019	1:2000	2/2	473WW-11-PL02

ORIGINAL DRAWING SIZE A1



ORIGINAL DRAWING SIZE A1

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.

2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.

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4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.

5- THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.

6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

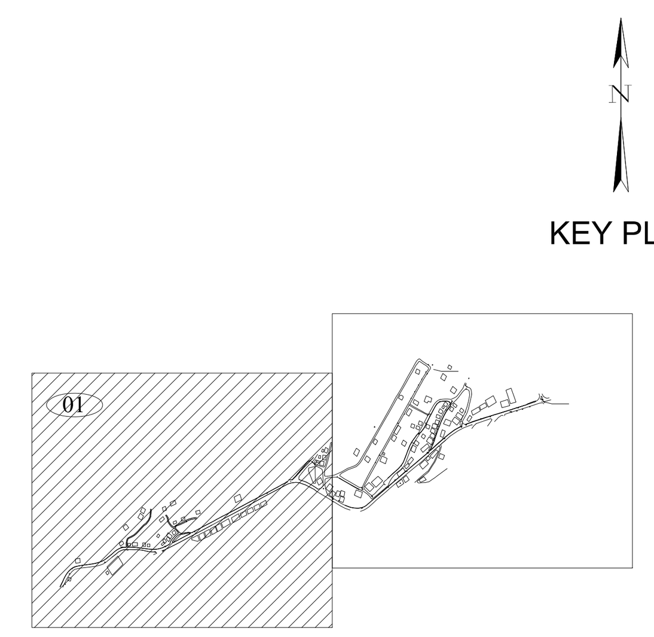
SEWER NETWORK

EXISTING WASTEWATER LINE	EXISTING MANHOLE
PROPOSED WASTEWATER LINE	PROPOSED MANHOLE
PROPOSED WASTEWATER LIFT LINE	

TOPOGRAPHICAL LEGEND

1-2-3	BUILDING 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS U: UNDER CONSTRUCTION V: VILLA	mh-s	MANHOLE SEWER
	PAVED ROAD	mh-w	MANHOLE WATER
	CONCRETE ROAD	mh-t	MANHOLE TELEPHONE
	TRACK/ SAND ROAD	MH	MANHOLE NOT IDENTIFIED
	REFERENCE LINE		LIGHTING POLE
channel	CHANNEL	EP/TP	ELECTRICAL / TELEPHONE POLE
	TERRACE		TOPOGRAPHICAL STATION
	FENCE	EL.S.S	ELECTRIC SUB STATION
	STREAM/RIVER		ELECTRIC POLE/TELEGRAPH POLE
	CULVERT/BRIDGE		STAKE POINT + STAKE NAME
Spr	SPRING	1160.12	SPOT HEIGHT
	WELL	1262	PLOT No
	DECIDUOUS/PINE TREE		BOUNDARY
	TREE		CIRCONSCRIPTION BOUNDARY
	ROCKS		CADASTRAL LIMITS
	DownHill High-Hill		

KEY PLAN



Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

ZEBDOL WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-11-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JANUARY 2019	1:2000	1/2	473WW-11-PL01

Bldg. Number	Type
DS25	قيد الإنشاء
DS26	قيد الإنشاء
DS31	قيد الإنشاء
B266	محطةوقود
B280	معرض.سيارات
B281	قيد.الانشاء
B284	مغسل.سيارات
B288	مشتل
B289	قيد.الانشاء

Appendix E11: Key Prominent Features in Jdita Network System

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
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6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

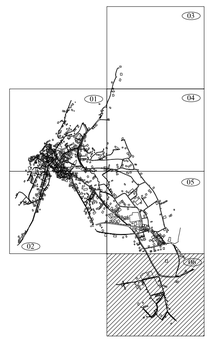
PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- UC: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- mh-s MANHOLE SEWER
- mh-w MANHOLE WATER
- mh-t MANHOLE TELEPHONE
- MH MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 SPOT HEIGHT
- 1262 PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

JDITA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-12-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JANUARY 2019	1:2000	6/6	473WW-12-PL06

ORIGINAL DRAWING SIZE A1

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
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6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

- BUILDING (1-2-3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS; UC: UNDER CONSTRUCTION; V: VILLA)
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
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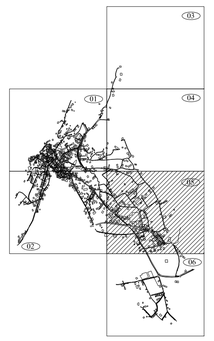
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

BUREAU TECHNIQUE POUR LE DEVELOPPEMENT
JALL ED DIB – HAJAL Bldg
P.O.BOX:70492 – ANTELIAS
PHONE:(04) 712157/712158 (03) 291016
FAX :(04) 712159

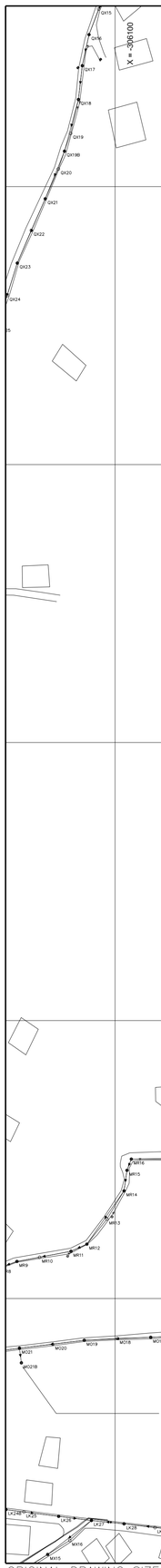
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

JDITA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-12-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JANUARY 2019	1:2000	5/6	473WW-12-PL05

ORIGINAL DRAWING SIZE A1



NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
3- WHERE THE PIPE COVER IS LESS THAN 90cm, A CONCRETE SURROUND WILL BE EXECUTED.
4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5- THE PROPOSED PIPES SHOULD BE LAID TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED LAND.

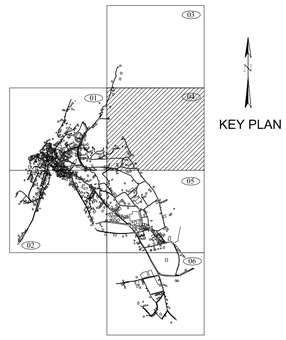
PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

1-2-3 BUILDING	
bb3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS	
U: UNDER CONSTRUCTION V: VILLA	
PAVED ROAD	
CONCRETE ROAD	
TRACK/ SAND ROAD	
REFERENCE LINE	
channel CHANNEL	
TERRACE	
FENCE	
STREAM/RIVER	
CULVERT/BRIDGE	
Spr SPRING	
WELL	
DECIDUOUS/PINE TREE	
TREE	
ROCKS	
DownHill	
HighHill	
mh-s	MANHOLE SEWER
mh-w	MANHOLE WATER
mh-t	MANHOLE TELEPHONE
MH	MANHOLE NOT IDENTIFIED
	LIGHTING POLE
EP/TP	ELECTRICAL / TELEPHONE POLE
	TOPOGRAPHICAL STATION
EL.S.S	ELECTRIC SUB STATION
	ELECTRIC POLE/TELEGRAPH POLE
	STAKE POINT + STAKE NAME
1160.12	SPOT HEIGHT
1262	PLOT No
	BOUNDARY
	CIRCONSCRIPTION BOUNDARY
	CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

JDITA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-12-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JANUARY 2019	1:2000	4/6	473WW-12-PL04

ORIGINAL DRAWING SIZE A1

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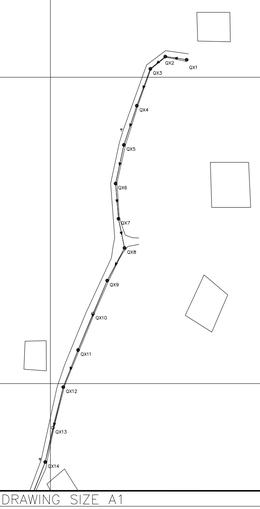
Y=-35100

Y=-35300

Y=-35500



ORIGINAL DRAWING SIZE A1

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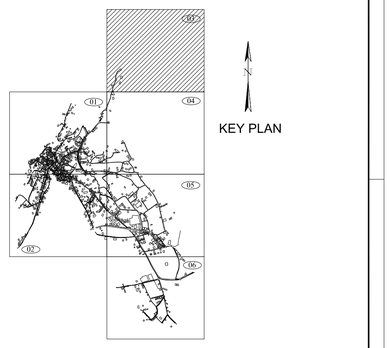
PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

- 1-2-3 — BUILDING
- bb3: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- channel — CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- Spr — SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- mh-s — MANHOLE SEWER
- mh-w — MANHOLE WATER
- mh-t — MANHOLE TELEPHONE
- MH — MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- EP/TP — ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- EL.S.S — ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- 1160.12 — SPOT HEIGHT
- 1262 — PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

JDITA WASTEWATER NETWORK | PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-12-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JANUARY 2019	1:2000	3/6	473WW-12-PL03

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Y=-36900

Y=-37100

Y=-37300

Y=-37500

Y=-37700

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PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- EXISTING MANHOLE
- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

- BUILDING
- bb2: 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS

KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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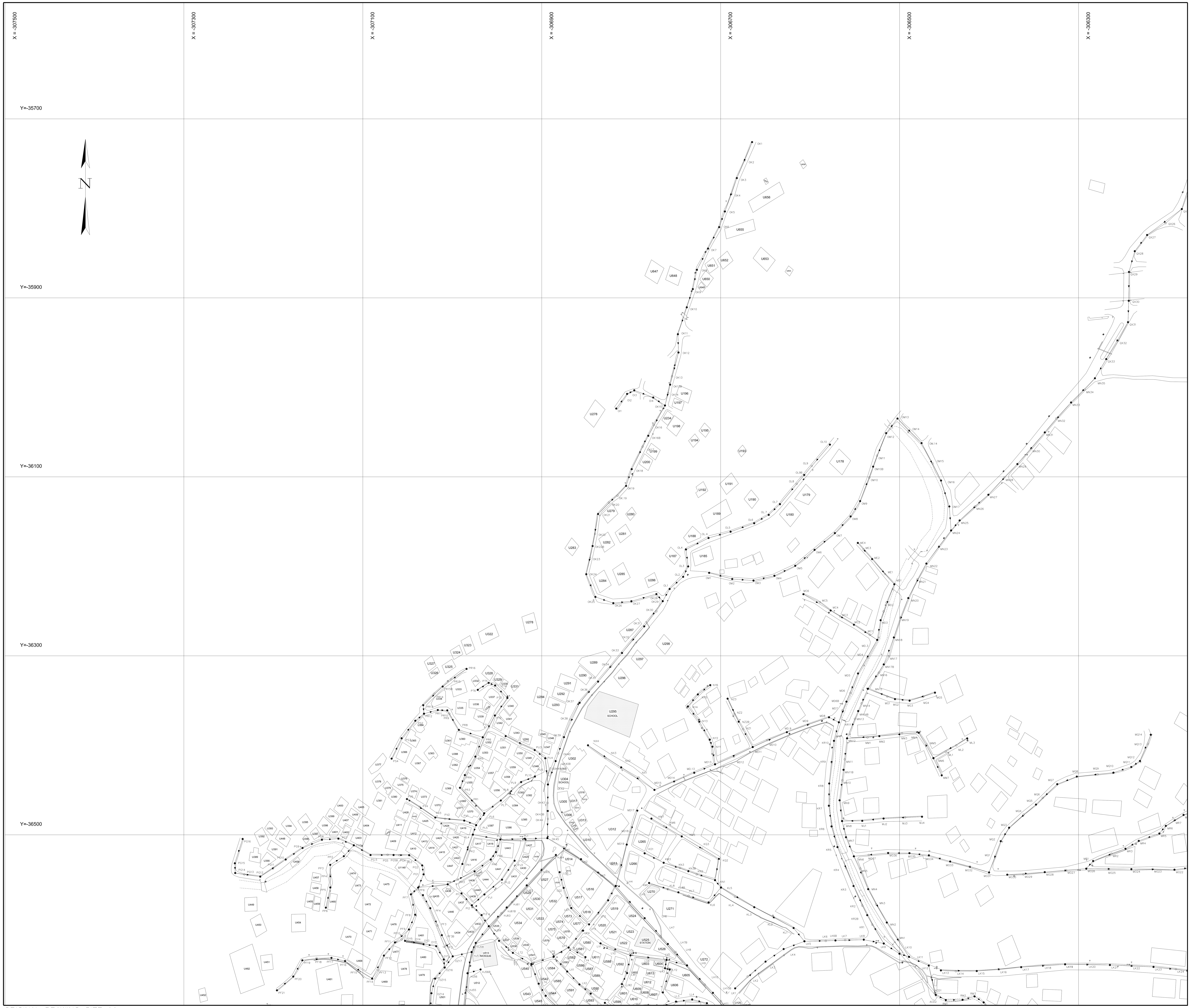
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

JDITA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-12-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JANUARY 2019	1:2000	2/6	473WW-12-PL02

ORIGINAL DRAWING SIZE A1



ORIGINAL DRAWING SIZE A1

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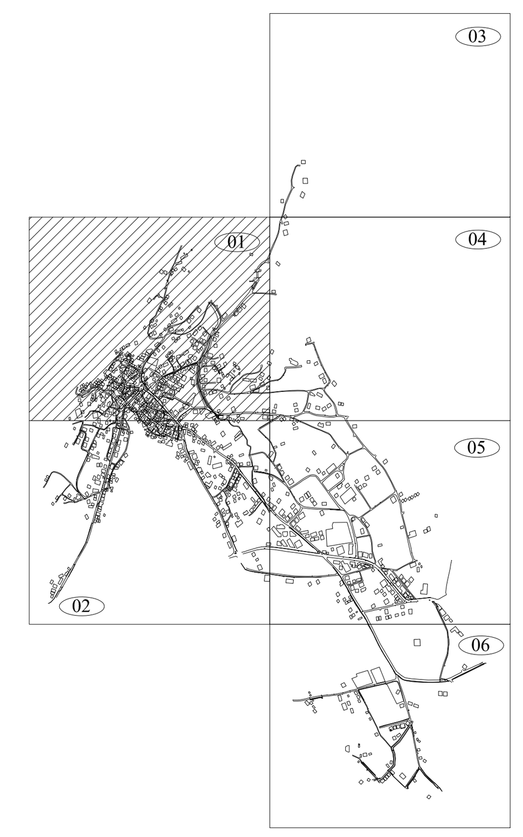
PLAN LEGEND

SEWER NETWORK

►	EXISTING WASTEWATER LINE		EXISTING MANHOLE
►	PROPOSED WASTEWATER LINE		PROPOSED MANHOLE
►►►	PROPOSED WASTEWATER LIFT LINE		

TOPOGRAPHICAL LEGEND

1-2-3	BUILDING 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS U: UNDER CONSTRUCTION V: VILLA	mh–s	MANHOLE SEWER
	PAVED ROAD	mh–w	MANHOLE WATER
	CONCRETE ROAD	mh–t	MANHOLE TELEPHONE
	TRACK/ SAND ROAD	MH	MANHOLE NOT IDENTIFIED
	REFERENCE LINE		LIGHTING POLE
channel	CHANNEL	EP/TP	ELECTRICAL / TELEPHONE POLE
	TERRACE		TOPOGRAPHICAL STATION
	FENCE	EL.S.S	ELECTRIC SUB STATION
	STREAM/RIVER		ELECTRIC POLE/TELEGRAPH POLE
	CULVERT/BRIDGE		STAKE POINT + STAKE NAME
Spr	SPRING	1160.12	SPOT HEIGHT
	WELL	1262	PLOT No
	DECIDUOUS/PINE TREE		BOUNDARY
	TREE	— + — + —	CIRCONSCRIPTION BOUNDARY
	ROCKS		CADASTRAL LIMITS
	DownHill High-Hill		



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

MINISTRY OF ENERGY AND WATER

BUREAU TECHINIQUE POUR LE DEVELOPPEMENT

JALL ED DIB – HAJAL Bldg PHONE:(04) 712157/712158 (03) 291016

P.O.BOX:70492 – ANTELIAS FAX :(04) 712159

EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

JDITA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW–12–PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JANUARY 2019	1:2000	1/6	473WW–12–PL01

Bldg. Number	Type
U270	مبنى بلدية جديتا
U295	مدرسة
U485	قيد الإنشاء
U513	جامع
U525	محطة وقود
U536	قيد الإنشاء
U564	كنيسة
U566	قيد الإنشاء
U600	كنيسة
U644	قيد الإنشاء
U660	سنتر تجاري
U686	قيد الإنشاء
U698	قيد الإنشاء
U699	قيد الإنشاء
U700	قيد الإنشاء
U701	قيد الإنشاء
U703	قيد الإنشاء
U731	فندق
U784	صالة أفراح
MA575	قيد.الانشاء
MA578	مزرعة
MA589	مزرعة غنم

Appendix E12: Key Prominent Features in Chtaura Network System

NOTES:

1- THE CONDITION OF THE EXISTING WASTEWATER LINES IS TO BE VERIFIED ON SITE BY THE CONTRACTOR.
2- WHERE A NEW LINE IS CONNECTED TO AN EXISTING MANHOLE , THE INVERT LEVEL OF THE MANHOLE SHOULD BE VERIFIED ON SITE BY THE CONTRACTOR , AND THE CONTRACTOR WILL TAKE ALL THE MEASURES TO DEAL WITH FLOW.
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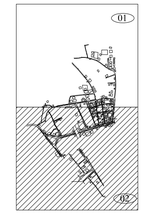
PLAN LEGEND

SEWER NETWORK

- EXISTING WASTEWATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER LIFT LINE
- EXISTING MANHOLE
- PROPOSED MANHOLE

