



REPUBLIC OF LEBANON
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

Consultancy Services For
Roads Routine Maintenance
And Rehabilitation of Remaining Roads
For Lot3 (Nabatieh, Marjayoun, West Bekaa, Rachaya, Hasbaya,
Jezzine & Saida Cazas)

CDR Contract No. 20836

Environmental & Social Management Plan (ESMP)
For Roads Routine Maintenance in Jezzine Caza
(Stage 1.2.b of Task 1)

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ASSOCIATED CONSULTING ENGINEERS

B.P. 11 - 3446 BEIRUT- LEBANON



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LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACE	Associate Consulting Engineers
CBD	Convention on Biological Diversity
CDR	Council of Development and Reconstruction
CO	Carbon Monoxide
CoM	Council of Ministers
EHS	Environmental, Health and Safety
ESMP	Environmental and Social Management Plans
GBV	Gender Based Violence
GRM	Grievance Redress Mechanism
IBA	Important Bird Area
ILO	International Labor Organization
LARI	Lebanese Agriculture Research Institute
MoE	Ministry of Environment
MoPWT	Ministry of Public Works and Transportation
NGOs	Nongovernmental Organizations
PIU	Project Implementation Unit
REP	Road and Employment Project
SEA	Sexual Exploitation and Abuse
UNFCCC	United Nations Framework Convention on Climate Change
VAC	Violence Against Children
WB	World Bank
WBG	World Bank Group
WHO	World Health Organization

EXECUTIVE SUMMARY – NON-TECHNICAL SUMMARY

ES1. Introduction

The Council for Development and Reconstruction (CDR) acting as an executing agency on behalf of the Lebanese Council of Ministers (CoM) awarded a contract to Associated Consulting Engineers (ACE), hereinafter the Consultant, to prepare an Environmental and Social Management Plan (ESMP) for roads routine maintenance for primary roads (including International roads/ Highways) in Jezzine (Lot 3) under Roads and Employment Project (REP) – Road Routine Maintenance & Rehabilitation of Remaining Roads Project. This project is funded by the World Bank (WB).

The project will be implemented over a period of five years and was extended one additional year. The Project's main objectives are to enhance transport connectivity along selected paved road sections, create short-term job opportunities for the Lebanese and Syrian communities, and support farmers engaged in crop and livestock production.

This report represents the Environmental and Social Management Plan (ESMP) for Roads Routine Maintenance activities in Jezzine Caza (Lot 3) in line with WB safeguard Operational Policies, guidelines and national legislation. Noting that the Project was signed before October 2018, date of effectiveness of the Environmental and Social Framework (ESF). It is worth mentioning that some roads under the REP are already under rehabilitation and that the roads presented in this ESMP are new roads eligible for maintenance.

ES2. Existing Policies, Legal and Administrative Framework

The governmental public institutions involved in the different stages of implementation of the roads project as well as its different components are CDR, Ministry of Public Works and Transportation (MOPWT), Ministry of Environment (MOE), Ministry of Labor (MOL), Ministry of Interior and Municipalities (MOIM), and the Ministry of Culture (MOC).

The various laws and regulations that road projects must abide by:

- Labor Law/1946: The Lebanese Labor Code
- Law No. 335/2001: Pursuant to the International Labor Organization ILO Convention No 128
- Law No. 400/2002: Pursuant to ILO Convention No 138
- Decree 8987/2012 Prohibition of employment of minors under the age of 18 in work that may harm their health, safety or morals
- Decree 9129/2022 - Cost of living allowance for employees and workers
- Decision 29/1/2018 - Businesses, professions, trades, and jobs that should be restricted to Lebanese only
- Decree 2761/1933 on The prohibition of wastewater discharge into water streams
- Decree 8735/1974 on the Conservation of Public Hygiene
- Law 558/1996 - Protection of forests
- MoE Decision 52/1/1996 -Requirements to protect air, water, and soil pollution
- MoE Decision 16/1/2022 - Emissions Limits Values for Air Emissions
- Law 444/2002 - Framework Law for Environmental Protection
- Decree 8803/2002 and its amendments - Organizes the activity of quarries and crushers, licensing procedures, as well as the operation, management
- Law 77/2018 - Water Law and rehabilitation of quarries.
- Law 78/2018 - Air Quality Law

- Law 80/2018 - Integrated Solid Waste Management
- Decree 11802/2008 - Occupational prevention, safety, and health in all enterprises subject to the Code of Labor
- Law 166/1933 - Antiquity Law amended by law 37/2008
- Decree-Law 118/1977 - Municipal Act
- Law 37/2008 - Cultural Policy Law
- Law 243/2012 - New Traffic Law
- Legislative Decree 340/1943 - Penal Code
- Law 58/1991 - Expropriation Law
- Law 53/2017 - Amendment of Penal Code

The World Bank Policies and Procedures: Compliance with OP/BP 4.01 on Environmental Assessment and OP/BP 4.12 on Involuntary Resettlement. According to OP/BP 4.01, a public consultation with project-affected people and local nongovernmental organizations (NGOs) must be conducted for all projects under Category A and Category B.

The WB Group (WBG) Environmental, Health and Safety (EHS) Guidelines are mandatory and need to be adopted throughout the project duration.

In addition, some international conventions and treaties are relevant to the project and are as follows: The United Nations Framework Convention on Climate Change (UNFCCC), Convention on Biological Diversity (CBD), Convention 120 concerning Hygiene in Commerce and Offices, Convention 136 concerning Protection against Hazards of Poisoning Arising from Benzene, and Convention 139 concerning Prevention and Control of Occupational Hazards caused by Carcinogenic Substances and Agents.

ES3. Description of the Proposed Project

The routine maintenance works of this project will be undertaken to roads located in the Caza of Jezzine of the South Governorate. The total number of the proposed roads to be maintained under this project will be a representative 25% of the total Primary Roads (including International roads/Highways) in the Caza with an estimated total length of 90,000 m of primary roads in Lot 3.

The routine maintenance is targeting in the first place the primary roads, including International roads ranging from one lane in each direction with low Traffic Volume to multiple lanes in each direction with high traffic density known as Highways, within the Caza of Jezzine, and the secondary roads where and when the funds permit. The total primary roads length as per i-RAP road classification in the Caza of Jezzine is 54 Km.

One of the road selection criteria is that the selected road should have a good condition taking into consideration that roads or section of the road that needs rehabilitation or reconstruction should be excluded.

The required maintenance activities for the proposed project will cover incidental repair works, pavement repair works, concrete repair works and installation of traffic control devices.

ES4. Baseline Environmental and Social Conditions

Topography, Geology and Hydrogeology

The Caza of Jezzine is located in the South Governorate and it is about 70 km away from the capital of Beirut (IDAL, 2020). The Caza is surrounded by Nabatieh and Saida from the West, Chouf from the

North-East, Marjayoun from the South and Hasbaya from the South-East. The elevation of Jezzine Caza ranges from 283 m to 1,668 m above sea level. The main geological formation within the study belong to the following (Geocities Website, 2022): Chouf Sandstone (C1), Abey Formation (C2) of the Lower Aptian age, Albian (C3), Sannine Limestone, of Cenemonain age unit (C4), Dolomitic Limestone (C4a), Bluish marl and shale (C4b), Limestone and dolomitic limestone (C4c), Miocene - marly conglomerates and reef limestones (m2), White marl and marl-limestones (C6), Pleistocene (Q)-(qta, qd, qar), Kserouan Limestone (J4)-Bhannes Volcanics (J5)-Bikfaya Limestone (J6)-Salima Limestone (J7), and Eocene (E).

The Caza of Jezzine has abundant water resources and several streams, including the Awali River that passes through the district. Some of these streams have been identified along or near the proposed primary road (PRI 051, 055, 057, 058) while others pass by or are near to some of the secondary roads. In addition, Jezzine village hosts the famous Jezzine waterfall. The Caza comprises of several springs distributed at different elevations within the Caza including: Nabaa El Zarqa that at a secondary road, Nabaa Aazzibe at PRI Road PRI 051, Nabaa Jezzine and Ain Ed Darje at Road PRI 055, and Nabaa El Tasse at a secondary road.

Climate and Meteorology

The results of Jezzine weather data conditions are used to describe the climate of the Caza. The lowest average temperature is 4°C, while the highest average temperature is 29°C. In Jezzine, most rain events fall in the winter during the months of February and December. However, the driest months are July and August. The wind rose for Jezzine indicates that the wind direction with the highest frequency within the study area is from the west to east with a speed of greater than 5 km/h.

Additional data on climate in the area was obtained from the Lebanese Agriculture Research Institute (LARI) from its station in the village of Machghara located at the altitude 1032 meters a.s.l. This data represents the average temperatures and average precipitation of the year 2018. As for the wind data, wind speed and direction data were also obtained from LARI's station in New Nabatiye which was the nearest station to the Caza. The station in New Nabatiye is at an elevation of 498 m.

Air Quality and Noise

In 2018, a study used the National Air Quality Monitoring Network (AQMN) data of 2014, as well as data from a long-term monitoring campaign, to assess an air quality modelling system. The study simulated air quality over Lebanon and Greater Beirut for key gas pollutants including Nitrogen Dioxide (NO₂) and Particulate Matter (PM). At the time of the study, the AQMN that was installed and operated by the MoE consisted of five stations, four of which were used in the study, including two urban stations in Beirut. The long-term monitoring campaign was conducted simultaneously by the University of Saint Joseph at an urban site within Beirut City, and at a suburban location outside Beirut. The modelled annual concentration map showed that NO₂ annual concentration at Jezzine is around 25 µg/m³ whereas the annual PM₁₀ is around 35 µg/m³.

Land Use/Land Cover

Jezzine Caza is characterized by different types of soil, arable lands, variation of elevations and mild climate conditions. The Caza hosts different agricultural activities and produces a variety of agricultural products. Land in the Jezzine Caza is used for farming activities and livestock production. The Caza is known for its cattle raising, poultry farming and beekeeping activities. In addition, the Caza has several urbanized villages, while others are surrounded with agricultural lands.

Biological Environment and Ecologically Sensitive Areas

Flora: Jezzine has been known for its pine trees and its agricultural sector. Most of the Jezzine Caza is covered in natural areas: Stone pine (*Pinus pinea*) forests. Within the Jezzine Caza, the mountain called Jabal el Rihane is named as a UNESCO Biosphere Reserve and is close to a proposed secondary road. Dense forests are present in Jabal El Rihane and are of various types including Pine and oaks. Jabal El Rihane is also known for its crops. In addition, the Bkassine Pine Forest which is listed as a protected forest and Hima is close to Roads PRI 051 and PRI 058 and two secondary roads The Bisri valley that is located in Jezzine Caza presents different trees associations of Calabrian pine, stone pine, oak, hawthorn, laurel, pistachio, juniper, carob along with a bushy vegetation and river course vegetation. Moreover, around 50 species of plants were identified.

Fauna: The existing species comprise of five fish species and one crab identified in the Awali River. Moreover, various species of amphibians and reptiles were identified in Bisri valley. As for the birds in the region, thirty-two species of birds were identified. Moreover, there was 17 identified mammals' species at Bisri, these include four species that were common to the region. In addition, there are riparian species living on the riverbanks of the Awali River.

The Caza of Jezzine is home to remarkable natural sites such as the pine forests and the famous Jezzine waterfall and caves. The Caza hosts Jabal el Rihane which is close to a proposed secondary road. Jabal el Rihan is named as a UNESCO Biosphere Reserve and is one of the key Biodiversity Areas (KBA) in Lebanon. In addition, the Bkassine Pine Forest which is listed as a protected forest and a Hima is close to Roads PRI 051 and PRI 058 as well as two secondary roads.

Demographic Profile

Jezzine Caza has a total population of around 32,100. Females represent 49.4% of the residents whereas males represent 50.6%. The Caza hosts 3,050 Palestinian refugees. According to the Syrian Refugee Response, the total number of Syrian Refugees in the different villages of the Jezzine Caza is around 2,139. Most of the Syrian refugees reside in residential dwellings/apartments within the Caza. Only few informal settlements are found in the northern part of Jezzine Caza, none of which are along the secondary roads. However, Primary Road PRI 0057 is at a small distance from some informal settlements. Moreover, the unemployment rate in Jezzine Caza is estimated at 8.3%.