TOPOGRAPHICAL LEGEND

- BUILDING
- 1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
- U: UNDER CONSTRUCTION
- V: VILLA
- PAVED ROAD
- CONCRETE ROAD
- TRACK/ SAND ROAD
- REFERENCE LINE
- CHANNEL
- TERRACE
- FENCE
- STREAM/RIVER
- CULVERT/BRIDGE
- SPRING
- WELL
- DECIDUOUS/PINE TREE
- TREE
- ROCKS
- DownHill
- HighHill
- MANHOLE SEWER
- MANHOLE WATER
- MANHOLE TELEPHONE
- MANHOLE NOT IDENTIFIED
- LIGHTING POLE
- ELECTRICAL / TELEPHONE POLE
- TOPOGRAPHICAL STATION
- ELECTRIC SUB STATION
- ELECTRIC POLE/TELEGRAPH POLE
- STAKE POINT + STAKE NAME
- SPOT HEIGHT
- PLOT No
- BOUNDARY
- CIRCONSCRIPTION BOUNDARY
- CADASTRAL LIMITS



KEY PLAN

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

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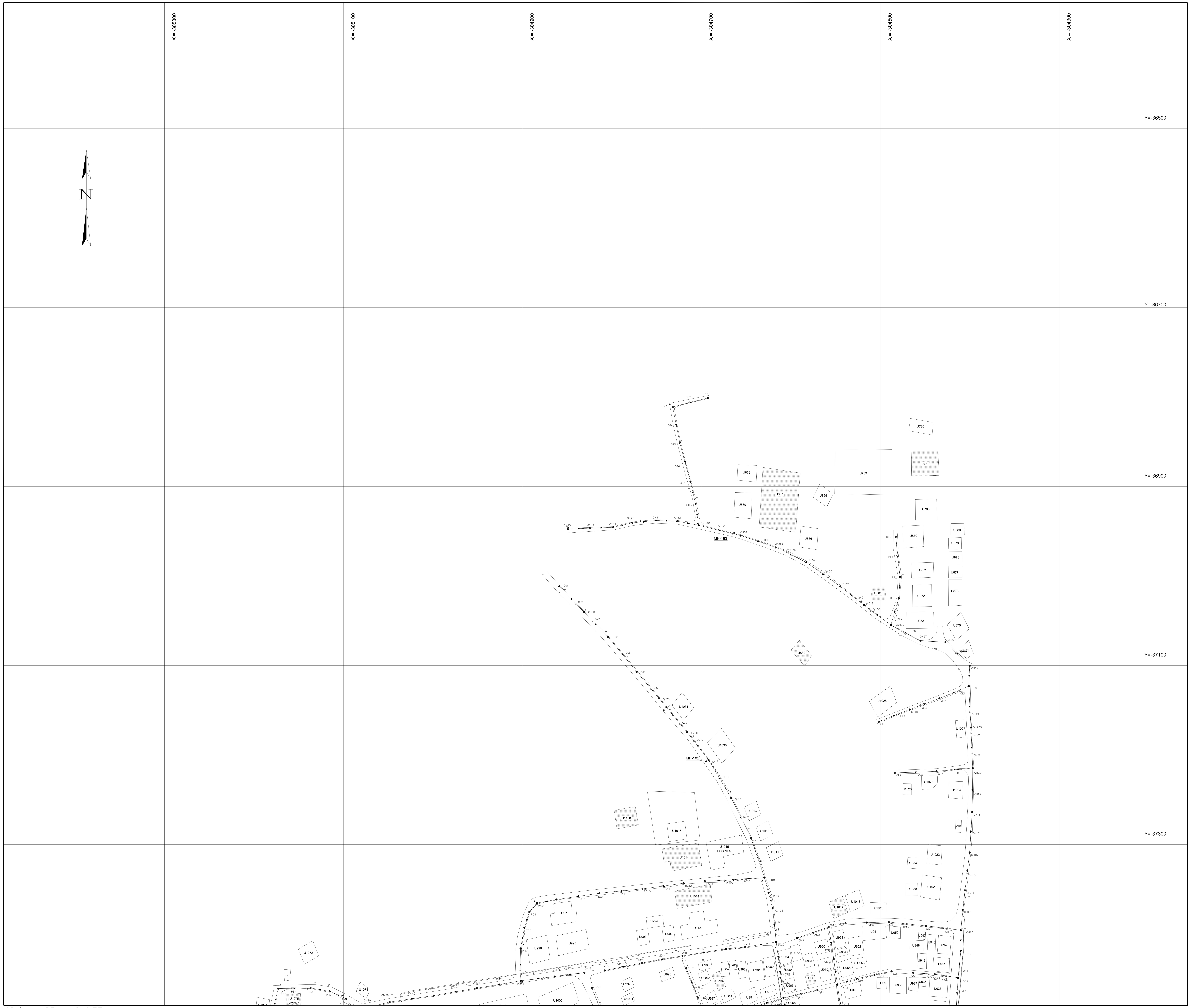
EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

CHTAURA WASTEWATER NETWORK	PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-13-PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JANUARY 2019	1:2000	2/2	473WW-13-PL02

ORIGINAL DRAWING SIZE A1



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PLAN LEGEND

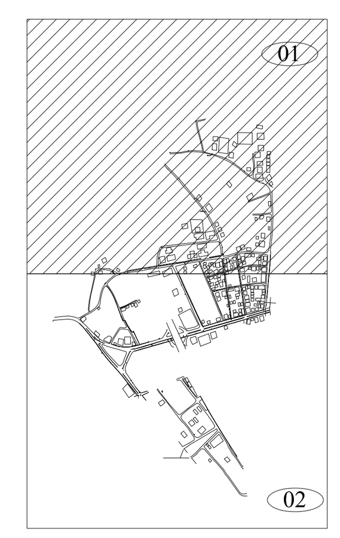
SEWER NETWORK

- EXISTING WASTEWATER LINE — EXISTING MANHOLE
- PROPOSED WASTEWATER LINE — PROPOSED MANHOLE
- PROPOSED WASTEWATER LIFT LINE

TOPOGRAPHICAL LEGEND

BUILDING
1-2-3 : 1 FLOOR+ 2 APARTMENTS + 3 SHOPS
U: UNDER CONSTRUCTION
V: VILLA
PAVED ROAD
CONCRETE ROAD
TRACK/ SAND ROAD
REFERENCE LINE
CHANNEL
TERRACE
FENCE
STREAM/RIVER
CULVERT/BRIDGE
SPRING
WELL
DECIDUOUS/PINE TREE
TREE
ROCKS
DownHill
High-Hill

mh–s MANHOLE SEWER
mh–w MANHOLE WATER
mh–t MANHOLE TELEPHONE
MH MANHOLE NOT IDENTIFIED
LIGHTING POLE
EP/TP ELECTRICAL / TELEPHONE POLE
TOPOGRAPHICAL STATION
EL.S.S ELECTRIC SUB STATION
ELECTRIC POLE/TELEGRAPH POLE
STAKE POINT + STAKE NAME
1160.12 SPOT HEIGHT
1262 PLOT No
BOUNDARY
CIRCONSCRIPTION BOUNDARY
CADASTRAL LIMITS



KEY PLAN

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

CHTAURA WASTEWATER NETWORK

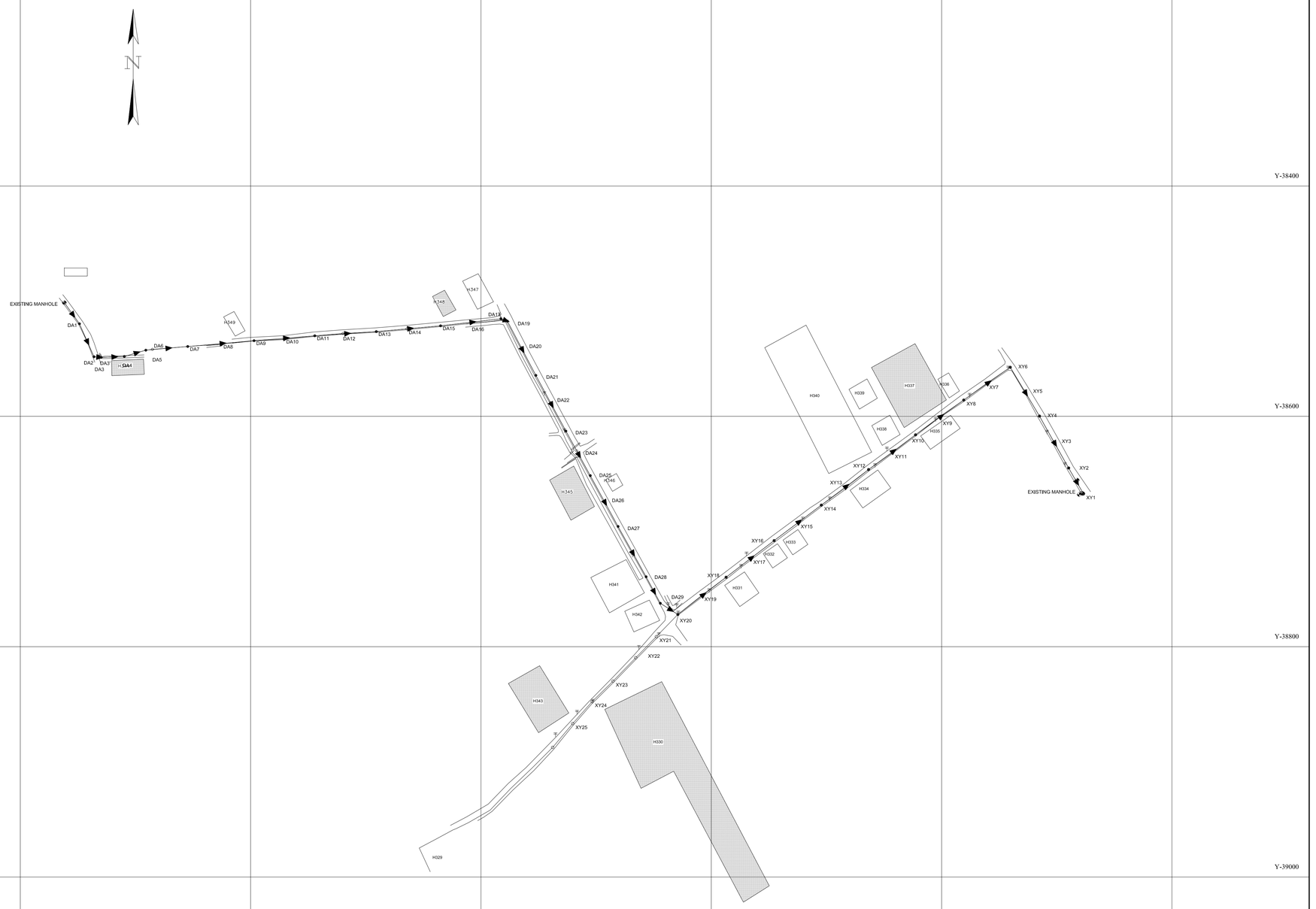
PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW–13–PL	J. ZALZAL	J. ZALZAL	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
JANUARY 2019	1:2000	1/2	473WW–13–PL01

Bldg. Number	Type
U787	مصنع سيراميك
U867	هنغار تصليح سيارات
U881	قيد الإنشاء
U882	قيد الإنشاء
U888	قيد الإنشاء
U966	قيد الإنشاء
U970	قيد الإنشاء
U990	قيد الإنشاء
U1004	مصنع حجر
U1009	سنتر تجاري
U1010	محطة وقود
U1014	قيد الإنشاء
U1017	قيد الإنشاء
U1075	كنيسة
U1077	سنتر تجاري
U1084	قيد الإنشاء
U1119	مبنى الجمارك
U1138	قيد الإنشاء
CH12	قيد لانشاء
CH15	مزرعة
CH20	بنك
CH27	غرفة
CH28	قيد لانشاء
CH29	قيد لانشاء
CH30	قيد لانشاء

Appendix E13: Key Prominent Features in Majdel Anjar and Taalabaya Connection



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3- WHERE THE PIPE COVER IS LESS THAN 90cm AND MORE THAN 4m, A CONCRETE SURROUND WILL BE EXECUTED.
4- WHEREVER THERE IS AN INTERSECTION WITH A WATER SUPPLY LINE A CONCRETE SURROUND WILL BE EXECUTED.
5- THE PROPOSED PIPES SHOULD BE LAID BY TAKING INTO CONSIDERATION THE PRESENCE OF THE EXISTING PIPES AND UTILITIES.
6- ALL PIPES SHOULD BE EXECUTED IN PUBLIC OR EXPROPRIATED ROAD.

PLAN LEGEND

SEWER NETWORK

- PROPOSED WASTEWATER LINE
- PROPOSED MANHOLE
- ASPHALTED ROAD
- BUILDING
- CANAL
- ELECTRIC POLE
- SURVEY STAKE
- STATION
- EXISTING MANHOLE

Rev.	Date	Dsgn	Drwn	Chk'd	Appr'd

REPUBLIC OF LEBANON

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
MINISTRY OF ENERGY AND WATER

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EXTENSION OF WASTEWATER COLLECTION NETWORKS DRAINED TOWARD EL MARJ WASTEWATER TREATMENT PLANT

CONNECTION LINE BETWEEN TAALABEYA AND ZAHLE WWTP

LINE TA
PLAN

FILE	DESIGNED BY	DRAWN BY	CHECKED BY
473WW-SN02-PL	M. DIMACHK	M. DIMACHK	L. ABOU RACHED

DATE	SCALE	SHEET No.	DRAWING No.
MARCH 2019	V=1/100 H=1/1000	1/1	473WW-SN02-PL01

ORIGINAL DRAWING SIZE A1

Bldg. Number	Type
H330	مخيم للنازحين
H337	مخيم للنازحين
H343	مخيم للنازحين
H344	مزرعة
H345	مخيم للنازحين عدد 12
H348	مخيم للنازحين عدد 4

APPENDIX F- ESF/SAFEGUARDS INTERIM NOTE: COVID-19 CONSIDERATIONS IN CONSTRUCTION/CIVIL WORKS PROJECTS

ESF/SAFEGUARDS INTERIM NOTE: COVID-19 CONSIDERATIONS IN CONSTRUCTION/CIVIL WORKS PROJECTS

This note was issued on April 7, 2020 and includes links to the latest guidance as of this date (e.g. from WHO). Given the COVID-19 situation is rapidly evolving, when using this note it is important to check whether any updates to these external resources have been issued.

1. INTRODUCTION

The COVID-19 pandemic presents Governments with unprecedented challenges. Addressing COVID-19 related issues in both existing and new operations starts with recognizing that this is not business as usual and that circumstances require a highly adaptive responsive management design to avoid, minimize and manage what may be a rapidly evolving situation. In many cases, we will ask Borrowers to use reasonable efforts in the circumstances, recognizing that what may be possible today may be different next week (both positively, because more supplies and guidance may be available, and negatively, because the spread of the virus may have accelerated).

This interim note is intended to provide guidance to teams on how to support Borrowers in addressing key issues associated with COVID-19, and consolidates the advice that has already been provided over the past month. As such, it should be used in place of other guidance that has been provided to date. This note will be developed as the global situation and the Bank's learning (and that of others) develops. This is not a time when 'one size fits all'. More than ever, teams will need to work with Borrowers and projects to understand the activities being carried out and the risks that these activities may entail. Support will be needed in designing mitigation measures that are implementable in the context of the project. These measures will need to take into account capacity of the Government agencies, availability of supplies and the practical challenges of operations on-the-ground, including stakeholder engagement, supervision and monitoring. In many circumstances, communication itself may be challenging, where face-to-face meetings are restricted or prohibited, and where IT solutions are limited or unreliable.

This note emphasizes the importance of careful scenario planning, clear procedures and protocols, management systems, effective communication and coordination, and the need for high levels of responsiveness in a changing environment. It recommends assessing the current situation of the project, putting in place mitigation measures to avoid or minimize the chance of infection, and planning what to do if either project workers become infected or the work force includes workers from proximate communities affected by COVID-19. In many projects, measures to avoid or minimize will need to be implemented at the same time as dealing with sick workers and relations with the community, some of whom may also be ill or concerned about infection. Borrowers should understand the obligations that contractors have under their existing contracts (see Section 3), require contractors to put in place appropriate organizational structures (see Section 4) and develop procedures to address different aspects of COVID-19 (see Section 5).

2. CHALLENGES WITH CONSTRUCTION/CIVIL WORKS

Projects involving construction/civil works frequently involve a large work force, together with suppliers and supporting functions and services. The work force may comprise workers from international, national, regional, and local labor markets. They may need to live in on-site accommodation, lodge within communities close to work sites or return to their homes after work. There may be different contractors

permanently present on site, carrying out different activities, each with their own dedicated workers. Supply chains may involve international, regional and national suppliers facilitating the regular flow of goods and services to the project (including supplies essential to the project such as fuel, food, and water). As such there will also be regular flow of parties entering and exiting the site; support services, such as catering, cleaning services, equipment, material and supply deliveries, and specialist sub-contractors, brought in to deliver specific elements of the works.

Given the complexity and the concentrated number of workers, the potential for the spread of infectious disease in projects involving construction is extremely serious, as are the implications of such a spread. Projects may experience large numbers of the work force becoming ill, which will strain the project's health facilities, have implications for local emergency and health services and may jeopardize the progress of the construction work and the schedule of the project. Such impacts will be exacerbated where a work force is large and/or the project is in remote or under-serviced areas. In such circumstances, relationships with the community can be strained or difficult and conflict can arise, particularly if people feel they are being exposed to disease by the project or are having to compete for scarce resources. The project must also exercise appropriate precautions against introducing the infection to local communities.

3. DOES THE CONSTRUCTION CONTRACT COVER THIS SITUATION?

Given the unprecedented nature of the COVID-19 pandemic, it is unlikely that the existing construction/civil works contracts will cover all the things that a prudent contractor will need to do. Nevertheless, the first place for a Borrower to start is with the contract, determining what a contractor's existing obligations are, and how these relate to the current situation.