Economic Activities and Infrastructure

The services sector was the largest employment sector in Jezzine Caza and is followed by the industrial sector and agriculture sector. The Caza hosts different agricultural activities and produces a variety of agricultural products. Jezzine has been known for and greatly relies on its handicrafts, and restaurants as an important source of business. In Jezzine, several sectors are at the core of development plans: ecotourism, agribusiness, and public-private partnerships are being encouraged. The village of Jezzine is the center of the industrial activities of the district, hosting around 40% of the industrial companies and around 40% of the total industrial workforce.

The main source of drinking water in Jezzine is the non-piped water supply with 76.4% connectivity. As for the public electricity network, almost all households in Jezzine Caza are connected to the public network.

Education

Jezzine Caza has 11 public schools, five out of which are located in Jezzine village. In Jezzine Caza, the illiteracy rate was reported to be 9%. This rate was found to be higher for women compared to men.

Health Services

The main hospital in the Caza Jezzine is the Jezzine Government Hospital which is located 160 m away from Road PRI 055 in Jezzine village

Cultural Heritage

Jezzine village hosts many cultural sites, including: Mar Maroun Church, Saydet Al Nabi Church, Evangelical Church, Mar Antonios Church, Saint Coeurs Convent, Sports Stadium, and Public Library. However, these sites are not identified along any of the road eligible for maintenance. Moreover, the Aazour village hosts many cultural sites, including The Old Olive Press located on Road PRI 055.

Summary of Baseline

The main sensitive receptors within the Jezzine Caza includes the Awali River that crosses Road PRI 055. In addition, Jezzine village hosts Jezzine waterfall and several rivers and springs distributed at different elevations within the Caza including Nabaa El Zarqa at a secondary road, Nabaa Aazzibe at Road PRI 051 , Nabaa Jezzine at Road PRI 055, Ain Ed Darje at Road PRI 055 and Nabaa El Tasse located on a secondary road. Moreover, the Caza hosts Jabal el Rihane which is named as a UNESCO Biosphere Reserve and is one of the KBA in Lebanon. Jabal el Rihane is close to a proposed secondary road. As for the Bkassine Pine Forest which is listed as a protected forest and a Hima, it is close to Roads PRI 051 and PRI 058 and two secondary roads. As for the health services, Jezzine Government Hospital is located around 160m away from Road PRI 055 in Jezzine village. Moreover, the Aazour village hosts many cultural sites, including The Old Olive Press located on Road PRI 055.

ES5. Summary of Potential Environmental and Social Impacts during Maintenance activities

Summary of Impacts during Maintenance activities

Receptor	Impact Description	Rating	Mitigation Measure
Environmental			
Air, nearby communities and workers	Air pollution from emissions of machinery, trucks or open burning activities Potential Impact on: Jezzine Government Hospital located 160 m away from Road PRI 055 The old olive press on Road PRI 055 Bkassine Pine Forest located 600-670m away from Roads PRI 051 and PRI 058 and two secondary roads Near densely populated urban areas	N	Prepare and abide by Pollution Prevention Plan that includes: Atmospheric Emissions and Dust Management Provisions Water the ground when extremely windy Mix material in an enclosed space Cover material when transporting Prepare and abide by Emergency Preparedness and Response Plan Specific Measures Near Sensitive Receptors Speed limit for project vehicles and machinery within working areas shall not exceed 20 Km/h
Air, nearby communities	Dust pollution from maintenance and excavation activities. Potential Impact on: Jezzine Government Hospital located 160 m away from Road PRI 055 The old olive press on Road PRI 055	N	Ensure optimal traffic routes. Use wet suppression in the dry season, where unpaved roads, the working strip, raw material stockpiles are located <200 m from settlements

Receptor	Impact Description	Rating	Mitigation Measure
	Bkassine Pine Forest located 600-670m away from Roads PRI 051 and PRI 058 and two secondary roads Near densely populated urban areas		
Nearby communities and workers	Noise pollution a result of transportation or delivery of raw materials, trucks movement, concrete mixing, drilling, construction and operation of heavy vehicle movement such as excavators. Potential Impact on: Jezzine Government Hospital located 160 m away from Road PRI 055 The Old Olive Press on Road PRI 055 Bkassine Pine Forest located 600-670m away from Roads PRI 051 PRI 058 and two secondary roads Jabal El Rihane around 1000m away from a proposed secondary road Near densely populated urban areas	N	Maintenance of vehicles and machinery Excavation and any other noisy activity only to be conducted during working hours In the case where it is absolutely necessary to conduct some activities outside the normal working hours (i.e. at night), prior approval of the concerned municipality and CDR will be obtained Set traffic speed limits Specific Measures Near Sensitive Receptors Verify drivers' behavior with respect to driving speed
Biodiversity and sensitive habitats	Disturbance of nearby areas and animal escape through noise and vibrations Potential Impact on: Bkassine Pine Forest 600-670m away from Road PRI 051 PRI 058 and in close proximity to two secondary roads Jabal El Rihane around 1000m away from a secondary road	N	Plan vehicle routes to avoid settlements where possible
Water resources, soil, nearby communities	Contamination of surface water and pollution of ground water from improper disposal of wastewater from workers and of wash water coming from cleaning of machines and equipment Potential impact on: Streams along and near the proposed roads (PRI 051, 055, 057, 058) Nabaa Aazzibe at Road PRI 051 Nabaa Jezzine and Ain Ed Darje at Road PRI 055	N	Prepare and abide by Pollution Prevention Plan that includes: Effluent Management Provisions Rainwater run-off Management Provisions Prepare and abide by Emergency Preparedness and Response Plan Specific Measures Near Sensitive Receptors On-site concrete pouring shall be done in a way to avoid leaching to nearby water bodies. Onsite mixing of concrete shall be performed at least 40 meters away from nearby water bodies