The obligations on health and safety will depend on what kind of contract exists (between the Borrower and the main contractor; between the main contractors and the sub-contractors). It will differ if the Borrower used the World Bank's standard procurement documents (SPDs) or used national bidding documents. If a FIDIC document has been used, there will be general provisions relating to health and safety. For example, the standard FIDIC, Conditions of Contract for Construction (Second Edition 2017), which contains no 'ESF enhancements', states (in the General Conditions, clause 6.7) that the Contractor will be required:

- to take all necessary precautions to maintain the health and safety of the Contractor's Personnel
- to appoint a health and safety officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the site and to take protective measures to prevent accidents
- to ensure, in collaboration with local health authorities, that medical staff, first aid facilities, sick bay, ambulance services and any other medical services specified are available at all times at the site and at any accommodation
- to ensure suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics

These requirements have been enhanced through the introduction of the ESF into the SPDs (edition dated July 2019). The general FIDIC clause referred to above has been strengthened to reflect the requirements of the ESF. Beyond FIDIC's general requirements discussed above, the Bank's Particular Conditions include a number of relevant requirements on the Contractor, including:

- to provide health and safety training for Contractor's Personnel (which include project workers and all personnel that the Contractor uses on site, including staff and other employees of the Contractor and Subcontractors and any other personnel assisting the Contractor in carrying out project activities)
- to put in place workplace processes for Contractor's Personnel to report work situations that are not safe or healthy
- gives Contractor's Personnel the right to report work situations which they believe are not safe or healthy, and to remove themselves from a work situation which they have a reasonable justification to believe presents an imminent and serious danger to their life or health (with no reprisal for reporting or removing themselves)
- requires measures to be in place to avoid or minimize the spread of diseases including measures to avoid or minimize the transmission of communicable diseases that may be associated with the influx of temporary or permanent contract-related labor
- to provide an easily accessible grievance mechanism to raise workplace concerns

Where the contract form used is FIDIC, the Borrower (as the Employer) will be represented by the Engineer (also referred to in this note as the Supervising Engineer). The Engineer will be authorized to exercise authority specified in or necessarily implied from the construction contract. In such cases, the Engineer (through its staff on site) will be the interface between the PIU and the Contractor. It is important therefore to understand the scope of the Engineer's responsibilities. It is also important to recognize that in the case of infectious diseases such as COVID-19, project management – through the Contractor/subcontractor hierarchy – is only as effective as the weakest link. A thorough review of management procedures/plans as they will be implemented through the entire contractor hierarchy is important. Existing contracts provide the outline of this structure; they form the basis for the Borrower to understand how proposed mitigation measures will be designed and how adaptive management will be implemented, and to start a conversation with the Contractor on measures to address COVID-19 in the project.

4. WHAT PLANNING SHOULD THE BORROWER BE DOING?

Task teams should work with Borrowers (PIUs) to confirm that projects (i) are taking adequate precautions to prevent or minimize an outbreak of COVID-19, and (ii) have identified what to do in the event of an outbreak. Suggestions on how to do this are set out below:

- The PIU, either directly or through the Supervising Engineer, should request details in writing from the main Contractor of the measures being taken to address the risks. As stated in Section 3, the construction contract should include health and safety requirements, and these can be used as the basis for identification of, and requirements to implement, COVID-19 specific measures. The measures may be presented as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures. The measures may be reflected in revisions to the project's health and safety manual. This request should be made in writing (following any relevant procedure set out in the contract between the Borrower and the contractor).

- In making the request, it may be helpful for the PIU to specify the areas that should be covered. This should include the items set out in Section 5 below and take into account current and relevant

guidance provided by national authorities, WHO and other organizations. See the list of references in the Annex to this note.

- The PIU should require the Contractor to convene regular meetings with the project health and safety specialists and medical staff (and where appropriate the local health authorities), and to take their advice in designing and implementing the agreed measures.

- Where possible, a senior person should be identified as a focal point to deal with COVID-19 issues. This can be a work supervisor or a health and safety specialist. This person can be responsible for coordinating preparation of the site and making sure that the measures taken are communicated to the workers, those entering the site and the local community. It is also advisable to designate at least one back-up person, in case the focal point becomes ill; that person should be aware of the arrangements that are in place.

- On sites where there are a number of contractors and therefore (in effect) different work forces, the request should emphasize the importance of coordination and communication between the different parties. Where necessary, the PIU should request the main contractor to put in place a protocol for regular meetings of the different contractors, requiring each to appoint a designated staff member (with back up) to attend such meetings. If meetings cannot be held in person, they should be conducted using whatever IT is available. The effectiveness of mitigation measures will depend on the weakest implementation, and therefore it is important that all contractors and sub-contractors understand the risks and the procedure to be followed.

- The PIU, either directly or through the Supervising Engineer, may provide support to projects in identifying appropriate mitigation measures, particularly where these will involve interface with local services, in particular health and emergency services. In many cases, the PIU can play a valuable role in connecting project representatives with local Government agencies, and helping coordinate a strategic response, which takes into account the availability of resources. To be most effective, projects should consult and coordinate with relevant Government agencies and other projects in the vicinity.

- Workers should be encouraged to use the existing project grievance mechanism to report concerns relating to COVID-19, preparations being made by the project to address COVID-19 related issues, how procedures are being implemented, and concerns about the health of their co-workers and other staff.

5. WHAT SHOULD THE CONTRACTOR COVER?

The Contractor should identify measures to address the COVID-19 situation. What will be possible will depend on the context of the project: the location, existing project resources, availability of supplies, capacity of local emergency/health services, the extent to which the virus already exist in the area. A systematic approach to planning, recognizing the challenges associated with rapidly changing circumstances, will help the project put in place the best measures possible to address the situation. As discussed above, measures to address COVID-19 may be presented in different ways (as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures). PIUs and contractors should refer to guidance issued by relevant authorities, both national

and international (e.g. WHO), which is regularly updated (see sample References and links provided in the Annex).

Addressing COVID-19 at a project site goes beyond occupational health and safety, and is a broader project issue which will require the involvement of different members of a project management team. In many cases, the most effective approach will be to establish procedures to address the issues, and then to ensure that these procedures are implemented systematically. Where appropriate given the project context, a designated team should be established to address COVID-19 issues, including PIU representatives, the Supervising Engineer, management (e.g. the project manager) of the contractor and sub-contractors, security, and medical and OHS professionals. Procedures should be clear and straightforward, improved as necessary, and supervised and monitored by the COVID-19 focal point(s). Procedures should be documented, distributed to all contractors, and discussed at regular meetings to facilitate adaptive management. The issues set out below include a number that represent expected good workplace management but are especially pertinent in preparing the project response to COVID-19.

(a) ASSESSING WORKFORCE CHARACTERISTICS

Many construction sites will have a mix of workers e.g. workers from the local communities; workers from a different part of the country; workers from another country. Workers will be employed under different terms and conditions and be accommodated in different ways. Assessing these different aspects of the workforce will help in identifying appropriate mitigation measures:

- The Contractor should prepare a detailed profile of the project work force, key work activities, schedule for carrying out such activities, different durations of contract and rotations (e.g. 4 weeks on, 4 weeks off).
- This should include a breakdown of workers who reside at home (i.e. workers from the community), workers who lodge within the local community and workers in on-site accommodation. Where possible, it should also identify workers that may be more at risk from COVID-19, those with underlying health issues or who may be otherwise at risk.
- Consideration should be given to ways in which to minimize movement in and out of site. This could include lengthening the term of existing contracts, to avoid workers returning home to affected areas, or returning to site from affected areas.
- Workers accommodated on site should be required to minimize contact with people near the site, and in certain cases be prohibited from leaving the site for the duration of their contract, so that contact with local communities is avoided.
- Consideration should be given to requiring workers lodging in the local community to move to site accommodation (subject to availability) where they would be subject to the same restrictions.
- Workers from local communities, who return home daily, weekly or monthly, will be more difficult to manage. They should be subject to health checks at entry to the site (as set out above) and at some point, circumstances may make it necessary to require them to either use accommodation on site or not to come to work.

(b) ENTRY/EXIT TO THE WORK SITE AND CHECKS ON COMMENCEMENT OF WORK

Entry/exit to the work site should be controlled and documented for both workers and other parties, including support staff and suppliers. Possible measures may include:

- Establishing a system for controlling entry/exit to the site, securing the boundaries of the site, and establishing designating entry/exit points (if they do not already exist). Entry/exit to the site should be documented.
- Training security staff on the (enhanced) system that has been put in place for securing the site and controlling entry and exit, the behaviors required of them in enforcing such system and any COVID - 19 specific considerations.
- Training staff who will be monitoring entry to the site, providing them with the resources they need to document entry of workers, conducting temperature checks and recording details of any worker that is denied entry.
- Confirming that workers are fit for work before they enter the site or start work. While procedures should already be in place for this, special attention should be paid to workers with underlying health issues or who may be otherwise at risk. Consideration should be given to demobilization of staff with underlying health issues.
- Checking and recording temperatures of workers and other people entering the site or requiring self-reporting prior to or on entering the site.
- Providing daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures, using demonstrations and participatory methods.
- During the daily briefings, reminding workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor or the COVID-19 focal point if they have symptoms or are feeling unwell.
- Preventing a worker from an affected area or who has been in contact with an infected person from returning to the site for 14 days or (if that is not possible) isolating such worker for 14 days.
- Preventing a sick worker from entering the site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days.

(c) GENERAL HYGIENE

Requirements on general hygiene should be communicated and monitored, to include:

- Training workers and staff on site on the signs and symptoms of COVID-19, how it is spread, how to protect themselves (including regular handwashing and social distancing) and what to do if they or other people have symptoms (for further information see WHO COVID-19 advice for the public).
- Placing posters and signs around the site, with images and text in local languages.
- Ensuring handwashing facilities supplied with soap, disposable paper towels and closed waste bins exist at key places throughout site, including at entrances/exits to work areas; where there is a toilet, canteen or food distribution, or provision of drinking water; in worker accommodation; at waste stations; at stores; and in common spaces. Where handwashing facilities do not exist or are not adequate, arrangements should be made to set them up. Alcohol based sanitizer (if available, 60-95% alcohol) can also be used.
- Review worker accommodations, and assess them in light of the requirements set out in IFC/EBRD guidance on Workers' Accommodation: processes and standards, which provides valuable guidance as to good practice for accommodation.
- Setting aside part of worker accommodation for precautionary self-quarantine as well as more formal isolation of staff who may be infected (see paragraph (f)).

(d) CLEANING AND WASTE DISPOSAL

Conduct regular and thorough cleaning of all site facilities, including offices, accommodation, canteens, common spaces. Review cleaning protocols for key construction equipment (particularly if it is being operated by different workers). This should include:

- Providing cleaning staff with adequate cleaning equipment, materials and disinfectant.
- Review general cleaning systems, training cleaning staff on appropriate cleaning procedures and appropriate frequency in high use or high-risk areas.
- Where it is anticipated that cleaners will be required to clean areas that have been or are suspected to have been contaminated with COVID-19, providing them with appropriate PPE: gowns or aprons, gloves, eye protection (masks, goggles or face screens) and boots or closed work shoes. If appropriate PPE is not available, cleaners should be provided with best available alternatives.
- Training cleaners in proper hygiene (including handwashing) prior to, during and after conducting cleaning activities; how to safely use PPE (where required); in waste control (including for used PPE and cleaning materials).
- Any medical waste produced during the care of ill workers should be collected safely in designated containers or bags and treated and disposed of following relevant requirements (e.g., national, WHO). If open burning and incineration of medical wastes is necessary, this should be for as limited a duration as possible. Waste should be reduced and segregated, so that only the smallest amount of waste is incinerated (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19).

(e) ADJUSTING WORK PRACTICES

Consider changes to work processes and timings to reduce or minimize contact between workers, recognizing that this is likely to impact the project schedule. Such measures could include:

- Decreasing the size of work teams.
- Limiting the number of workers on site at any one time.
- Changing to a 24-hour work rotation.
- Adapting or redesigning work processes for specific work activities and tasks to enable social distancing, and training workers on these processes.
- Continuing with the usual safety trainings, adding COVID-19 specific considerations. Training should include proper use of normal PPE. While as of the date of this note, general advice is that construction workers do not require COVID-19 specific PPE, this should be kept under review (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- Reviewing work methods to reduce use of construction PPE, in case supplies become scarce or the PPE is needed for medical workers or cleaners. This could include, e.g. trying to reduce the need for dust masks by checking that water sprinkling systems are in good working order and are maintained or reducing the speed limit for haul trucks.
- Arranging (where possible) for work breaks to be taken in outdoor areas within the site.
- Consider changing canteen layouts and phasing meal times to allow for social distancing and phasing access to and/or temporarily restricting access to leisure facilities that may exist on site, including gyms.

- At some point, it may be necessary to review the overall project schedule, to assess the extent to which it needs to be adjusted (or work stopped completely) to reflect prudent work practices, potential exposure of both workers and the community and availability of supplies, taking into account Government advice and instructions.

(f) PROJECT MEDICAL SERVICES

Consider whether existing project medical services are adequate, taking into account existing infrastructure (size of clinic/medical post, number of beds, isolation facilities), medical staff, equipment and supplies, procedures and training. Where these are not adequate, consider upgrading services where possible, including:

- Expanding medical infrastructure and preparing areas where patients can be isolated. Guidance on setting up isolation facilities is set out in WHO interim guidance on considerations for quarantine of individuals in the context of containment for COVID-19). Isolation facilities should be located away from worker accommodation and ongoing work activities. Where possible, workers should be provided with a single well-ventilated room (open windows and door). Where this is not possible, isolation facilities should allow at least 1 meter between workers in the same room, separating workers with curtains, if possible. Sick workers should limit their movements, avoiding common areas and facilities and not be allowed visitors until they have been clear of symptoms for 14 days. If they need to use common areas and facilities (e.g. kitchens or canteens), they should only do so when unaffected workers are not present and the area/facilities should be cleaned prior to and after such use.
- Training medical staff, which should include current WHO advice on COVID-19 and recommendations on the specifics of COVID-19. Where COVID-19 infection is suspected, medical providers on site should follow WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected.
- Training medical staff in testing, if testing is available.
- Assessing the current stock of equipment, supplies and medicines on site, and obtaining additional stock, where required and possible. This could include medical PPE, such as gowns, aprons, medical masks, gloves, and eye protection. Refer to WHO guidance as to what is advised (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- If PPE items are unavailable due to world-wide shortages, medical staff on the project should agree on alternatives and try to procure them. Alternatives that may commonly be found on constructions sites include dust masks, construction gloves and eye goggles. While these items are not recommended, they should be used as a last resort if no medical PPE is available.
- Ventilators will not normally be available on work sites, and in any event, intubation should only be conducted by experienced medical staff. If a worker is extremely ill and unable to breathe properly on his or her own, they should be referred immediately to the local hospital (see (g) below).
- Review existing methods for dealing with medical waste, including systems for storage and disposal (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19, and WHO guidance on safe management of wastes from health-care activities).

(g) LOCAL MEDICAL AND OTHER SERVICES

Given the limited scope of project medical services, the project may need to refer sick workers to local medical services. Preparation for this includes:

- Obtaining information as to the resources and capacity of local medical services (e.g. number of beds, availability of trained staff and essential supplies).
- Conducting preliminary discussions with specific medical facilities, to agree what should be done in the event of ill workers needing to be referred.
- Considering ways in which the project may be able to support local medical services in preparing for members of the community becoming ill, recognizing that the elderly or those with pre-existing medical conditions require additional support to access appropriate treatment if they become ill.
- Clarifying the way in which an ill worker will be transported to the medical facility, and checking availability of such transportation.
- Establishing an agreed protocol for communications with local emergency/medical services.
- Agreeing with the local medical services/specific medical facilities the scope of services to be provided, the procedure for in-take of patients and (where relevant) any costs or payments that may be involved.
- A procedure should also be prepared so that project management knows what to do in the unfortunate event that a worker ill with COVID-19 dies. While normal project procedures will continue to apply, COVID-19 may raise other issues because of the infectious nature of the disease. The project should liaise with the relevant local authorities to coordinate what should be done, including any reporting or other requirements under national law.

(h) INSTANCES OR SPREAD OF THE VIRUS

WHO provides detailed advice on what should be done to treat a person who becomes sick or displays symptoms that could be associated with the COVID-19 virus (for further information see WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected). The project should set out risk-based procedures to be followed, with differentiated approaches based on case severity (mild, moderate, severe, critical) and risk factors (such as age, hypertension, diabetes) (for further information see WHO interim guidance on operational considerations for case management of COVID-19 in health facility and community). These may include the following:

- If a worker has symptoms of COVID-19 (e.g. fever, dry cough, fatigue) the worker should be removed immediately from work activities and isolated on site.
- If testing is available on site, the worker should be tested on site. If a test is not available at site, the worker should be transported to the local health facilities to be tested (if testing is available).
- If the test is positive for COVID-19 or no testing is available, the worker should continue to be isolated. This will either be at the work site or at home. If at home, the worker should be transported to their home in transportation provided by the project.
- Extensive cleaning procedures with high-alcohol content disinfectant should be undertaken in the area where the worker was present, prior to any further work being undertaken in that area. Tools used by the worker should be cleaned using disinfectant and PPE disposed of.
- Co-workers (i.e. workers with whom the sick worker was in close contact) should be required to stop work, and be required to quarantine themselves for 14 days, even if they have no symptoms.

- Family and other close contacts of the worker should be required to quarantine themselves for 14 days, even if they have no symptoms.
- If a case of COVID-19 is confirmed in a worker on the site, visitors should be restricted from entering the site and worker groups should be isolated from each other as much as possible.
- If workers live at home and has a family member who has a confirmed or suspected case of COVID-19, the worker should quarantine themselves and not be allowed on the project site for 14 days, even if they have no symptoms.
- Workers should continue to be paid throughout periods of illness, isolation or quarantine, or if they are required to stop work, in accordance with national law.
- Medical care (whether on site or in a local hospital or clinic) required by a worker should be paid for by the employer.

(i) CONTINUITY OF SUPPLIES AND PROJECT ACTIVITIES

Where COVID-19 occurs, either in the project site or the community, access to the project site may be restricted, and movement of supplies may be affected.