Receptor	Impact Description	Rating	Mitigation Measure
	Nabaa El Tasse at a secondary road Nabaa El Zarqa at a secondary road Awali River at Road PRI 055		Prohibit the disposal of excess concrete mix into the environment or near water bodies
Water resources, soil, nearby communities	Water pollution due to accidental spill of oils and chemicals from trucks and from transportation of chemicals and oils. Potential impact on: Streams along and near the proposed roads (PRI 051, 055, 057, 058) Nabaa Aazzibe at Road PRI 051 Nabaa Jezzine and Ain Ed Darje at Road PRI 055 Nabaa El Tasse at a secondary road Nabaa El Zarqa at a secondary road Awali River at Road PRI 055	N	Prepare and abide by a Spill Prevention and Management Plan under Pollution Prevention Plan Minimize soil exposure time Minimize the use of chemicals Regular maintenance of vehicles Prepare and abide by Waste Management Plan and Hazardous Materials Management Plan Prepare and abide by Emergency Preparedness and Response Plan Specific Measures Near Sensitive Receptors Fuel, oil or hazardous materials required to be temporarily stored onsite shall be stored within secondary containment located further than 100m from a watercourse or water body Fuel and hazardous chemical storage areas shall not be allowed within 30m of a minor watercourse, within 100m of a major watercourse, or where there is the potential for spilled fuel to enter groundwater Keep the area free of litter and garbage and prevent random disposal of waste Specific locations shall be designated for consuming food and snacks away from sensitive receptors.
Water resources	Improper disposal of cut volume may cause contamination of water bodies in rainy weather Potential impact on: Streams along and near the proposed roads Nabaa Aazzibe at Road PRI 051 Nabaa Jezzine and Ain Ed Darje at Road PRI 055 Nabaa El Tasse at a secondary road Nabaa El Zarqa at a secondary road Awali River at Road PRI 055	N	
Water resources, soil, subsoil and land	Contamination of soil and surface water bodies from the improper disposal of solid waste generated from workers and the used materials, construction waste from excavation and drilling activities Potential impact on: Streams along and near the proposed roads (PRI 051, 055, 057, 058) Nabaa Aazzibe at Road PRI 051 Nabaa Jezzine and Ain Ed Darje at Road PRI 055 Nabaa El Tasse at a secondary road	N	Prepare and abide by Waste Management Plan Reuse or recycle the generated waste whenever possible Prepare and abide by Emergency Preparedness and Response Plan Specific Measures Near Sensitive Receptors Waste bins shall be located at a distance of over 100 m from any natural sensitive area or water bodies and over 500 m from any socioeconomic sensitive area

Receptor	Impact Description	Rating	Mitigation Measure
	Nabaa El Zarqa at a secondary road Awali River at Road PRI 055		
Energy resources	High consumption rates of electricity, fossil fuel, etc. contributing to overconsumption and depletion of fuel	N	Maintenance of the generators and trucks Light in the site offices shut down during the night Construction workers must be trained and provided with awareness sheets on efficient energy use Machinery and equipment must be turned off when not in use
Water resources	High consumption rates of water for construction related activities	N	Use water in the most efficient way and reduce wastage Regular site inspection to detect water leakages
Water resources, soil, nearby communities	Reduction in overall ground and surface water quality due to improper disposal of construction waste	N	Whenever possible, use dry-cleaning instead wet cleaning Training and awareness should be raised to workers concerning water usage best practices and water conservation Proper disposal of construction waste
Water resources, soil, subsoil and land	Depletion of natural resources due to the unsustainable extraction of borrowing material (sand, aggregates, ...)	N	Ensure that the borrow material are extracted from legal sites Avoid agricultural lands to extract borrowing material
Biodiversity and sensitive habitats	Potential damage of existing flora: Bkassine Pine Forset 600m-670m away from Roads PRI 055 and PRI 058, and close to two secondary roads Jabal El Rihane Biosphere Reserve around 1000m away from a proposed secondary road.	N	Prepare and abide by Pollution Prevention Plan In case of any tree removal, ensure that the contractor will get a permit from the MoA
Social			
Local workers, socio-economic activities	Creation of job opportunities for local communities	P	Workers are paid their wages in full and on time
Nearby communities, socio-economic activities	Local garages will benefit from the equipment oil maintenance and residents will benefit from the rent fees of the offices and the equipment parking area.	P	
Shop owners/renters	Small snack shops and coffee stations are expected to benefit from workers buying food and drinks	p	
Foreign Workers	Temporary potential Labor Influx	N	Priority hiring to qualified local community

Receptor	Impact Description	Rating	Mitigation Measure
			GRM for local communities (public notice including GRM to be posted at relevant municipalities and on project sign boards)
Shop owners/renters	Economic Activities and its effect on the livelihood of the shop owners	N	<p>Install overpass structures from the road to the shops</p> <p>Maintain a passing corridor within the alignment to grant access to nearby properties</p> <p>Ensure that access to small snack and coffee stations is not blocked by installing wooden boards where necessary</p> <p>Inform the shops' owners ahead of time about maintenance date and coordinate with relevant municipalities</p> <p>Regularly inform road users and local communities in relation to changed traffic conditions or access</p> <p>Proper installation of sign boards in culturally appropriate languages that are clear and understandable to the public</p> <p>Timely completion of the maintenance activities</p> <p>Ensure access to external GRM (public notice including GRM to be posted at relevant municipalities and on project sign boards)</p> <p>Prepare and abide by Traffic Management Plan</p>
Foreign workers influx	Discrimination from the local community against the potential influx of foreign workers	N	<p>Prevent discrimination at the workplace</p> <p>Conduct awareness campaigns for the local community regarding foreign workers influx</p> <p>Inform the local community that worker will sign code of conduct before starting the work</p> <p>GRM for local communities and all relevant stakeholders</p>
Locals and foreign, skilled and unskilled)	Possible unequal wage benefits between local and foreign workers	N	<p>Ensure that all workers (locals and foreign, skilled and unskilled) shall be compensated and are contracted equally as per the scale of market price rates, have equal contractual benefits and working conditions, and have access to internal GRM</p>
Local and foreign children	Possible recruitment of children who are under the legal age as workers on the site, especially in the case of the day laborers	2N	<p>Daily registrations of workers and verification of their age to prevent child labor</p> <p>Abide by the National Labor Law</p> <p>Ensure the contractor is aware of the penalties that Labor Law imposes in the case of child labor</p> <p>Oblige the contractor to strictly abide by the Labor Law through the CDR tender documents that should include prohibition of child labor</p>