- Identify back-up individuals, in case key people within the project management team (PIU, Supervising Engineer, Contractor, sub-contractors) become ill, and communicate who these are so that people are aware of the arrangements that have been put in place.
- Document procedures, so that people know what they are, and are not reliant on one person's knowledge.
- Understand the supply chain for necessary supplies of energy, water, food, medical supplies and cleaning equipment, consider how it could be impacted, and what alternatives are available. Early pro-active review of international, regional and national supply chains, especially for those supplies that are critical for the project, is important (e.g. fuel, food, medical, cleaning and other essential supplies). Planning for a 1-2 month interruption of critical goods may be appropriate for projects in more remote areas.
- Place orders for/procure critical supplies. If not available, consider alternatives (where feasible).
- Consider existing security arrangements, and whether these will be adequate in the event of interruption to normal project operations.
- Consider at what point it may become necessary for the project to significantly reduce activities or to stop work completely, and what should be done to prepare for this, and to re-start work when it becomes possible or feasible.

(j) TRAINING AND COMMUNICATION WITH WORKERS

Workers need to be provided with regular opportunities to understand their situation, and how they can best protect themselves, their families and the community. They should be made aware of the procedures that have been put in place by the project, and their own responsibilities in implementing them.

- It is important to be aware that in communities close to the site and amongst workers without access to project management, social media is likely to be a major source of information. This raises the importance of regular information and engagement with workers (e.g. through training, town halls, tool boxes) that emphasizes what management is doing to deal with the risks of COVID-19. Allaying fear is an important aspect of work force peace of mind and business continuity. Workers should be given an opportunity to ask questions, express their concerns, and make suggestions.

- Training of workers should be conducted regularly, as discussed in the sections above, providing workers with a clear understanding of how they are expected to behave and carry out their work duties.
- Training should address issues of discrimination or prejudice if a worker becomes ill and provide an understanding of the trajectory of the virus, where workers return to work.
- Training should cover all issues that would normally be required on the work site, including use of safety procedures, use of construction PPE, occupational health and safety issues, and code of conduct, taking into account that work practices may have been adjusted.
- Communications should be clear, based on fact and designed to be easily understood by workers, for example by displaying posters on handwashing and social distancing, and what to do if a worker displays symptoms.

(k) COMMUNICATION AND CONTACT WITH THE COMMUNITY

Relations with the community should be carefully managed, with a focus on measures that are being implemented to safeguard both workers and the community. The community may be concerned about the presence of non-local workers, or the risks posed to the community by local workers presence on the project site. The project should set out risk-based procedures to be followed , which may reflect WHO guidance (for further information see WHO Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response). The following good practice should be considered:

- Communications should be clear, regular, based on fact and designed to be easily understood by community members.
- Communications should utilize available means. In most cases, face-to-face meetings with the community or community representatives will not be possible. Other forms of communication should be used; posters, pamphlets, radio, text message, electronic meetings. The means used should take into account the ability of different members of the community to access them, to make sure that communication reaches these groups.
- The community should be made aware of procedures put in place at site to address issues related to COVID-19. This should include all measures being implemented to limit or prohibit contact between workers and the community. These need to be communicated clearly, as some measures will have financial implications for the community (e.g. if workers are paying for lodging or using local facilities). The community should be made aware of the procedure for entry/exit to the site, the training being given to workers and the procedure that will be followed by the project if a worker becomes sick.
- If project representatives, contractors or workers are interacting with the community, they should practice social distancing and follow other COVID-19 guidance issued by relevant authorities, both national and international (e.g. WHO).

6. EMERGENCY POWERS AND LEGISLATION

Many Borrowers are enacting emergency legislation. The scope of such legislation, and the way it interacts with other legal requirements, will vary from country to country. Such legislation can cover a range of issues, for example:

- Declaring a public health emergency

- Authorizing the use of police or military in certain activities (e.g. enforcing curfews or restrictions on movement)
- Ordering certain categories of employees to work longer hours, not to take holiday or not to leave their job (e.g. health workers)
- Ordering non-essential workers to stay at home, for reduced pay or compulsory holiday

Except in exceptional circumstances (after referral to the World Bank's Operations Environmental and Social Review Committee (OESRC)), projects will need to follow emergency legislation to the extent that these are mandatory or advisable. It is important that the Borrower understands how mandatory requirements of the legislation will impact the project. Teams should require Borrowers (and in turn, Borrowers should request Contractors) to consider how the emergency legislation will impact the obligations of the Borrower set out in the legal agreement and the obligations set out in the construction contracts. Where the legislation requires a material departure from existing contractual obligations, this should be documented, setting out the relevant provisions.

ANNEX

WHO Guidance

Advice for the public

WHO advice for the public, including on social distancing, respiratory hygiene, self-quarantine, and seeking medical advice, can be consulted on this WHO website:
https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

Technical guidance

Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected, issued on 19 March 2020

Coronavirus disease (COVID-19) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health, issued on 18 March 2020

Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response, issued on 16 March 2020

Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19), issued on 19 March 2020

Operational considerations for case management of COVID-19 in health facility and community, issued on 19 March 2020

Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19), issued on 27 February 2020

Getting your workplace ready for COVID-19, issued on 19 March 2020

Water, sanitation, hygiene and waste management for COVID-19, issued on 19 March 2020

Safe management of wastes from health-care activities issued in 2014

Advice on the use of masks in the community, during home care and in healthcare settings in the context of the novel coronavirus (COVID-19) outbreak, issued on March 19, 2020

ILO GUIDANCE

ILO Standards and COVID-19 FAQ, issued on March 23, 2020 (provides a compilation of answers to most frequently asked questions related to international labor standards and COVID-19)

MFI GUIDANCE

IDB Invest Guidance for Infrastructure Projects on COVID-19: A Rapid Risk Profile and Decision Framework

KfW DEG COVID-19 Guidance for employers, issued on 31 March 2020

CDC Group COVID-19 Guidance for Employers, issued on 23 March 2020

APPENDIX G- COVID-19 CONSIDERATIONS IN CONSTRUCTION/CIVIL WORKS PROJECTS

COVID-19 CONSIDERATIONS IN CONSTRUCTION/CIVIL WORKS PROJECTS

April 2020

WORLD BANK GROUP

Guidance on COVID-19

- The COVID-19 pandemic presents Governments with unprecedented challenges
- Addressing COVID-19 related issues starts with recognizing that this is not business as usual and that circumstances require a highly adaptive responsive management design to avoid, minimize and manage what may be a rapidly evolving situation

WORLD BANK GROUP

Guidance on COVID-19

- It is thus necessary to emphasize the importance of:
  - Careful scenario planning
  - Clear procedures and protocols
  - Management systems
  - Effective communication and coordination
  - Need for high levels of responsiveness in a changing environment

WORLD BANK GROUP

Guidance on COVID-19

1. Start by assessing the current situation of the project
2. Put in place mitigation measures to avoid or minimize the chance of infection
3. Plan what to do if project workers get infected or the workforce includes workers from proximate communities affected by COVID-19

WORLD BANK GROUP

Challenges with Construction/Civil Works

- Involve a large workforce (together with suppliers and supporting functions and services)
- Workforce may comprise workers from international, national, regional and local labor markets
- May need on-site accommodation, reside within communities close to the work site or return home after work
- There may be different contractors permanently present on site, carrying out different activities, each with their own workforce
- Supply chains may involve international, regional and national suppliers
- Regular flow of parties entering and exiting the site (including support services, specialist subcontractors, etc.)

Does the Construction Contract Cover this Situation?

- Determine what a contractor's existing obligations are and how these relate to the current situation
- What are the health and safety requirements on the Contractor?
- Existing contracts provide the outline for the management procedures/plans as they will be implemented through the entire contractor hierarchy
- Understanding this structure will help in the design of mitigation measures and how adaptive management will be implemented to address COVID-19 in the project

WORLD BANK GROUP

What Planning Should We be Doing?

1. Take adequate precautions to prevent or minimize an outbreak of COVID-19
2. Identify what to do in the event of an outbreak

WORLD BANK GROUP

What Planning Should We be Doing?

- Request details in writing from the main Contractor of the measures being taken to address the risks.
  - *Measures can be presented as a contingency plan, as an extension of the existing project emergency and preparedness plan or s standalone procedures*
- PIU should require the Contractor to convene regular meetings with project health and safety specialists and medical staff, and take their advice in designing and implementing the agreed measures
- A senior person should be identified as a focal point to deal with COVID-19 issues (it is also advisable to designate at least one back-up person who should be aware of the arrangements in place)

WORLD BANK GROUP

What Planning Should We be Doing?

- On sites where there are a number of contractors (different workforces) there should be coordination and communication between different parties
- The PIU may provide support to projects in identifying appropriate mitigation measures, particularly where these will involve local services (health and emergency services)
- Projects should consult and coordinate with relevant Government agencies and other projects in the vicinity
- Workers should be encouraged to use existing project GRM to report concerns related to COVID-19

What Should the Contractor Cover?

- Where appropriate given the project context, a designated team should be established to address COVID-19 issues
- This team should include: PIU representatives, the Supervising Engineers, project manager of the contractor and subcontractors, security and medical and OHS professionals
- Procedures should be clear and straightforward, improved as necessary, and supervised and monitored by the COVID-19 focal point(s)
- Procedures should be documented, distributed to all contractors and discussed at regular meetings to facilitate adaptive management

WORLD BANK GROUP

What Should the Contractor Cover?

Preparing the project response to COVID-19 should include:

a) Assessing Workforce Characteristics
b) Entry/Exit to the Work Site and Checks on Commencement of Work
c) General Hygiene
d) Cleaning and Waste Disposal
e) Adjusting Work Practices
f) Project Medical Services
g) Local Medical and Other Services
h) Instances or Spread of the Virus
i) Continuity of Supplies and Project Activities
j) Training and Communication with Workers
k) Communication and Contact with the Community

WORLD BANK GROUP

What Should the Contractor Cover?

a) Assessing Workforce Characteristics

- Prepare a detailed profile of the project workforce, key work activities, schedule for carrying out such activities, different durations of contract and rotations
- Breakdown of workers who reside at home, those who reside within the local community and workers in on-site accommodation
- Minimize movement in and out of site as much as possible
- Workers residing on-site should be required to minimize contact with people near the site/prohibited from leaving the site for the duration of their contract
- Consideration to be given to moving workers who reside in the local community to on-site accommodation
- Workers from local communities (who return home regularly) should be subject to regular health checks at entry to the site

What Should the Contractor Cover?

b) Entry/Exit to the Work Site and Check on Commencement of Work

- Establishing a system for controlling entry/exit to the site, securing the boundaries of the site and establishing designated entry/exit points
- Training security staff on the enhanced system for securing the site and controlling entry/exit
- Training staff who will be monitoring entry to the site, providing them with the resources they need to document entry of workers, conducting temperature checks and recording details of any worker that is denied entry
- Confirming that workers are fit for work before they enter the site or start work
- Checking and recording temperatures of workers and other people entering the site

What Should the Contractor Cover?

b) Entry/Exit to the Work Site and Check on Commencement of Work

- Providing daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations
- On a daily basis, reminding workers to self-monitor for possible symptoms and to report to their supervisor or the COVID-19 focal point if they have symptoms or are feeling unwell
- Preventing a worker from an affected area or who has been in contact with an infected person from returning to the site for 14 days or isolating such worker for 14 days.
- Preventing a sick worker from entering the site, referring them to local health or requiring them to isolate at home for 14 days.

What Should the Contractor Cover?

c) General Hygiene

- Training workers and staff on site on the signs and symptoms of COVID-19, how it is spread, how to protect themselves and what to do if they or other people have symptoms
- Placing posters and signs around the site, with images and text in local languages
- Ensuring fully supplied handwashing facilities exist at key places throughout the site
- Review workers accommodations and assess them in light of the IFC/EBRD guidance on Worker's Accommodation
- Setting aside part of worker accommodation for precautionary self-quarantine

What Should the Contractor Cover?

d) Cleaning and Waste Disposal

- Conduct regular and thorough cleaning of all site facilities
- Review cleaning protocols for key construction equipment
- Provide cleaning staff with adequate cleaning equipment and materials
- Review general cleaning systems, training cleaning staff on appropriate cleaning procedures and appropriate frequency in high use or high-risk areas
- Provide cleaners with appropriate PPE as necessary
- Train cleaners in proper hygiene, how to use PPE and waste control
- Any medical waste produced during the care of ill workers should be collected safely in designated containers or bags and treated and disposed of following relevant requirements

What Should the Contractor Cover?

e) Adjusting Work Practices

- Consider changes to work processes and timings to reduce or minimize contact between workers (decreasing size of work teams, changing to a 24-hour work rotation, etc.)
- Adapting or redesigning work processes to enable social distancing and training workers on these processes
- Continuing with usual safety trainings, adding COVID-19 specific considerations
- Reviewing work methods to reduce use of construction PPE, in case supplies become scarce or the PPE is needed for medical workers or cleaners.
- Arranging for work breaks to be taken in outdoor areas
- Consider changing canteen layouts and phasing meal times to allow for social distancing
- Review overall work schedule and assess whether adjustments are needed

What Should the Contractor Cover?

f) Project Medical Services

- Consider whether existing project medical services are adequate, taking into account existing infrastructure, medical staff, equipment and supplies, procedures and training. Where these are not adequate, consider upgrading services where possible

g) Local Medical and Other Services

- Given the limited scope of project medical services, the project may need to refer sick workers to local medical services
- Establishing an agreed protocol for communications and action with local emergency/medical services in case a worker becomes ill
- Considering ways in which the project may be able to support local medical services
- Procedures should be prepared so that project management knows what to do in the event of a COVID-19 related death

What Should the Contractor Cover?

h) Instances or Spread of the Virus

- The project should set out risk-based procedures to be followed, with differentiated approaches based on case severity and risk factors
- If a worker has symptoms of COVID-19, the worker should be removed immediately from work activities and isolated on site
- If testing is available on site, the worker should be tested on site. If a test is not available at site, the worker should be transported to the local health facilities to be tested
- Extensive cleaning procedures with high-alcohol content disinfectant should be undertaken in the area where the infected worker was present, prior to any further work being undertaken in that area
- Co-workers should be required to stop work, and to quarantine themselves for 14 days, even if they have no symptoms

What Should the Contractor Cover?

h) Instances or Spread of the Virus

- If a case of COVID-19 is confirmed in a worker on the site, visitors should be restricted from entering the site and worker groups should be isolated from each other as much as possible
- If workers live at home and has a family member who has a confirmed or suspected case of COVID-19, the worker should quarantine themselves and not be allowed on the project site for 14 days, even if they have no symptoms
- Workers should continue to be paid throughout periods of illness, isolation or quarantine, or if they are required to stop work, in accordance with national law
- Medical care required by a worker should be paid for by the employer

What Should the Contractor Cover?

i) Continuity of Supplies and Project Activities

- Where COVID-19 occurs, either in the project site or the community, access to the project site may be restricted, and movement of supplies may be affected
- Identify back-up individuals (project management) and communicate who these are so that people are aware of the arrangements that have been put in place
- Document procedures, so that people know what they are, and are not reliant on one person's knowledge
- Understand the supply chain for necessary supplies of energy, water, food, medical supplies and cleaning equipment, consider how it could be impacted, and what alternatives are available

What Should the Contractor Cover?

i) Continuity of Supplies and Project Activities

- Place orders for/procure critical supplies
- Consider existing security arrangements, and whether these will be adequate in the event of interruption to normal project operations
- Consider at what point it may become necessary for the project to significantly reduce activities or to stop work completely, and what should be done to prepare for this, and to re-start work when it becomes possible or feasible

What Should the Contractor Cover?

j) Training and Communication with Workers

- Workers need to be provided with regular opportunities to understand their situation, and how they can best protect themselves, their families and the community
- Workers should be made aware of the procedures that have been put in place by the project, and their own responsibilities in implementing them
- Training of workers should be conducted regularly, providing workers with a clear understanding of how they are expected to behave and carry out their work duties
- Training should cover all issues that would normally be required on the work site, including use of safety procedures, use of construction PPE, occupational health and safety issues, and code of conduct, taking into account that work practices may have been adjusted
- Communications should be clear, based on fact and designed to be easily understood by workers

What Should the Contractor Cover?

k) Communication and Contact with the Community

- Relations with the community should be carefully managed, with a focus on measures that are being implemented to safeguard both workers and the community
- Communications should be clear, regular, based on fact and designed to be easily understood by community members
- Communications should utilize available means. The means used should take into account the ability of different members of the community to access them, to make sure that communication reaches these groups
- The community should be made aware of procedures put in place at site to address issues related to COVID-19
- If project representatives, contractors or workers are interacting with the community, they should practice social distancing and follow other COVID-19 guidance issued by relevant authorities, both national and international

APPENDIX H- GRM COMPLAINT FORM

GRIEVANCE REDRESS MECHANISM

A. CONTACT INFORMATION FO THE COMPLAINANT

Name:

Job:

Complaint date:

Contact number & email:

Complaint source:

O Internal	O External: □ Expropriation Related □ Non-Expropriation Related

Do you request that your identity is kept anonymous? O Yes O No

B. COMPLAINT DETAILS, INCONVENIENCE CAUSED TO COMPLAINANT, AND OUTCOME(S) SOUGHT

Signature of Complainant: _____

C. BRIEF ON THE OUTCOME OF THE INVESTIGATIONS

Date of the field visit:

Accuracy of the declarations:

Complaint root cause:

D. COMPLAINT FINAL RESULT

Proposed actions:

Personnel in charge:

Expected timeline:

Proposed monitoring actions:

Satisfaction of complainant: O Yes O No

Closure date:

Signature: _____

APPENDIX I-PUBLIC ANNOUNCEMENT

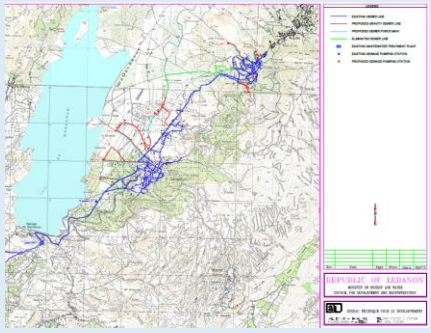
دعوة عامة

دراسة خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحى وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحى فى بلدة المرج (قضاء البقاع الغربى، محافظة البقاع)

تتشرف شركة الأرض للتنمية المتطورة للموارد ش.م.ل. (ELARD s.a.l.) المكلّفة من قبل مجلس الإنماء والإعمار بإعداد "الخطة البيئية والاجتماعية لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطة ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج"، بدعوتكم لحضور اجتماع مشاركة العامة الذي سوف يتناول عرضًا للمشروع ومناقشة الآثار البيئية والاجتماعية المحتملة له.

يتضمّن المشروع إنشاء شبكات إضافية للصرف الصحي وإشراكها بالشبكات القائمة في كل من البلدات التالية: بوارج، شتورة، المريجات، جديتا، جلالا، مكسة، تعلبايا، تعنايل، وادي الدلم، زبدل، الصويري، وجزء من قب الياس، بالإضافة إلى إنشاء محطة ضخ في قرية الصويري ليتم وصلها بمحطة معالجة مياه الصرف الصحي في بلدة المرج. يبلغ إجمالي أطوال الشبكات الإضافية المقترحة حوالى 192 كم، ضمن حرم الأملاك العامة للطرق القائمة باستثناء قرية الصويري، حيث تمتد بعضها ضمن الأملاك الخاصة.

يأتي هذا الاجتماع بهدف الاستماع لآراء واقتراحات المجتمع المدني المحلي، الجهات الرسمية المعنية والمجموعات التي يمكن أن تتأثر بالمشروع المقترح حول الآثار البيئية والاجتماعية المحتملة وخطة الإدارة البيئية والاجتماعية المقترحة لتفادي وتقليص حدّة الآثار المحتملة.



يُعقَد الاجتماع في المكان والزمان المبيّنين أدناه:

المكان: غرفة التجارة والصناعة والزراعة في زحلة، زحلة – شارع مار ميخائيل

الزمان: الثلاثاء 28 آب 2018 في تمام الساعة 10:00 صباحاً

في حال تعذر حضور الاجتماع، يمكن تزويد كل من وزارة البيئة والاستشاري البيئي بأية ملاحظات أو اقتراحات حول التأثيرات البيئية والاقتصادية الاجتماعية المحتملة للمشروع المذكور، وأية تدابير تخفيفية مقترحة، وذلك خلال مهلة شهر من تاريخ لصق هذا الإعلان، على العناوين التالية:

وزارة البيئة – مصلحة تكنولوجيا البيئة – دائرة الأنظمة البيئية المتكاملة مباني اللعازارية – منطقة الباشورة – الطابق السابع – بلوك A1 New وسط بيروت – لبنان ص.ب. 11/2727 هاتف: 976555- 01 فاكس: 976535- 01	**شركة الأرض للتنمية المتطورة للموارد ش.م.ل.** مبنى فلّاس (Playroom) – الطابق الثالث– عمارة شلهوب – 1407 2614 بيروت، لبنان هاتف: 888305- 01 فاكس:896793 – 01 مقسم 143

آملين حضوركم واستمرار التعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.

بيروت، في 13 آب 2018

ELARD

APPENDIX J- PUBLIC CONSULTATION INVITATION LETTERS

ELARD
Earth Link & Advanced Resources Development S.A.L.
Member of ELARD Holding S.A.L.

جانب رئيس بلدية زحلة - معلقة، الأستاذ أسعد زغيب المحترم
حي مار الياس، جانب مستشفى تل شيحا، زحلة
هاتف:08-820225

بيروت، في 10 آب 2018

مرجعنا: **رك/403/2017**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

تحية طيبة وبعد،

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الزمان: الثلاثاء 28 آب 2018 في تمام الساعة 10:00 صباحاً

لتأكيد الحضور أوالاستفسار عن الموضوع، الرجاء الاتصال بالسيد طارق طباجا على الرقم 01/888305، مقسم 144.

آملين حضوركم والتعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.

وتفضّلوا بقبول فائق الإحترام،

ELARD S.A.L. R.C. 2035062 Beirut, Lebanon
EARTH LINK & ADVANCED RESOURCES DEVELOPMENT
الأرض للتنمية المتطورة للموارد

رامز كيال،
المدير العام

ELARD
Earth Link & Advanced Resources Development S.A.L.
Member of ELARD Holding S.A.L.

جانب رئيس بلدية تعلبايا وجلالا التحتا، الأستاذ جورج صوان المحترم
مقابل الكنيسة، تعلبايا
هاتف: 08/505915 أو 03/666207
بريد إلكتروني:taalabaya@idm.net.lb

بيروت، في 10 آب 2018

مرجعنا: **رك/402/2017**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

تحية طيبة وبعد،

تتشرف شركة الأرض للتنمية المتطورة للموارد ش.م.ل. (ELARD s.a.l.) المكلّفة من قبل مجلس الإنماء والإعمار بإعداد "الخطة البيئية والاجتماعية لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطة ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج"، بدعوتكم لحضور اجتماع مشاركة العامة الذي سوف يتناول عرضًا للمشروع ومناقشة الآثار البيئية والاجتماعية المحتملة له.

يتضمّن المشروع إنشاء شبكات إضافية للصرف الصحي وإشراكها بالشبكات القائمة في كل من البلدات التالية: بوارج، شتورة، المريجات، جديتا، جلالا، مكسة، تعلبايا، تعنايل، وادي الدلم، زبدل، الصويري، وجزء من قب الياس، بالإضافة إلى إنشاء محطة ضخ في قرية الصويري ليتم وصلها بمحطة معالجة مياه الصرف الصحي في بلدة المرج. يبلغ إجمالي أطوال الشبكات الإضافية المقترحة حوالى 192 كم، ضمن حرم الأملاك العامة للطرق القائمة باستثناء قرية الصويري حيث تمتد بعضها ضمن الأملاك الخاصة.

يأتي هذا الاجتماع بهدف الاستماع لآراء واقتراحات المجتمع المدني المحلي، الجهات الرسمية المعنية والمجموعات التي يمكن أن تتأثر بالمشروع المقترح حول الآثار البيئية والاجتماعية المحتملة وخطة الإدارة البيئية والاجتماعية المقترحة لتفادي وتقليص حدّة الآثار المحتملة.
يُعقَد الاجتماع في المكان والزمان المبيّنين أدناه:

المكان: غرفة التجارة والصناعة والزراعة في زحلة، زحلة – شارع مار ميخائيل

الزمان: الثلاثاء 28 آب 2018 في تمام الساعة 10:00 صباحاً

لتأكيد الحضور أوالاستفسار عن الموضوع، الرجاء الاتصال بالسيد طارق طباجا على الرقم 01/888305، مقسم 144.
آملين حضوركم والتعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.

وتفضّلوا بقبول فائق الإحترام،

EARTH LINK & ADVANCED RESOURCES DEVELOPMENT
ELARD S.A.L.
R.C. 2035062
Beirut, Lebanon
الأرض للتنمية المتطورة للموارد

رامز كيال،
المدير العام

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جانب رئيس بلدية الصويري، الأستاذ حسين عامر المحترم
وسط البلدة، الصويري
هاتف: 08/565059 أو 03/676444

بيروت، في 10 آب 2018

مرجعنا: **رك/401/2017**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

تحية طيبة وبعد،

تتشرف شركة الأرض للتنمية المتطورة للموارد ش.م.ل. (ELARD s.a.l.) المكلّفة من قبل مجلس الإنماء والإعمار بإعداد "الخطة البيئية والاجتماعية لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطة ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج"، بدعوتكم لحضور اجتماع مشاركة العامة الذي سوف يتناول عرضًا للمشروع ومناقشة الآثار البيئية والاجتماعية المحتملة له.

يتضمّن المشروع إنشاء شبكات إضافية للصرف الصحي وإشراكها بالشبكات القائمة في كل من البلدات التالية: بوارج، شتورة، المريجات، جديتا، جلالا، مكسة، تعلبايا، تعنايل، وادي الدلم، زبدل، الصويري، وجزء من قب الياس، بالإضافة إلى إنشاء محطة ضخ في قرية الصويري ليتم وصلها بمحطة معالجة مياه الصرف الصحي في بلدة المرج. يبلغ إجمالي أطوال الشبكات الإضافية المقترحة حوالى 192 كم، ضمن حرم الأملاك العامة للطرق القائمة باستثناء قرية الصويري حيث تمتد بعضها ضمن الأملاك الخاصة.

يأتي هذا الاجتماع بهدف الاستماع لآراء واقتراحات المجتمع المدني المحلي، الجهات الرسمية المعنية والمجموعات التي يمكن أن تتأثر بالمشروع المقترح حول الآثار البيئية والاجتماعية المحتملة وخطة الإدارة البيئية والاجتماعية المقترحة لتفادي وتقليص حدّة الآثار المحتملة.

يُعقَد الاجتماع في المكان والزمان المبيّنين أدناه:

المكان: غرفة التجارة والصناعة والزراعة في زحلة، زحلة – شارع مار ميخائيل

الزمان: الثلاثاء 28 آب 2018 في تمام الساعة 10:00 صباحاً

لتأكيد الحضور أوالاستفسار عن الموضوع، الرجاء الاتصال بالسيد طارق طباجا على الرقم 01/888305، مقسم 144.

آملين حضوركم والتعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.

وتفضّلوا بقبول فائق الإحترام،

EARTH LINK & ADVANCED RESOURCES DEVELOPMENT
ELARD S.A.L.
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جانب محافظ البقاع، القاضي كمال أبو جوده المحترم

بيروت، في 14 آب 2018

مرجعنا: **رك/400/2018**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

تحية طيبة وبعد،

تتشرف شركة الأرض للتنمية المتطورة للموارد ش.م.ل. (ELARD s.a.l.) المكلّفة من قبل مجلس الإنماء والإعمار بإعداد "الخطة البيئية والاجتماعية لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطة ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج"، بدعوتكم لحضور اجتماع مشاركة العامة الذي سوف يتناول عرضًا للمشروع ومناقشة الآثار البيئية والاجتماعية المحتملة له.

يتضمّن المشروع إنشاء شبكات إضافية للصرف الصحي وإشراكها بالشبكات القائمة في كل من البلدات التالية: بوارج، شتورة، المريجات، جديتا، جلالا، مكسة، تعلبايا، تعنايل، وادي الدلم، زبدل، الصويري، وجزء من قب الياس، بالإضافة إلى إنشاء محطة ضخ في قرية الصويري ليتم وصلها بمحطة معالجة مياه الصرف الصحي في بلدة المرج. يبلغ إجمالي أطوال الشبكات الإضافية المقترحة حوالى 192 كم، ضمن حرم الأملاك العامة للطرق القائمة باستثناء قرية الصويري حيث تمتد بعضها ضمن الأملاك الخاصة.

يأتي هذا الاجتماع بهدف الاستماع لآراء واقتراحات المجتمع المدني المحلي، الجهات الرسمية المعنية والمجموعات التي يمكن أن تتأثر بالمشروع المقترح حول الآثار البيئية والاجتماعية المحتملة وخطة الإدارة البيئية والاجتماعية المقترحة لتفادي وتقليص حدّة الآثار المحتملة.

يُعقَد الاجتماع في المكان والزمان المبيّنين أدناه:

المكان: غرفة التجارة والصناعة والزراعة في زحلة، زحلة – شارع مار ميخائيل

الزمان: الثلاثاء 28 آب 2018 في تمام الساعة 10:00 صباحاً

لتأكيد الحضور أوالاستفسار عن الموضوع، الرجاء الاتصال بالسيد طارق طباجا على الرقم 01/888305، مقسم 144.

آملين حضوركم والتعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.

وتفضّلوا بقبول فائق الإحترام،

ELARD S.A.L. R.C. 2035052 Beirut, Lebanon
EARTH LINK & ADVANCED RESOURCES DEVELOPMENT
الأرض للتنمية المتطورة للموارد

رامز كيال،
المدير العام

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جانب قائمقام قضاء البقاع الغربي، الأستاذ وسام نسبية المحترم
صغبين
هاتف: 08/660023 أو 03/089543

بيروت، في 10 آب 2018

مرجعنا: **رك/399/2018**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

تحية طيبة وبعد،

تتشرف شركة الأرض للتنمية المتطورة للموارد ش.م.ل. (ELARD s.a.l.) المكلّفة من قبل مجلس الإنماء والإعمار بإعداد "الخطة البيئية والاجتماعية لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطة ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج"، بدعوتكم لحضور اجتماع مشاركة العامة الذي سوف يتناول عرضًا للمشروع ومناقشة الآثار البيئية والاجتماعية المحتملة له.

يتضمّن المشروع إنشاء شبكات إضافية للصرف الصحي وإشراكها بالشبكات القائمة في كل من البلدات التالية: بوارج، شتورة، المريجات، جديتا، جلالا، مكسة، تعلبايا، تعنايل، وادي الدلم، زبدل، الصويري، وجزء من قب الياس، بالإضافة إلى إنشاء محطة ضخ في قرية الصويري ليتم وصلها بمحطة معالجة مياه الصرف الصحي في بلدة المرج. يبلغ إجمالي أطوال الشبكات الإضافية المقترحة حوالى 192 كم، ضمن حرم الأملاك العامة للطرق القائمة باستثناء قرية الصويري حيث تمتد بعضها ضمن الأملاك الخاصة.

يأتي هذا الاجتماع بهدف الاستماع لآراء واقتراحات المجتمع المدني المحلي، الجهات الرسمية المعنية والمجموعات التي يمكن أن تتأثر بالمشروع المقترح حول الآثار البيئية والاجتماعية المحتملة وخطة الإدارة البيئية والاجتماعية المقترحة لتفادي وتقليص حدّة الآثار المحتملة.

يُعقَد الاجتماع في المكان والزمان المبيّنين أدناه:

المكان: غرفة التجارة والصناعة والزراعة في زحلة، زحلة – شارع مار ميخائيل

الزمان: الثلاثاء 28 آب 2018 في تمام الساعة 10:00 صباحاً

لتأكيد الحضور أوالاستفسار عن الموضوع، الرجاء الاتصال بالسيد طارق طباجا على الرقم 01/888305، مقسم 144.

آملين حضوركم والتعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.

وتفضّلوا بقبول فائق الإحترام،

ELARD S.A.L. R.C. 2035062 Beirut, Lebanon

رامز كيال،
المدير العام

Amaret Chalhoub, Zalka Highway, Fallas Building, 3rd Floor, Postal Code 2614 1407
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جانب رئيس بلدية قب الياس -وادي الدلم، الأستاذ جهاد المعلم المحترم
وسط البلدة، قب الياس
هاتف: 08/500723 أو 03/778195
بريد إلكتروني:info@kabelias.org

بيروت، في 10 آب 2018

مرجعنا: **رك/398/2018**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

تحية طيبة وبعد،

تتشرف شركة الأرض للتنمية المتطورة للموارد ش.م.ل. (ELARD s.a.l.) المكلّفة من قبل مجلس الإنماء والإعمار بإعداد "الخطة البيئية والاجتماعية لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطة ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج"، بدعوتكم لحضور اجتماع مشاركة العامة الذي سوف يتناول عرضًا للمشروع ومناقشة الآثار البيئية والاجتماعية المحتملة له.

يتضمّن المشروع إنشاء شبكات إضافية للصرف الصحي وإشراكها بالشبكات القائمة في كل من البلدات التالية: بوارج، شتورة، المريجات، جديتا، جلالا، مكسة، تعلبايا، تعنايل، وادي الدلم، زبدل، الصويري، وجزء من قب الياس، بالإضافة إلى إنشاء محطة ضخ في قرية الصويري ليتم وصلها بمحطة معالجة مياه الصرف الصحي في بلدة المرج. يبلغ إجمالي أطوال الشبكات الإضافية المقترحة حوالى 192 كم، ضمن حرم الأملاك العامة للطرق القائمة باستثناء قرية الصويري حيث تمتد بعضها ضمن الأملاك الخاصة.

يأتي هذا الاجتماع بهدف الاستماع لآراء واقتراحات المجتمع المدني المحلي، الجهات الرسمية المعنية والمجموعات التي يمكن أن تتأثر بالمشروع المقترح حول الآثار البيئية والاجتماعية المحتملة وخطة الإدارة البيئية والاجتماعية المقترحة لتفادي وتقليص حدّة الآثار المحتملة.
يُعقَد الاجتماع في المكان والزمان المبيّنين أدناه:

المكان: غرفة التجارة والصناعة والزراعة في زحلة، زحلة – شارع مار ميخائيل

الزمان: الثلاثاء 28 آب 2018 في تمام الساعة 10:00 صباحاً

لتأكيد الحضور أوالاستفسار عن الموضوع، الرجاء الاتصال بالسيد طارق طباجا على الرقم 01/888305، مقسم 144.
آملين حضوركم والتعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.
وتفضّلوا بقبول فائق الاحترام،

EARTH LINK & ADVANCED RESOURCES DEVELOPMENT
ELARD S.A.L.
R.C. 2035062
Beirut, Lebanon
الأرض للتنمية المتطورة للموارد

رامز كيال،
المدير العام

ELARD
Earth Link & Advanced Resources Development S.A.L.
Member of ELARD Holding S.A.L.

جانب رئيس بلدية مكسة، الأستاذ عاطف الميس المحترم
الطريق العام، مكسة
هاتف: 08/544742 أو 03/267222

بيروت، في 10 آب 2018

مرجعنا: **رك/397/2017**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

تحية طيبة وبعد،

تتشرف شركة الأرض للتنمية المتطورة للموارد ش.م.ل. (ELARD s.a.l.) المكلّفة من قبل مجلس الإنماء والإعمار بإعداد "الخطة البيئية والاجتماعية لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطة ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج"، بدعوتكم لحضور اجتماع مشاركة العامة الذي سوف يتناول عرضًا للمشروع ومناقشة الآثار البيئية والاجتماعية المحتملة له.