Receptor	Impact Description	Rating	Mitigation Measure
Nearby communities, socio-economic activities	Disruption of local community to access services due to maintenance activities and temporal road closures	N	<p>Prepare and abide by Traffic Management Plan Traffic shall be secured via alternative routes to reach relevant destinations in case the works imply the temporary closure of this road Inform the local community about the location of detours, road blockages or diversions through public announcements and proper diversion signage</p> <p>Ensure access to external GRM (public notice including GRM to be posted at relevant municipalities and on project sign boards)</p>
Existing infrastructure and nearby communities	Damage of existing infrastructure	N	<p>Regular coordination with relevant municipalities</p> <p>Conducting trial pits</p> <p>Ensure access to external GRM (public notice including GRM to be posted at relevant municipalities and on project sign boards)</p>
Nearby communities	<p>Potential occurrence of gender-based violence and sexual exploitation and abuse incidents and all forms of GBV incidents</p> <p>Potential Impact in informal tents</p>	N	<p>Draft Codes of Conduct and the guidelines for a GBV and VAC Action Plan</p> <p>Conduct training sessions for workers on Sexual Exploitation and Abuse and/or Sexual Harassment</p> <p>All workers should understand, and sign codes of conduct written in their native language</p> <p>Respond to the reported incidents of sexual abuse exploitation as a matter of priority</p> <p>Regular training on gender-based aspects, internal and external GRM that includes an anonymous channel for protection of complainants' identity and confidentiality</p> <p>Availability of a GRM with multiple channels to initiate a GBV complaint, which ensures confidential reporting with safe and ethical documenting of GBV cases, including Sexual Exploitation and Abuse and Sexual Harassment</p> <p>GRM will be sensitive to complaints related to SEA/SH grievances and ensure implementation of the necessary referral pathways</p> <p>Ensure that there is a survivor centric approach for SEA/SH complaints and trained personnel handling these calls</p>
Nearby communities	Slight increase in traffic due to the transport of construction materials or due to the material that may fall	N	<p>Prepare and abide by Traffic Management Plan</p> <p>Ensure traffic is not blocked during transportation</p> <p>Inform residents and place signs near the working areas in culturally appropriate</p>

Receptor	Impact Description	Rating	Mitigation Measure
	Traffic congestion in the town due to temporal road closure Material falling from vehicles during transport may cause traffic accidents or congestion Potential Impact on: Jezzine Government Hospital located 160 m away from Road PRI 055 Near densely populated urban areas		languages and written in clear and understandable manner Ensure communities have access to GRM Cover transported material Abide by traffic regulations Operate well maintained vehicles
Health and Safety			
Workers	Accident and injuries to workers and public because of maintenance activities	2N	Develop a site-specific Public Health and Safety Plan and Occupational Health and Safety
Nearby communities	Dust generation and noise may cause health related problems for workers and disturbance to residents. Potential Impact on: The old Olive Press on Road PRI 055 Jezzine Government Hospital located 160 m away from Road PRI 055 Near densely populated urban areas	N	

ES6. Environmental and Social Management and Monitoring Plans

Continuous monitoring during the implementation of the maintenance activities will be required to ensure the effectiveness of the proposed mitigation measures. Monitoring shall include:

- Observe dust dispersion and measure total suspended particles, PM10, PM 2.5, SOx, NOx and CO when a significant amount of air pollutants are generated
- Check for leakages in the connections between the porta cabin toilets and the existing network or polyethylene tank
- Check the discharge endpoint of the pumped wastewater from the polyethylene tank
- Ensure an active solid waste management plan
- Ensure active spill prevention and management plan
- Inspect the quantities and types of the used fuel and oils
- Inspect water quantities
- Monitor the different drilling and construction activities
- Ensure active spill and accident prevention plan
- Check the infrastructure locations and that excavation works do not interfere with it
- Ensure Site Observation
- Check traffic conditions during transportation of materials
- Ensure traffic is not blocked

- Ensure traffic is relocated properly
- Ensure all safety precautions are abided by
- Ensure the proportion of Lebanese vs Syrian workers
- Check Worker's age
- Check GRM log
- Ensure that all workers are committed to prevent and report sexual abuse and exploitation incidents
- Ensure signs are in place before works begin
- Ensure that all workers are wearing their PPEs
- Record injuries and accidents within the workers
- Ensure the installation of pedestrian and vehicular passages near residential areas
- Ensure road diversion and construction attention signs are in place before works begin
- Record injuries and accidents with passers-by
- Ensure the development of a site-specific Occupational and Public Health and Safety Plan, and that the best practices are applied

ES7. Consultation, Disclosure and GRM

The purpose of conducting public consultation is to inform the stakeholders and the local NGOs about the proposed project and the routine maintenance activities that will be executed in Jezzine Caza and to take into account their concerns and feedback. Due to the Covid-19 situation in Lebanon at the moment and high level of community transmission, public consultation was held virtually on Tuesday, 8 February 2022 using Zoom Application. In addition to the unions and municipalities, local and international NGOs were invited to the public hearing but did not attend the session. A total of 10 participant attended the session out of which 3 were women. The proceedings which describe in detail the raised concerns and complaints by the participants and how all have been addressed are presented in this ESMP.

In addition, a formal grievance readiness mechanism (GRM) will be implemented during maintenance activities. The purpose of a GRM is to ensure that all feedback and complaints received from stakeholders, customers, employees, contractor staff and the public in general are documented, considered and addressed in an acceptable and timely manner. It is important to note that this mechanism will be shared with the participants and two mechanisms are used for filing a grievance, one for the surrounding communities and one for the workers. Moreover, GRM will be disseminated to the affected municipalities prior to roads routine maintenance works. The GRM will also be responsible for tracking and resolving worker grievances and maintain records about grievances/complaints received, recommendations and resolutions made and notice of resolution of grievance to the complainant. In addition, the GM will be sensitive to complaints related to SEA/SH grievances and ensure implementation of the necessary referral pathways. The online GRM form that is designed for the REP at the CDR level can be used in the meantime.

1. INTRODUCTION

1.1 Project Background

The Council for Development and Reconstruction (CDR) acting as an executing agency on behalf of the Lebanese Council of Ministers (CoM) awarded a contract to Associated Consulting Engineers (ACE), hereinafter the Consultant, to prepare an Environmental and Social Management Plan (ESMP) for roads routine maintenance for primary roads (including International Roads/ Highways) in Jezzine (Lot 3) under Roads and Employment Project (REP) – Road Routine Maintenance & Rehabilitation of Remaining Roads Project. This project is funded by the World Bank (WB). *See more about the Project in Section 3.*

The Roads and Employment Project covers classified roads¹ in 25 Cazas² throughout Lebanon with an expected total length of 835 km and grouped in six (6) lots. The project will be implemented over a period of five years and was extended one additional year. The Project's main objectives are to enhance the transport connectivity along selected paved road sections, to create short-term job opportunities for the Lebanese and Syrian communities and to support farmers engaged in crop and livestock production.

This report represents the Environmental and Social Management Plan (ESMP) for Roads Routine Maintenance activities in Jezzine Caza (Lot 3) in line with WB safeguard Operational Policies, guidelines and national legislation. Noting that the Project was signed before October 2018, date of effectiveness of the Environmental and Social Framework (ESF). It is worth mentioning that some roads under the REP are already under rehabilitation and that the roads under this ESMP are new roads eligible for maintenance.

1.2 Project Rationale

Lebanon has a total of around 21,705 km of roads including international, primary and secondary roads (World Bank, 2017) along with a highway network linking the country with Syria (WFP, 2016). Despite this large road network coverage, a significant percentage of these roads is in poor condition. This situation hinders local and economic development mainly in rural and lagging regions, where the condition of the main network is worse than the national average. Moreover, this state has been aggravated by the influx of Syrian refugees which has significantly increased traffic and the utilization of the road network (CDR, 2018). As such, the proposed project aims to improve the efficiency of road sector expenditures through the prioritization of road works and the improvement of road asset management techniques (CDR, 2018).

The objectives of Component 1 of this assignment, which is Roads Rehabilitation and Maintenance are to (1) Carry out a program of activities to rehabilitate, upgrade and maintain selected roads, including road safety and spot improvements ("Sub-projects") and (2) Provide technical assistance for the design, procurement and supervision of said Sub-projects and for preparation of Safeguards Instruments for the Project. This ESMP will only cover the planned routine maintenance works for classified primary roads (including International roads/ Highways) in Jezzine Caza.

¹Classified roads are based on the official Ministry of Public Works road classification which classifies the roads in Lebanon as primary, secondary or tertiary.

²Lebanon is divided administratively into three levels: Governorates (محاافظات), cazas or districts (أقضية), and municipalities (بلديات). There are eight governorates, 26 districts, and 1,029 municipalities in the country (as of the 2016 municipal elections).

1.3 Report Objectives

This ESMP has the following objectives:

- Describe all activities of the project;
- Identify relevant environmental and social national, international and WB policies and regulations;
- Conduct public consultation to identify public concerns regarding the project and to feed into project design to the extent possible;
- Describe baseline environmental and socio-economic conditions within the study area;
- Identify the significant positive and negative environmental and social impacts associated with the implementation of the proposed project;
- Propose mitigation / enhancement measures for the identified impact whenever possible;
- Facilitate informed decision making, including setting the environmental terms and conditions for implementing the proposed project;
- Develop a plan to monitor the identified impacts and their associated mitigation measures;
- Develop an institutional setup along with capacity building requirements.
- Develop a Grievance Redress Mechanism (GRM) for the Project.

1.4 Methodology

This ESMP of the Road Routine Maintenance & Rehabilitation of Remaining Roads Project in Jezzine Caza (Lot 3) was prepared to cover Roads Routine Maintenance of Component 1 “Roads Rehabilitation and Maintenance” during maintenance and to assess the likely environmental and social consequences of these activities and identify mitigation/enhancement measures. As such, the task was initiated by conducting literature review in order to define the current environmental and social conditions, along with relevant local and WB legislations, guidelines, and standards. In addition, the environmental team communicated closely with the technical team in order to obtain the necessary information the proposed maintenance activities, thus describing the proposed project in a thorough manner. In terms of the assessment, negative and positive impacts were identified and mitigation measures were proposed to address the negative ones. As such, an ESMP was developed and included a monitoring plan, which is needed to ensure compliance of the project with environmental and social conditions and regulations.

Based on the current institutional setup of the Roads and Employment Project, the institutional setup and the requirements for capacity development was described to ensure that project implementers have sufficient technical and human resources available to effectively undertake the environmental and social management and monitoring tasks. As for the participation of the public and concerned entities, this was done through conducting public consultation to which stakeholders and local community were invited to participate. Consultation was held on February 7, 2022 virtually and results are included in this report.

2. POLICY, LEGAL & ADMINISTRATIVE FRAMEWORK

2.1 National Environmental and Social Legal Framework

The maintenance works of roads involve a variety of activities that need to abide by national legislations. Table 2-1 describes a legal framework governing the routine maintenance activities for Jezzine Caza that is part of Lot 3.