يتضمّن المشروع إنشاء شبكات إضافية للصرف الصحي وإشراكها بالشبكات القائمة في كل من البلدات التالية: بوارج، شتورة، المريجات، جديتا، جلالا، مكسة، تعلبايا، تعنايل، وادي الدلم، زبدل، الصويري، وجزء من قب الياس، بالإضافة إلى إنشاء محطة ضخ في قرية الصويري ليتم وصلها بمحطة معالجة مياه الصرف الصحي في بلدة المرج. يبلغ إجمالي أطوال الشبكات الإضافية المقترحة حوالى 192 كم، ضمن حرم الأملاك العامة للطرق القائمة باستثناء قرية الصويري حيث تمتد بعضها ضمن الأملاك الخاصة.

يأتي هذا الاجتماع بهدف الاستماع لآراء واقتراحات المجتمع المدني المحلي، الجهات الرسمية المعنية والمجموعات التي يمكن أن تتأثر بالمشروع المقترح حول الآثار البيئية والاجتماعية المحتملة وخطة الإدارة البيئية والاجتماعية المقترحة لتفادي وتقليص حدّة الآثار المحتملة.

يُعقَد الاجتماع في المكان والزمان المبيّنين أدناه:

المكان: غرفة التجارة والصناعة والزراعة في زحلة، زحلة – شارع مار ميخائيل

الزمان: الثلاثاء 28 آب 2018 في تمام الساعة 10:00 صباحاً

لتأكيد الحضور أوالاستفسار عن الموضوع، الرجاء الاتصال بالسيد طارق طباجا على الرقم 01/888305، مقسم 144.

آملين حضوركم والتعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.

وتفضّلوا بقبول فائق الإحترام،

EARTH LINK & ADVANCED RESOURCES DEVELOPMENT
ELARD S.A.L.
R.C. 2035062
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الأرض للتنمية المتطورة للموارد

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جانب رئيس بلدية جديتا، الأستاذ وهيب قيقانو المحترم
الطريق العام، جديتا
هاتف: 08/540331
بريد إلكتروني:municipality_of_jdita@hotmail.com

بيروت، في 10 آب 2018

مرجعنا: **رك/396/2018**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

تحية طيبة وبعد،

تتشرف شركة الأرض للتنمية المتطورة للموارد ش.م.ل. (ELARD s.a.l.) المكلّفة من قبل مجلس الإنماء والإعمار بإعداد "الخطة البيئية والاجتماعية لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطة ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج"، بدعوتكم لحضور اجتماع مشاركة العامة الذي سوف يتناول عرضًا للمشروع ومناقشة الآثار البيئية والاجتماعية المحتملة له.

يتضمّن المشروع إنشاء شبكات إضافية للصرف الصحي وإشراكها بالشبكات القائمة في كل من البلدات التالية: بوارج، شتورة، المريجات، جديتا، جلالا، مكسة، تعلبايا، تعنايل، وادي الدلم، زبدل، الصويري، وجزء من قب الياس، بالإضافة إلى إنشاء محطة ضخ في قرية الصويري ليتم وصلها بمحطة معالجة مياه الصرف الصحي في بلدة المرج. يبلغ إجمالي أطوال الشبكات الإضافية المقترحة حوالى 192 كم، ضمن حرم الأملاك العامة للطرق القائمة باستثناء قرية الصويري حيث تمتد بعضها ضمن الأملاك الخاصة.

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الزمان: الثلاثاء 28 آب 2018 في تمام الساعة 10:00 صباحاً

لتأكيد الحضور أوالاستفسار عن الموضوع، الرجاء الاتصال بالسيد طارق طباجا على الرقم 01/888305، مقسم 144.
آملين حضوركم والتعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.
وتفضّلوا بقبول فائق الإحترام،

رامز كيال،
المدير العام

ELARD
Earth Link & Advanced Resources Development S.A.L.
Member of ELARD Holding S.A.L.

جانب رئيس بلدية المريجات، الأستاذ جمال مشعلاني المحترم
مبنى المدرسة الرسمية، المريجات
هاتف: 08/545464 أو 03/212907

بيروت، في 10 آب 2018

مرجعنا: **رك/395/2018**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

تحية طيبة وبعد،

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وتفضّلوا بقبول فائق الإحترام،

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جانب رئيس بلدية شتورة وجلالا الفوقى، الأستاذ نقولا عاصي المحترم
ساحة البلدة، شتورة
هاتف: 08/540276 أو 03/728883
بريد إلكتروني:chtauramuni@idm.net.lb

بيروت، في 10 آب 2018

مرجعنا: **رك/394/2018**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

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الزمان: الثلاثاء 28 آب 2018 في تمام الساعة 10:00 صباحاً

لتأكيد الحضور أوالاستفسار عن الموضوع، الرجاء الاتصال بالسيد طارق طباجا على الرقم 01/888305، مقسم 144.
آملين حضوركم والتعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.
وتفضّلوا بقبول فائق الإحترام،

رامز كيال،
المدير العام

ELARD
Earth Link & Advanced Resources Development S.A.L.
Member of ELARD Holding S.A.L.

جانب رئيس بلدية بوارج وزبدل، الأستاذ محمد أحمد البسط المحترم
الطريق العام، بوارج
هاتف: 08/545154 أو 03/270171
بريد إلكتروني:mohamedelbastrais@gmail.com

بيروت، في 10 آب 2018

مرجعنا: **رك/393/2018**

الموضوع: اجتماع مشاركة العامة ضمن إطار خطة الإدارة البيئية والاجتماعية المقترحة لمشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

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آملين حضوركم والتعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.

وتفضّلوا بقبول فائق الاحترام،

EARTH LINK & ADVANCED RESOURCES DEVELOPMENT
ELARD S.A.L.
R.C. 2035062
Beirut, Lebanon
الأرض للتنمية المتطورة للموارد

رامز كيال
المدير العام

APPENDIX K- PUBLIC CONSULTATION PRESENTATION

إجتماع مشاركة العامة

مشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج (قضاء البقاع الغربي، محافظة البقاع)

نظام المرج لإدارة الصرف الصحي

٢٨ أب ٢٠١٨

ELARD

مجلس الإنماء والإعمار

وزارة الطاقة والمياه

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البرنامج

- أهداف الجلسة
- لمحة عن المشروع
- الغاية والأهداف المرجوّة من المشروع
- الإطار القانوني والمؤسساتي
- الوضع الحالي لإدارة الصرف الصحي في منطقة المشروع
- وصف تفصيلي للمشروع
- الوضع البيئي الحالي
- تقييم الأثر البيئي والاجتماعي والتدابير التخفيفية
- برنامج الرصد والمراقبة
- أسئلة ومناقشة

أهداف الجلسة

- عرض مختصر للمشروع المقترح وأهدافه
- عرض آثاره المحتملة البيئية والاقتصادية الاجتماعية
- مناقشة خطة الإدارة البيئية والاجتماعية المقترحة
- مناقشة مخاوف بيئية، إجتماعية أو اقتصادية محتملة لم يتم التطرّق إليها
- الحصول على اقتراحات لمعالجة هذه المخاوف وتخفيفها.

لمحة عن المشروع

- صاحب المشروع: مجلس الإنماء والإعمار
- الجهة المانحة: البنك الدولي The Word Bank
- الشركة الهندسية: شركة BTD
- الاستشاري المسؤول عن دراسة خطة الإدارة البيئية والإجتماعية: شركة الأرض للتنمية المتطورة للموارد (ELARD)
- البلدات المعنية مباشرةً بالمشروع: بوارج، شتورة، المريجات، جديتا، جلالا، مكسة، تعلبايا، تعنايل، وادي الدلم، زبدل، الصويري، وقب الياس

لمحة عن المشروع

يتضمن المشروع:

- إنشاء 220 كم من خطوط الصرف الصحي الإضافية لشبكات الصرف الصحي في بلدات بوارج، شتورة، المريجات، جديتا، جلالا، مكسة، تعلبايا، تعنايل، وادي الدلم، زبدل، الصويري، وجزء من قب الياس، الموصولة بمحطة المرج لمعالجة الصرف الصحي
- تنظيف واعادة تأهيل حوالي 40 كم من خطوط الصرف الصحي الموجودة حالياً

الغاية والأهداف المرجوّة من المشروع

أحد المكونات الرئيسية لمشروع الحد من تلوث بحيرة القرعون هو تحسين عملية جمع مياه الصرف الصحي من خلال إنشاء شبكات جديدة وإعادة تأهيل جزء من الشبكات القديمة.

لذلك، يهدف هذا المشروع إلى الإسهام في التحسين المستدام في:

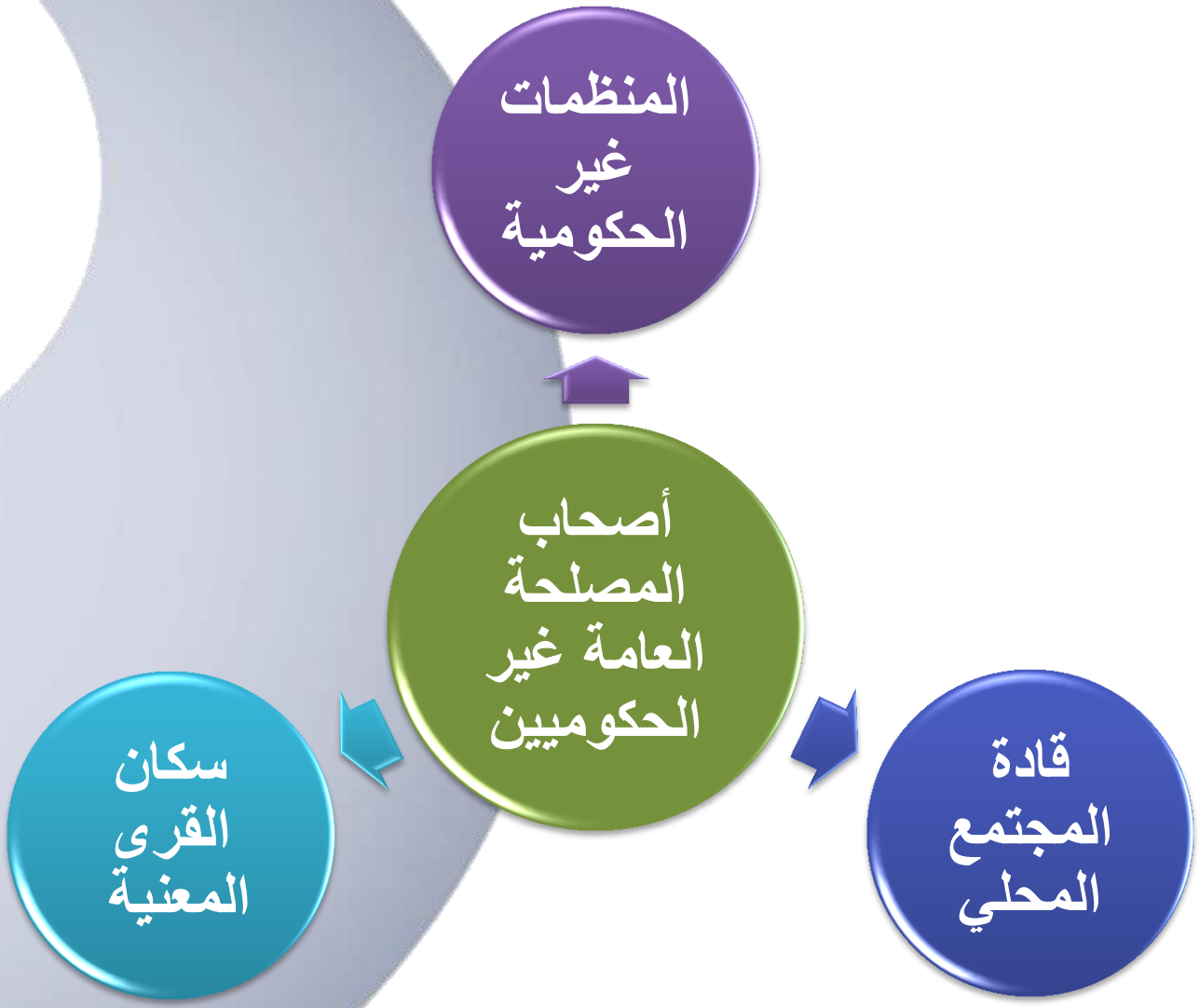
- خدمة الصرف الصحي للتجمّعات غير الموصولة بشبكات الصرف الصحي القائمة في القرى المخدومة
- رفع الضرر البيئي الناتج عن الصرف العشوائي للمياه المبتذلة في بحيرة القرعون.

الإطار القانوني والمؤسساتي

رقم القانون / القرار	العنوان
القانون 444/2002	قانون حماية البيئة
قرار وزارة البيئة رقم 8/1 (2001)	تحديد المواصفات والمعايير المتعلقة بملوثات الهواء والنفايات السائلة المتولدة عن المؤسسات المصنفة ومحطات معالجة المياه المبتذلة
قرار وزارة البيئة رقم 52/1 (1996)	تحديد المواصفات والنسب الخاصة للحد من تلوث الهواء والمياه والتربة
القانون 58 (1991) المحدّث عام 2006	قانون الاستملاك

الإطار القانوني والمؤسساتي

الإطار القانوني والمؤسساتي



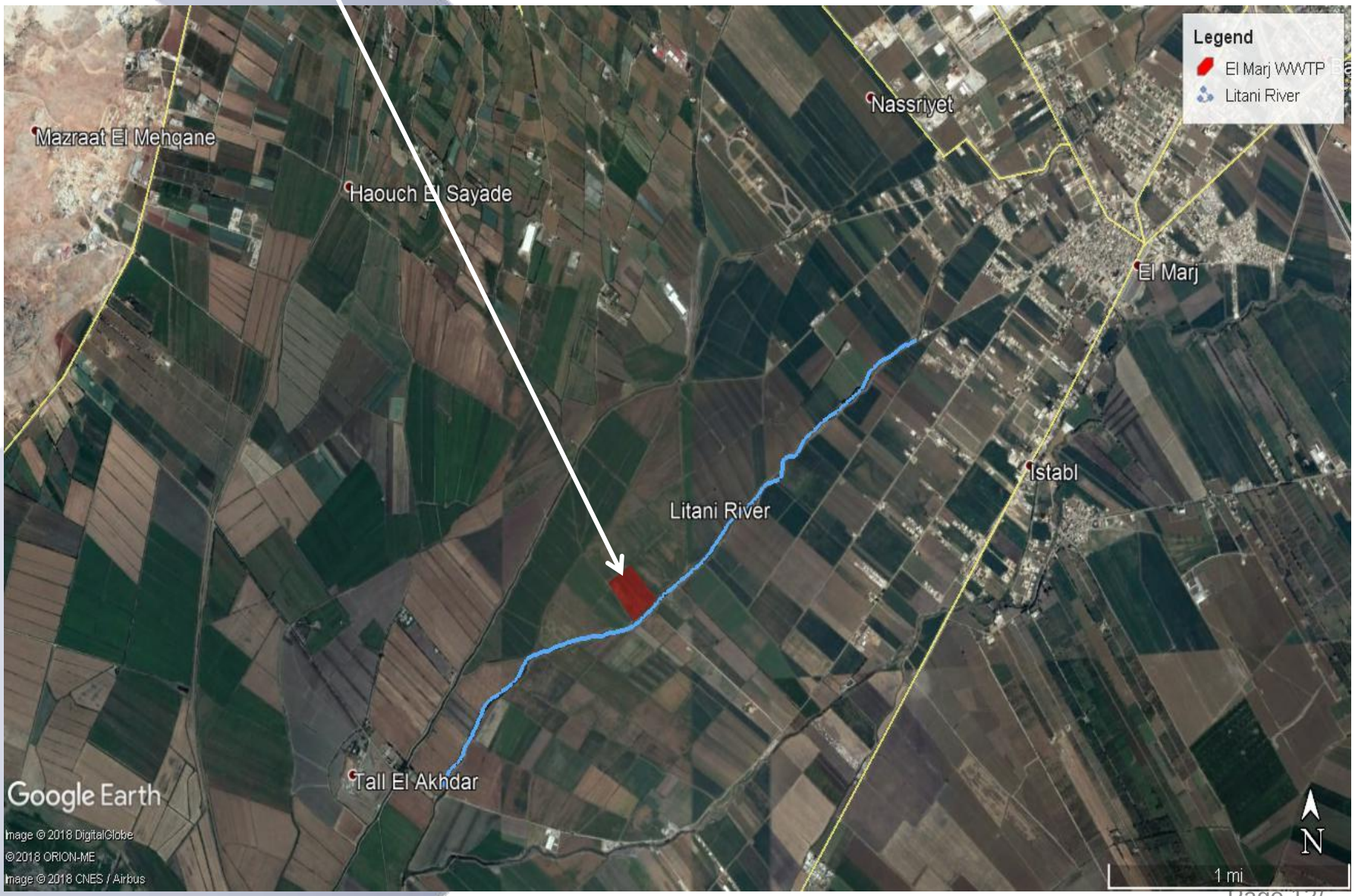
الإطار القانوني والمؤسساتي

الوضع الحالي لإدارة الصرف الصحى فى منطقة المشروع

البلدة	الشبكة الحالية (%)	موقع الصرف
بوارج	51	نهر مكسة
شتورة وجلالا	93	نهر شتورة
المريجات	87	نهر مكسة
جديتا	80	نهر شتورة
مكسة	59	نهر مكسة
قب الياس ووادي الدلم	85	نهر السيادة
الصويري	0	-
تعلبايا	90	نهر البردوني
زبدل	43	نهر شتورة
تعنايل	–	نهر شتورة