Table 2-1: National Legal Framework related to Project

Law / Decree / Decision	Relevant Provisions
Labor	
Labor Law/1946 - The Lebanese Labor Code	The Labor Law covers the industrial accident prevention and compensation. It regulates the minimum wage, the minimum age of employment based on their ages and the workplaces, resting periods and vacations for adolescent workers. It also sets the working hours, and the penal code regulation of strikes and lock out in essential employments
Law No. 335/2001 - Pursuant to International Labor Organization (ILO) Convention No 128	This ratified convention addresses the minimum age of employment
Law No. 400/2002 - Pursuant to the ILO Convention No 138	Elimination of the worst form of child labor
Decree 8987/2012 - Prohibition of employment of minors under the age of 18 in work that may harm their health, safety or morals	This Decree restricts the employment of minors under the age of 18 in activities and works that can be harmful to their health, morals and that can limit their education
Decree 9129/2022 - Cost of living allowance for employees and workers	This Decree sets the minimum wage of the cost of living allowance for employees and workers subject to the Labor Law
Decision 29/1/2018 - Businesses, professions, trades, and jobs that should be restricted to Lebanese only	Restricts significant number of jobs to Lebanese only and allows Syrians to occupy jobs that are not restricted to Lebanese especially in the construction sector
Environment	
Decree 2761/1933 - The prohibition of wastewater discharge into water streams	States the characteristics of channels and reservoirs where wastewater is discharged. In addition to the prohibition of its discharged into natural environment
Decree 8735/1974 - Conservation of Public Hygiene	Solid waste management including collection and disposal is under the control of the municipality. It restricts dumping of wastes in public or private lands adjacent to roads and residential districts
Law 558/1996 - Protection of forests	Classifies protected forests and defines the prohibited activities and works into the mentioned forests. It also contains offences and penalties.
MoE Decision 52/1/1996 - Requirements to protect air, water, and soil pollution	Allowable noise level according to type of areas and the permissible duration of exposure
MoE Decision 16/1/2022 - Emissions Limits Values for Air Emissions	Sets limits for air emissions and specify the parameters that need be measured according to the sector and the facilities
Law 444/2002 - Framework Law for Environmental Protection	Protect the national environment against all forms of degradation, air and water and soil pollution, and the promotion of sustainable use of natural resources and conservation of biodiversity
Decree 8803/2002 and its amendments - Organizes the activity of quarries and crushers, licensing procedures, as well as the operation, management and rehabilitation of quarries.	Ensures the provision of construction material and the disposal of construction waste comply with the decree
Law 77/2018 - Water Law	Tackles protection of water resources from pollution and management and monitoring of public wastewater treatment facilities
Law 78/2018 - Air Quality Law	The investment in any facility or establishment that emanate foul or toxic odors should abide by the different environmental conditions issued by a decision from MoE
Law 80/2018 - Integrated Solid Waste Management	Covers the management of non-hazardous and hazardous waste, and responsibilities and penalties related to violations of waste management laws

Law / Decree / Decision	Relevant Provisions
Health and Safety	
Decree 11802/2008 - Occupational prevention, safety, and health in all enterprises subject to the Code of Labor	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
Cultural and Municipal	
Law 166/1933 - Antiquity Law amended by law 37/2008	This law defines heritage and antiquity, identifies its ownership, states legislation for excavation and judicial procedures due to violation
Decree-Law 118/1977 - Municipal Act	Defining the responsibilities of municipalities
Law 37/2008 - Cultural Policy Law	Any archaeological artefact located in Lebanon and deemed to be of historical, artistic, architectural or anthropological significance by the Ministry of Culture must be protected
Traffic	
Law 243/2012 - New Traffic Law	Provide general driving rules and defines the penalties upon violation of the law
General	
Legislative Decree 340/1943 - Penal Code	The law defines the type of crimes such as rape; lewd acts by threat, violence, or against minors; and other similar crimes. It also states punishments and legality of penalties
Law 58/1991 - Expropriation Law	States general and specific provisions for land acquisition. Also is includes improvement tax resulting from the implementation of public works. Despite that no expropriation activities will be done; this law is added because OP 4.12 was triggered by the project
Law 53/2017 - Amendment of Penal Code	Under sexual violence Article 522 of the Penal Code exonerated a perpetrator of kidnapping and adultery who married his victim. This was repealed in this law

In terms of the national legal requirements for maintenance, Lebanon uses the American Association of State Highway and Transportation Officials (AASHTO) 4th edition "Maintenance Manual for Roadways and Bridges" of 2007.

Numerous governmental public institutions will be involved in the different stages of the ESMP of the REP. These include:

- Council for Development & Reconstruction
- Ministry of Public Works and Transportation
- Ministry of Environment
- Ministry of Agriculture
- Ministry of Labor
- Ministry of Interior and Municipalities / Municipalities
- Ministry of Culture

2.2 Word Bank Policies

The WB policies that are applicable to this project are represented in Table 2-2. Furthermore, additional information will be provided for each World Bank policy.

Table 2-2: World Bank Policies

WB Policies	Description
Safeguards Policies	Compliance with OP/BP 4.01 on Environmental Assessment and OP/BP 4.12 on Involuntary Resettlement
Access to Information	The WB allows access to any information in its possession that is not on a list of exceptions

WB Policies	Description
Consultation and Disclosure Policy	According to OP/BP 4.01, a public consultation with project-affected people and local nongovernmental organizations (NGOs) must be conducted for all projects under Category A and Category B
Guidelines and Manuals	The WB Group (WBG) Environmental, Health and Safety (EHS) Guidelines are mandatory and need to be adopted throughout the project duration. In addition, the WB has developed guidelines and manuals that need to be adopted during the ESMP implementation phase of the project

2.3 International Treaties and Conventions

Table 2-3 presents the international conventions that Lebanon is a signatory to whose provisions may be relevant to the project.

Table 2-3: Relevant International Treaties and Conventions

Convention	Ratification
United Nations Framework Convention on Climate Change (UNFCCC) – 1992	Ratified through Law No. 359 (1994)
Convention on Biological Diversity (CBD) – 1992	Ratified through Law No. 360 (1/8/1994)
Convention 120 concerning Hygiene in Commerce and Offices	Ratified by Lebanon in 1977
Convention 136 concerning Protection against Hazards of Poisoning Arising from Benzene	Ratified by Lebanon in 2000
Convention 139 concerning Prevention and Control of Occupational Hazards caused by Carcinogenic Substances and Agents	Ratified by Lebanon in 2000

2.4 Environmental Health and Safety (EHS) Guidelines of the WB

Table 2-4 showed the EHS guidelines of the WB as well as the national regulations that must be abided by for wastewater and ambient water quality, air emissions and ambient air quality and noise management.

Table 2-4: WBG EHS Guidelines and National Regulations

General EHS Guidelines	National Regulations
World Health Organization (WHO) Guidelines for Ambient Air Quality of 2005	National Ambient Air Quality Standards of MoE Decision 52/1/1996
WHO Noise Level Guidelines	Noise Standards as per MoE Decision 52/1/1996

3. DESCRIPTION OF THE PROPOSED PROJECT

3.1 Location

The routine maintenance works of this project will be undertaken to roads located in the Caza of Jezzine of the South Governorate. The total number of the proposed roads to be maintained under this project will be a representative 25% of the total Primary Roads including International roads ranging from one lane in each direction with low traffic volume to multiple lanes in each direction with high traffic density known as Highways, in the Caza with an estimated total length of 90,000 m of primary roads in Lot 3.