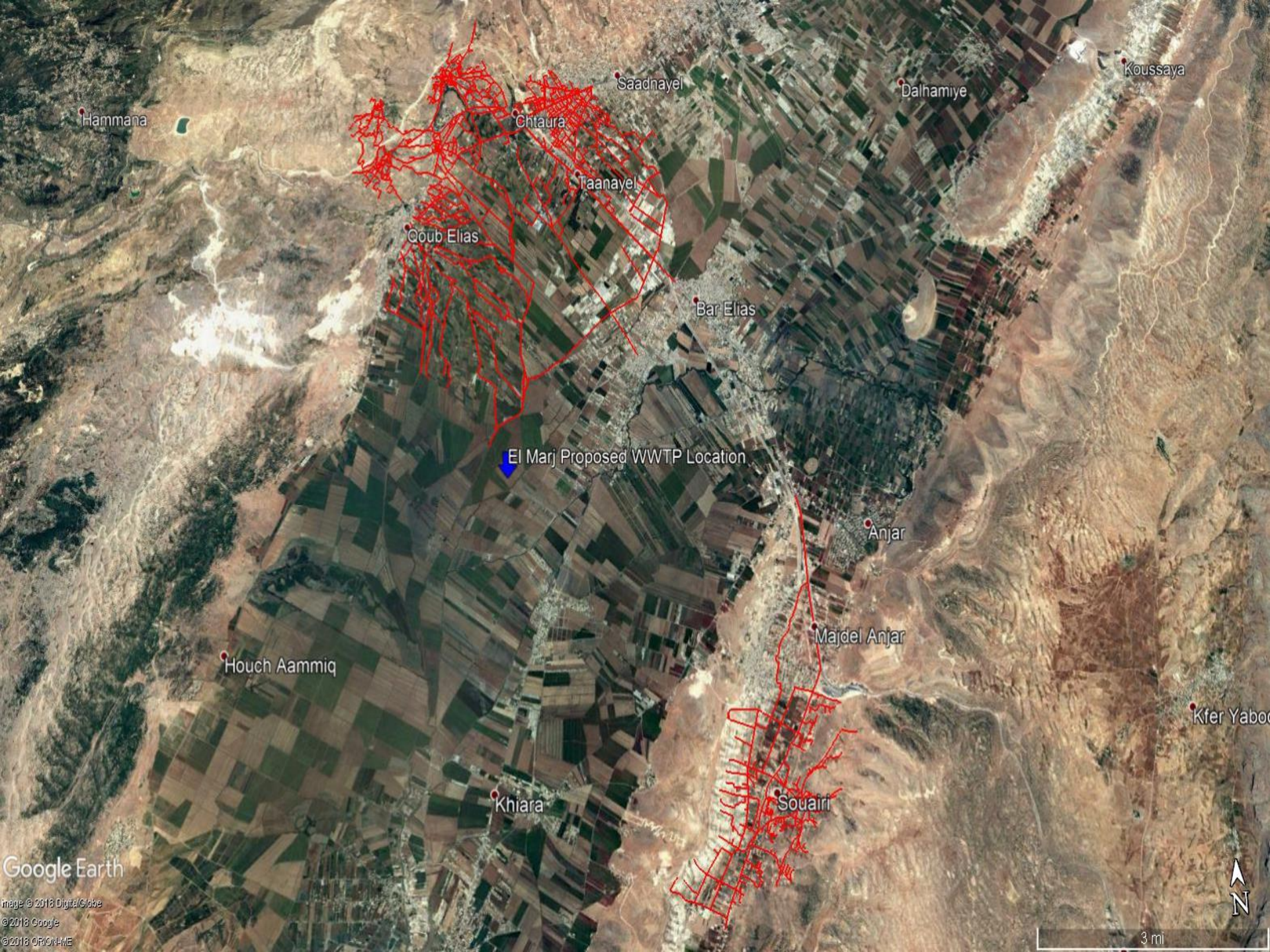
الوضع الحالي لإدارة الصرف الصحي في منطقة المشروع: محطة المرج

تقع المحطة المقترحة بين منطقتي المرج وقب الياس



الوضع الحالي لإدارة الصرف الصحي في منطقة المشروع: محطة المرج

- ستعمل محطة المرج على تدفق بمعدل 43,200 متر مكعب في اليوم وعلى تدفق ذروة يصل الى 86,400 متر مكعب في اليوم
- سيتم تصريف المياه المعالجة في مجرى نهر الليطاني


Hammana
Saadnayel
Chtaura
Dalhamiye
Koussaya
Taanayel
Coub Elias
Bar Elias
El Marj Proposed WWTP Location
Anjar
Majdel Anjar
Houch Aammiq
Khiara
Souairi
Google Earth
Image © 2018 DigitalGlobe
©2018 Google
©2018 ORION-ME
N
3 mi

وصف المشروع

- سيتم بناء خطوط الصرف الصحي الإضافية في نطاق الملكية العامة على طول الطريق الحالي دون الحاجة إلى استملاك الأراضي، باستثناء جزء من خطوط الصرف الصحي المقترحة في الصويري التي تمر في أراضي خاصة.

- سيتم استملاك أجزاء من 46 عقار في الصويري تعادل مساحتها الإجمالية 9336 م^2

- تم الاتصال بمالكي الأراضي لإعلامهم بالمشروع وأخذ رأيهم. رحّب أصحاب الأراضي بالمشروع حيث أنهم يعانون بسبب عدم وجود شبكة صرف صحي في المنطقة. لذلك لم يكن لديهم اعتراض طالما أنهم سيحصلون على تعويض مالي عادل.

وصف المشروع

خصائص خطوط الصرف الصحى:

- أنابيب ذات قطر يتراوح بين 200 و 1000 مم من الـ uPVC - GRP – GRE - أو الباطون كخطوط جاذبية
- أنابيب ذات قطر 300 مم من الـ DI أو GRP كمجاري رئيسية
- مجاري فرعية

الوضع البيئي الحالي

التقييم البيولوجي للأراضي التي سيتم استملاكها في الصويري:

وجهة استعمال الأرض	القيمة الإيكولوجية
أراضي مزروعة شجر (زيتون، تفاح، تين، كرز، لوز، رمان، خوخ)	ستتم إزالة مائة وسبعون (170) شجرة ذات قيمة إيكولوجية منخفضة او متوسطة
أراضي غير مزروعة	لا قيمة إيكولوجية

الوضع البيئي الحالي


أراضي غير مزروعة

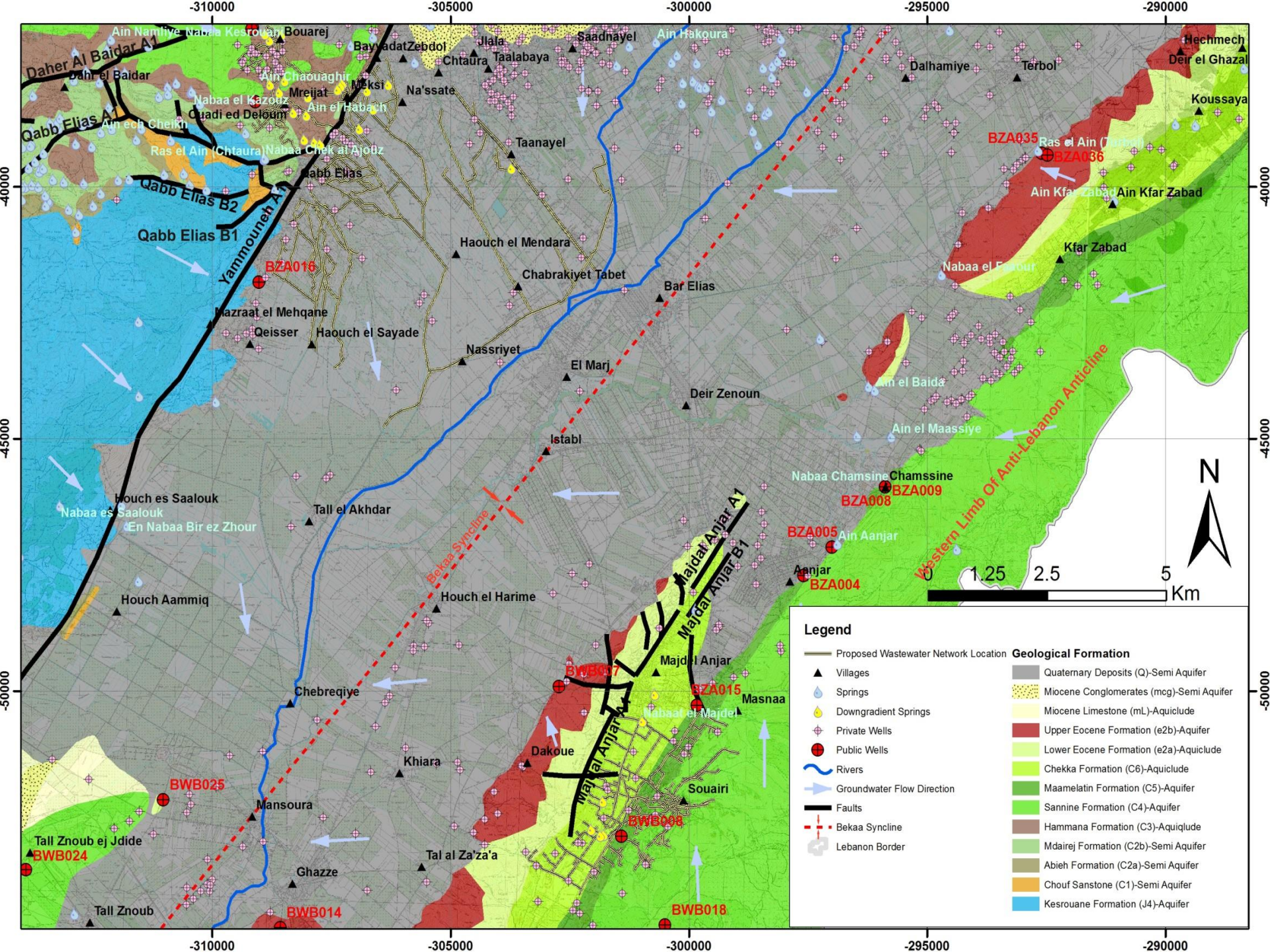

أراضي مزروعة شجر


سور منزل


طريق خاص

الوضع البيئي الحالي:
الخصائص الجيولوجية والهيدروجيولوجية

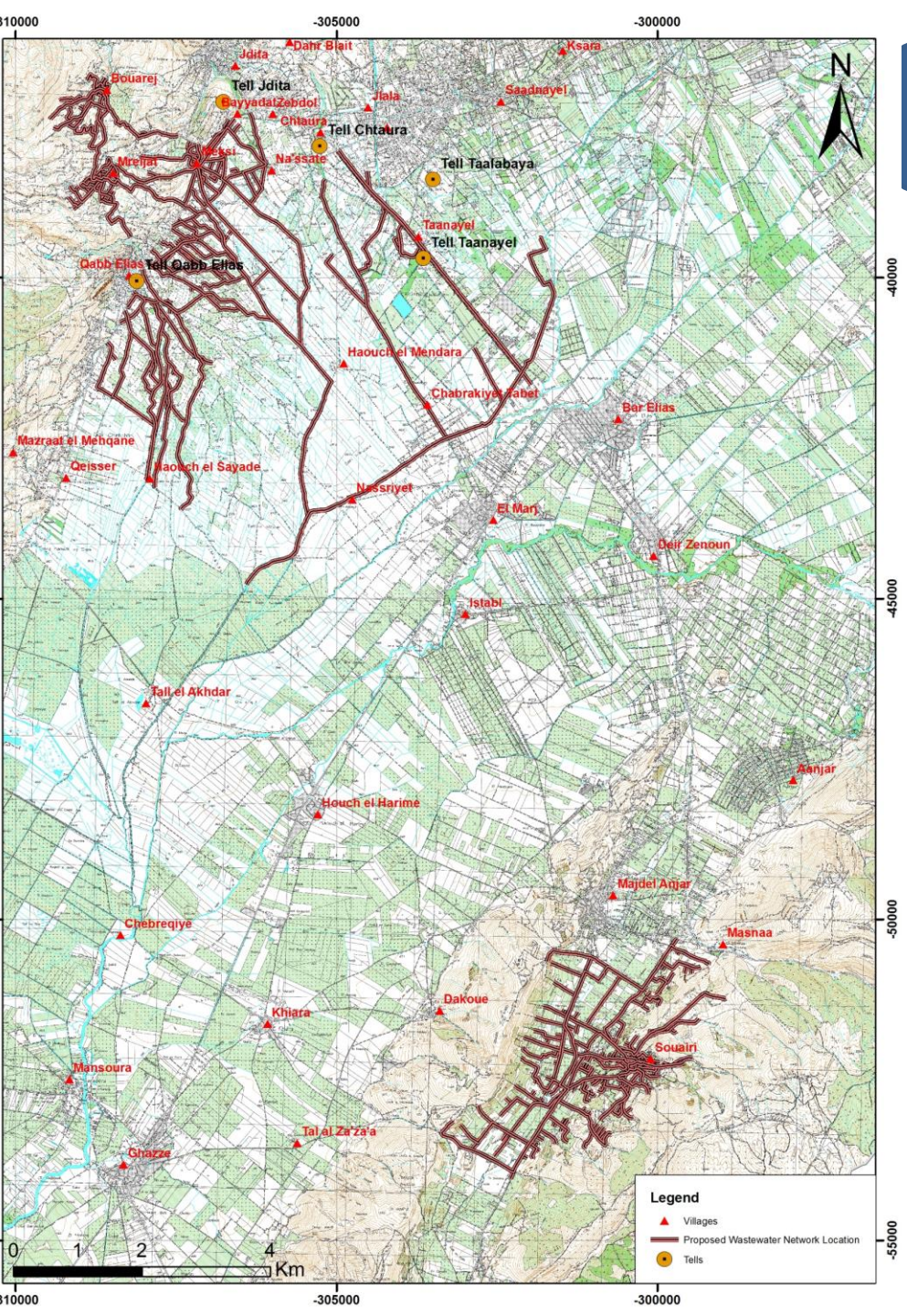
- المسطحات المائية الرئيسية المحيطة بمنطقة الدراسة هي نهر الليطاني
- هناك أكثر من سبعين ينبوع في منطقة الدراسة، سبعة وعشرين منها يمكن أن تتأثر بسبب موقعها مقارنةً بشبكة الصرف الصحي
- يوجد تسعة عشر (19) بئر عام داخل منطقة الدراسة على عمق يتراوح بين 20 و350 متراً
- تتضمن منطقة الدراسة العديد من الآبار الخاصة (المرخصة وغير المرخصة)


-310000
-305000
-300000
-295000
-290000
-40000
-45000
-50000
Ain Namliye
Nabaa Kesrouan
Bouarej
Daher Al Baidar A1
Daher el Baidar
BayyadatZebdol
Jlala
Taalabaya
Chtaura
Saadnayel
Ain Hakoura
Hechmech
Deir el Ghazal
Dalhamiye
Terbol
Koussaya
Ain Chaouaghir
Mreijat
Meksi
Na'ssate
Nabaa el Kazouz
Ain el Habach
Ouadi ed Deloum
Qabb Elias A1
Ain ech Cheikh
Ras el Ain (Chtaura)
Nabaa Chek al Ajouz
Qabb Elias
Taanayel
BZA035
BZA036
Ras el Ain (Zahle)
Ain Kfar Zabad
Qabb Elias B2
Yammouneh A1
Qabb Elias B1
Haouch el Mendara
BZA016
Chabrakiyet Tabet
Bar Elias
Kfar Zabad
Nabaa el Faour
Mazraat el Mehqane
Qeisser
Haouch el Sayade
Nassriyet
El Marj
Ain el Baida
Deir Zenoun
Western Limb Of Anti-Lebanon Anticline
Ain el Maassiye
Istabl
Nabaa Chamssine
Chamssine
BZA009
BZA008
Houch es Saalouk
Nabaa es Saalouk
En Nabaa Bir ez Zhour
Tall el Akhdar
Bekaa Syncline
Majdal Anjar A1
Majdal Anjar B1
BZA005
Ain Aanjar
Aanjar
BZA004
Houch Aammiq
Houch el Harime
Majdal Anjar
BWB007
BZA015
Masnaa
Nabaat el Majdel
Chebreqiye
Dakoue
Khiara
Majdal Anjar
Souairi
BWB025
Mansoura
BWB008
Tall Znoub ej Jdide
BWB024
Tal al Za'za'a
Ghazze
Tall Znoub
BWB014
BWB018
N
0
1.25
2.5
5
Km
Legend
Proposed Wastewater Network Location
Villages
Springs
Downgradient Springs
Private Wells
Public Wells
Rivers
Groundwater Flow Direction
Faults
Bekaa Syncline
Lebanon Border
Geological Formation
Quaternary Deposits (Q)-Semi Aquifer
Miocene Conglomerates (mcg)-Semi Aquifer
Miocene Limestone (mL)-Aquiclude
Upper Eocene Formation (e2b)-Aquifer
Lower Eocene Formation (e2a)-Aquiclude
Chekka Formation (C6)-Aquiclude
Maamelatin Formation (C5)-Aquifer
Sannine Formation (C4)-Aquifer
Hammana Formation (C3)-Aquiqlude
Mdairej Formation (C2b)-Semi Aquifer
Abieh Formation (C2a)-Semi Aquifer
Chouf Sanstone (C1)-Semi Aquifer
Kesrouane Formation (J4)-Aquifer

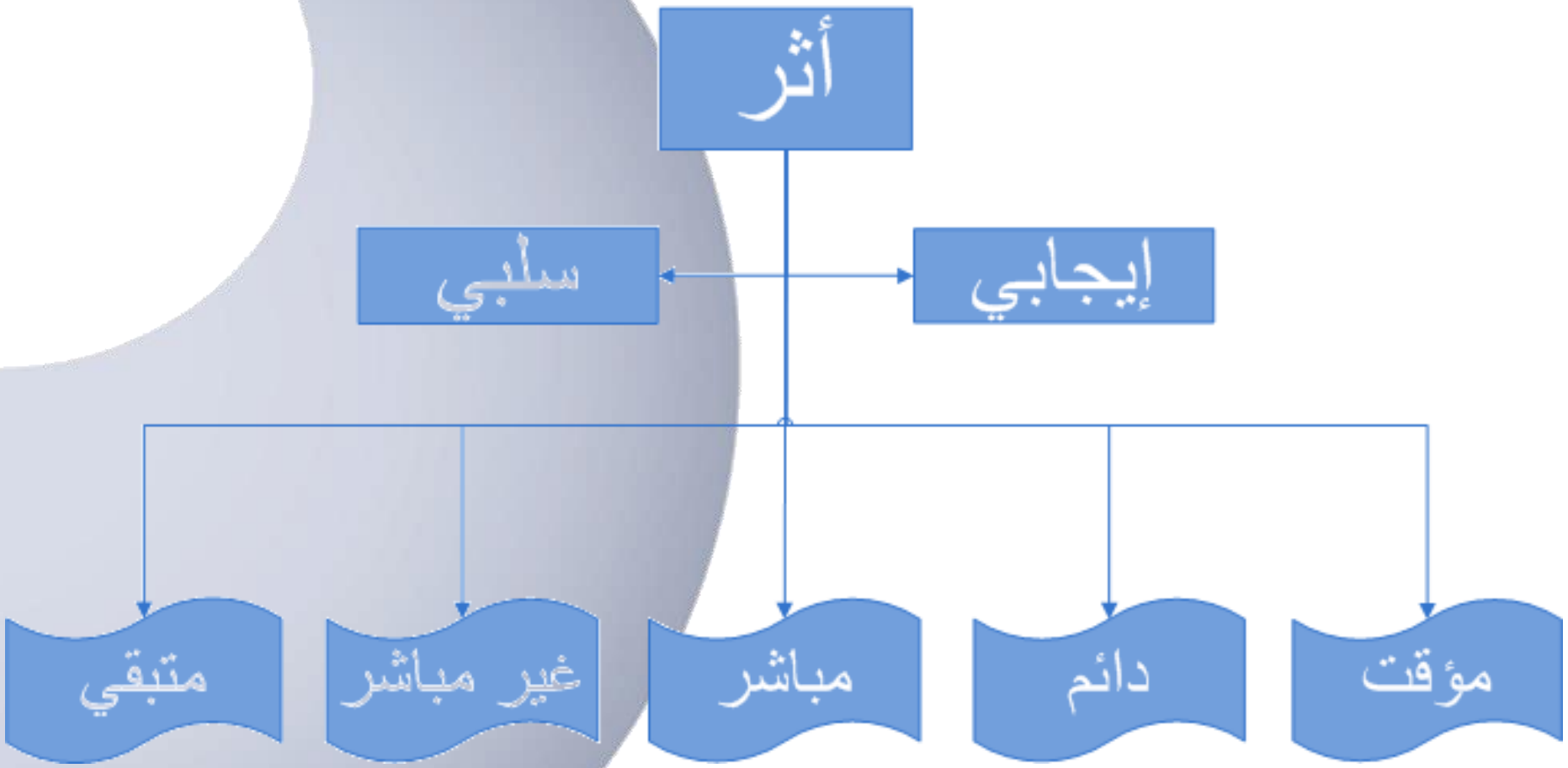
الوضع البيئي الحالي:
الآثار والإرث الثقافي

تم تحديد اثار في بعض قرى المشروع مثل:

- شتورة
- جديتا
- تعلبايا
- تعنايل
- قب الياس
- وادي الدلم



تقييم الأثر البيئي والاجتماعي



نطاق ومنهجية تقييم الآثار المحتملة

إحتمالات الحدوث		تقييم الأهمية					
		ضئيلة	بسيطة	معتدلة	كبيرة	كارثية	مفيدة
		1	2	3	4	5	B
	منخفض L=1	1	2	3	4	5	+
	متوسط M=2	2	4	6	8	10	++
	مرتفع H=3	3	6	9	12	15	+++

دليل

القبولية	
مفيدة	+ to +++
منخفضة	1 to 3
متوسطة	4 to 9
مرتفعة	10 to 15

إحتمالات الحدوث

(1) منخفض -L
(2) متوسط -M
(3) مرتفع -H

تقييم الأهمية

1- ضئيلة
2- بسيطة
3- معتدلة
4- كبيرة
5- كارثية
B- مفيدة

محاور الآثار البيئية والاجتماعية

نوعية الهواء	مصادر المياه
مستوى الضوضاء	مصادر الطاقة
التربة والمياه الجوفية	الآثار والإرث الثقافي
التنوع البيولوجي	الوضع الاجتماعي والاقتصادي
حركة المرور	السلامة العامة وسلامة العمال

- لكل من هذه المحاور تم تحديد وتقييم الآثار الإيجابية والسلبية المتوقعة خلال مرحلتي البناء والتشغيل للمشروع

تقييم الأثر البيئي والاجتماعي:
مرحلة البناء

المكوّن البيئي والاجتماعي	الأثر المحتمل	قبل التدابير	بعد التدابير
نوعية الهواء	الانبعاثات الهوائية من الشاحنات وآليات العمل ومولدات الطاقة	9	6
	الغبار من أعمال الحفر والردم والبناء والتخزين المؤقت والمواد الأولية	9	4
مستوى الضوضاء	الضوضاء الناتجة من عمليات البناء، مولدات الطاقة، حركة السير	9	6
التربة والمياه الجوفية	تجهيز الموقع والتدريج والحفر	9	2
	التسربات العرضية للوقود والزيوت والكيماويات	6	2
	سوء إدارة النفايات	6	1
	سوء التخزين والتخلص من مياه الصرف الصحي	6	1
التنوع البيولوجي	تدهور أو تجزئة أو خسارة الموئل	6	2
حركة المرور	زيادة الضغط على حركة المرور الحالية في المنطقة	9	4
مصادر المياه والطاقة	استهلاك المياه و الطاقة لأعمال البناء	6	4
الآثار والإرث الثقافي	الأضرار المحتملة على الآثارغير المكتشفة أثناء الحفر	12	2
الوضع الإجتماعي والإقتصادي	خلق فرص العمل	+++	
	احتمال تلف البنية التحتية القائمة	8	4
	اضطرابات من توليد الضوضاء والغبار	9	4
	زيادة الحمل على البنية التحتية القائمة	6	4
	استملاك الأراضي	9	3
السلامة العامة وسلامة العمال	مخاطر أنشطة البناء وتعرض العمال لاحتمال حدوث إصابات	6	2

أهم التدابير التخفيفية خلال مرحلة البناء

المكوّن البيئي أوالاجتماعي	أهم التدابير التخفيفية
نوعية الهواء	• الصيانة المستمرة للآليات والمعدات • استخدام مولدات تتطابق انبعاثاتها مع قرار وزارة البيئة 8/1 (2001) • تغطية جميع الشاحنات الواردة والصادرة من الموقع والمواد الأولية أو التربة • رش المياه للحد من انبعاث الغبار • الجدولة الفعالة للأعمال وإطفاء المعدات والآليات عندما لا يتم استعمالها
مستوى الضوضاء	• تزويد الآليات، المعدات والمولدات بكواتم صوت عند الإمكان • الصيانة المستمرة للآليات والمعدات • الالتزام بأوقات العمل خلال فترة النهار ووضع نظام لتلقي الشكاوى • قياس الضوضاء لضمان توافق الانبعاثات مع القرار 52/1 • إطفاء المعدات والآليات عندما لا يتم استعمالها • إعلام السكان المجاورين عن جدول الأعمال المسببة للضجيج

أهم التدابير التخفيفية خلال مرحلة البناء

المكوّن البيئي أوالاجتماعي	أهم التدابير التخفيفية
التربة والمياه الجوفية	• التقيّد بالمعايير الدولية (للحفر والضغط والتدريج) • تخزين المواد الكيميائية والزيوت والوقود داخل غرفة مغلقة ومخصصة • إعداد خطة طوارئ للتسرب خاصة بالمشروع وتدريب فريق العمل عليها • إعادة تأهيل الأراضي فورالانتهاء من العمل
التنوع البيولوجي	• الحد من اضطراب الأراضي من خلال الحفر والبناء في المواقع اللازمة فقط • حظر القطع أو الإضرار غير الضروري بالنباتات والأشجار البرية • تجنب أعمال البناء خلال مواسم هجرة الطيور • زرع 170 شجررة محلية في المناطق المحيطة بمواقع الأعمال للتخفيف من الآثار السلبية لإزالة الأشجار
حركة المرور	• تحديد مواعيد زمنية لنقل المواد وتسليمها، تجنب ساعات الذروة • التنسيق مع شرطة البلدية في حال إغلاق الطرق وإعادة توجيهها • وضع حد لسرعة حركة الشاحنات في موقع المشروع والمنطقة المحيطة

أهم التدابير التخفيفية خلال مرحلة البناء

المكوّن البيئي أوالاجتماعي	أهم التدابير التخفيفية
مصادر المياه والطاقة	• اعتماد خطة لتخفيف استهلاك المياه خلال مرحلة البناء • مراقبة الاستهلاك الشهري للوقود والطاقة لتتبع الاستهلاك وتحديد الإفراط في الاستخدام • تجنب التشغيل غير الضروري للمركبات ومحركات المعدات
الآثار والإرث الثقافي	• التنسيق مع المديرية العامة للآثار لتحديد المناطق الحساسة قبل البدء بأعمال الحفر والبناء • إبلاغ المديرية العامة للآثار قبل 3 أسابيع على الأقل من بداية أعمال الحفر • التأكد من أن طاقم العمل ومهندسي الموقع على علم بالقوانين المتعلقة بالأثار • في حال إيجاد آثار أثناء أعمال الحفر والبناء: ✓ إيقاف الأعمال ✓ تسييج الموقع لمنع أي ضرر أو خسارة للأثار القابلة للإزالة ✓ إبلاغ عالم الآثار المسؤول الذي بدوره سيلغ المديرية العامة للآثار (في غضون أقل من 24 ساعة) ✓ المديرية ستضع التدابير اللازمة لتخفيف الآثار السلبية وتتخذ الإجراءات اللازمة ✓ يمكن استئناف أعمال البناء بعد الحصول على إذن من المديرية

أهم التدابير التخفيفية خلال مرحلة البناء

المكوّن البيئي أوالاجتماعي	أهم التدابير التخفيفية
الوضع الاجتماعي والاقتصادي	• تنفيذ التدابير التخفيفية المقترحة للحد من الاضطرابات الناجمة عن الضوضاء وانبعاثات الهواء • المحافظة على البنية التحتية القائمة من خلال تنفيذ الحفر التجريبية على طول مسار الشبكة لتحديد المكونات القائمة • تخفيف الضغط على البنية التحتية القائمة من خلال: ✓ فرز النفايات، وإعادة استخدام ما يمكن إعادة استخدامه. ✓ تخزين النفايات الخطرة في حاويات مخصصة قبل نقلها من قبل فريق المورّد/ الصيانة إلى المكان المتفق عليه. • التعويض المادي على أصحاب الأراضي التي سيتم استملاكها
السلامة العامة وسلامة العمال	• تزويد العمال بمعدات الوقاية الشخصية المناسبة وفرض استخدامها • تسييج مناطق الأشغال ووضع الحواجز والتنبيهات حول الحفر ومواقع البناء • التأكد من أن العمال يفهمون ويطبقون متطلبات السلامة في الموقع

تقييم الأثر البيئي والاجتماعي:
مرحلة التشغيل

المكوّن البيئي والاجتماعي	الأثر المحتمل	قبل التدابير	بعد التدابير
نوعية الهواء	الانبعاثات الهوائية من مولدات الطاقة	6	4
	انتشار الروائح الناتجة عن التسرب من الشبكات	3	2
مستوى الضوضاء	الضوضاء الناجمة عن أنشطة الصيانة	3	1
التربة والمياه الجوفية	انسكابات عرضية للوقود والنفط أثناء الصيانة	6	1
	عطل يؤدي الى تسرب مياه الصرف الصحي غير المعالجة	9	2
حركة المرور	زيادة الضغط على حركة المرور خلال عمليات الصيانة	3	2
الوضع الإجتماعي والإقتصادي	تخفيف التلوث الناجم عن التخلص العشوائي من مياه الصرف الصحي	+++	
السلامة العامة وسلامة العمال	مخاطر تعرض عمال الصيانة لاحتمال حدوث إصابات	3	2

أهم التدابير التخفيفية خلال مرحلة التشغيل

المكوّن البيئي أوالاجتماعي	أهم التدابير التخفيفية
نوعية الهواء	• وجود جدول منتظم للصيانة لمنع أي تسرب/ فيض وانتشار الروائح
مستوى الضوضاء	عند القيام بأعمال الصيانة: • الالتزام بأوقات العمل خلال فترة النهار ووضع نظام لتلقي الشكاوى • إطفاء المعدات والآليات عندما لا يتم استعمالها • إعلام السكان المجاورين عن جدول الأعمال المسببة للضجيج
التربة والمياه الجوفية	• وضع الزيوت و الشحوم والنفايات الصلبة الناتجة عن الصيانة في مستوعبات خاصة مقفلة و تسليمها للجهات المختصة بإعادة استعمالها أو تكريرها • تجنب القيام بعمليات الصيانة أثناء الأيام الممطرة • صيانة دورية لمحطة التكرير في المرج • إجراء فحوصات دورية للمياه المكررة في محطة المرج

أهم التدابير التخفيفية خلال مرحلة التشغيل

المكوّن البيئي أوالاجتماعي	أهم التدابير التخفيفية
حركة المرور	• تجنب الصيانة أثناء ساعات الذروة • التنسيق مع شرطة البلديات في حال إغلاق الطرق وإعادة توجيهها
السلامة العامة وسلامة العمال	• تنفيذ التدابير التخفيفية المقترحة للحد من الاضطرابات الناجمة عن الضوضاء وانبعاثات الهواء، وتدريب العمال عليها • تزويد العمال بمعدات الوقاية الشخصية المناسبة وفرض استخدامها • توفر عدة للإسعافات الأولية

برنامج الرصد والمراقبة – مرحلة البناء

المكوّن البيئي أوالاجتماعي	مؤشر الرصد/المراقبة	تواتر المراقبة	نقطة الرصد/المراقبة	عدد العينات / نقاط المراقبة	المسؤولية
نوعية الهواء	انبعاثات المولدات: ارتفاع الداخون، SO_2، NO_2، CO، PM_{10}	عند أول استخدام للمولدات	على مداخن المولدات	عينة واحدة	مسؤول السلامة العامة للموقع
مستوى الضوضاء	Leq, Lmax, Lmin, L90 dB(A)	يومي	مناطق العمل و قرب المستقبلات الحساسة	على بعد متر من المولدات والمعدات، وعند أقرب مستقبلات	مسؤول السلامة العامة للموقع
نوعية المياه الجوفية	الخصائص الميكروبيولوجية ،الفيزيائية والكيميائية	قبل بدء أعمال البناء وبعدها	الآبار الموجودة في مناطق العمل	عينة واحدة من كل بئر	مسؤول السلامة العامة للموقع
مياه الصرف الصحي	التسربات	أسبوعي	مواقع التخزين	الفحص البصري	مسؤول السلامة العامة للموقع
النفايات الصلبة	الأنواع، الكميات، إعادة الاستخدام، التخزين، والتصريف	يومي	مواقع البناء	السجلات اليومية	مسؤول السلامة العامة للموقع
مصادر الطاقة	استهلاك الوقود	أسبوعي	مواقع البناء	فواتير الوقود والكهرباء	المقاول
موارد المياه	استهلاك المياه	أسبوعي	مواقع البناء	فواتير المياه	المقاول
ازدحام السير	الالتزام بمواعيد نقل المواد وتسليمها الالتزام بالسرعة المسموحة وضع الإشارات اللازمة	يومي	الطرقات المغلقة والطرقات التي تمت إعادة توجيهها	الفحص البصري الشكاوى الواردة إلى البلدية	المقاول
الموارد الأثرية	المعالم الأثرية التي وجدت خلال الأعمال	يومي	موقع البناء	الفحص البصري	مهندس الموقع، المقاول، العمال
مخاطر الصحة والسلامة	استخدام معدات الوقاية الشخصية المناسبة ممارسات جيدة للتدبير المنزلي	يومي	مواقع البناء	الفحص البصري	مسؤول السلامة العامة للموقع

برنامج الرصد والمراقبة – مرحلة التشغيل

المكوّن البيئي أوالاجتماعى	نوع المراقبة	تواتر المراقبة	الموقع	عدد العينات / نقاط المراقبة	المسؤولية
مياه الصرف الصحي	فحص نظري وهندسي/تقني لأي تسرب أو فيضان للصرف الصحي للشبكات	فحص نظري: خلال الكشف الأسبوعي فحص هندسي/تقني: كل ستة اشهر	الشبكات	فتحات الشبكة (manhole)	إدارة الشبكات (مؤسسة مياه البقاع)
النفايات الصلبة	الأنواع، الكميات، إعادة الاستخدام، التخزين، والتصريف	خلال عمليات الصيانة	مواقع الصيانة	السجلات اليومية	إدارة الشبكات (مؤسسة مياه البقاع)
مخاطر الصحة والسلامة	الفحص البصري و تسجيل عدد وسبب الحوادث	مستمر	مواقع الصيانة	-	إدارة الشبكات (مؤسسة مياه البقاع)

أسئلة ومناقشة

أسئلة/ هواجس/ اقتراحات/ توصيات

شكراً لمشاركتكم

ELARD

مجلس الإنماء والإعمار

وزارة الطاقة والمياه

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APPENDIX L- LIST OF PARTICIPANTS

اجتماع مشاركة العامّة

مشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة
مياه الصرف الصحي في بلدة المرج
(قضاء البقاع الغربي، محافظة البقاع)

٢٨ أب ٢٠١٨

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ttabaja@elard-group.com	01-888305 ext. 144	ELARD	Junior Environmental Consultant	Tarek Tabaja

اجتماع مشاركة العامة

مشروع إمداد خطوط إضافية لشبكات الصرف الصحي وإنشاء محطات ضخ موصولة إلى محطة معالجة مياه الصرف الصحي في بلدة المرج

(قضاء البقاع الغربي، محافظة البقاع)

٢٨ أب ٢٠١٨

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وزارة الطاقة والمياه

مجلس الإنماء والإعمار

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—	03/565071	مصلحة تصحيح الخطط	مهندس مدني	م. مفيد الريحاني
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presentation