The routine maintenance is targeting in the first place the primary roads (incl. International Roads/ Highways) within the Caza of Jezzine, and the secondary roads where and when the funds permit. The total primary roads length as per i-RAP road classification in the Caza of Jezzine is 54 km (Table 3-1).

Table 3-1: Primary Roads in Jezzine Caza

Caza Jezzine		
Road Code	i-RAP Classification	Length (km)
PRI 051	Primary Road	6.8
PRI 055	Primary Road	42.7
PRI 057	Primary Road	3.9
PRI 058	Primary Road	6.1

The map below (Figure 3-1) shows the primary (incl. International Roads/ Highways) and secondary roads eligible for maintenance in the Caza of Jezzine.

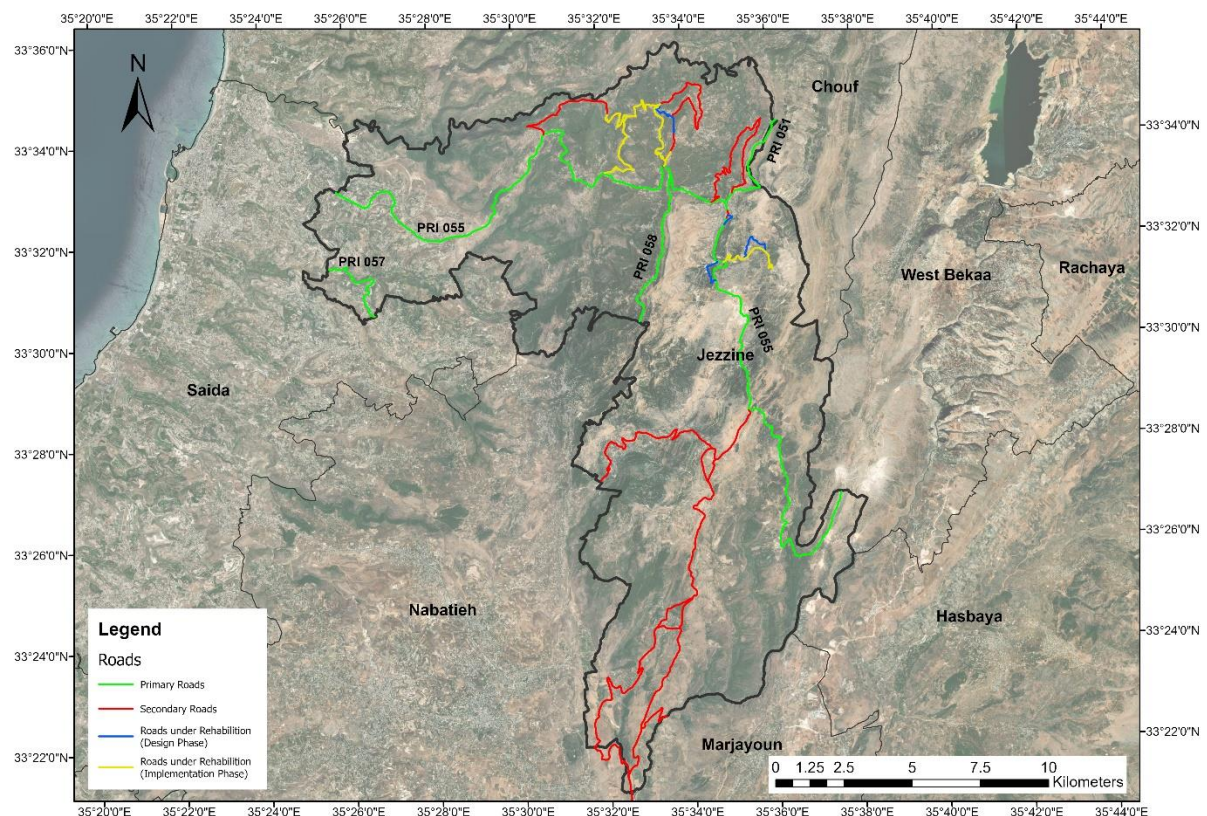


Figure 3-1: Primary and Secondary Roads Eligible for Maintenance in Jezzine Caza

The following criteria are proposed for the selection of representative roads:

- 1) Road Category: The selected road(s) should be classified as primary roads (including International roads/ highways).
- 2) Road Design Characteristics: The existing road design characteristics, horizontal and vertical alignments, cross-section(s), shall comply with the characteristics of primary road as specified in the international design standard.
- 3) Road Usage: The selected road(s) should be of high traffic volume compared to other roads and ensure the connection with the main secondary roads and popular areas.
- 4) Road Overall Condition: The selected road should have a good condition taking into consideration that roads or section of the road that needs rehabilitation or reconstruction should be excluded
- 5) Total Length: the total length of the selected representative roads shall be not less than 25% of the total length of the primary roads.

3.2 Project Activities

In order to identify the required maintenance and repair works for this project, a site inspection will be conducted by an experienced highway engineer who will visually inspect various roads characteristics and features including surface condition, shoulders, roadside drainage and protection works, road signage and road safety elements. Moreover, a reconnaissance of the selected 25% of the total primary roads must be executed.

The required maintenance activities for the proposed project will cover Incidental Repair Works, Pavement Repair Works, Concrete Repair Works and installation of Traffic control devices, all their components are described in the following sections.

3.2.1 Incidental Repair Works

Incidental repair works will include the following:

- Clearing and grubbing comprising the removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area.
- Repairing of damaged manhole covers completed as specified and to the Engineer's satisfaction.
- Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts.
- Removing damaged Galvanized Steel Guardrail and replace by new one as specified and shown on drawings.
- Repairing of Masonry wall.

3.2.2 Pavement Repair Works

The repair works that will be undertaken for the pavement will be as follows:

- Shallow Patching works: surface patch including milling and re-instating wearing asphalt course (5cm) and a full asphalt removal and repair with maintaining base course layer and applying one layer asphalt binder course (5 cm) and one layer asphalt wearing course of (5cm) as specified and shown on drawings.
- Deep Patching works including excavation, base course (30cm), asphalt binder course (one layer 5cm) and asphalt wearing courses (one layer 5cm).
- Crack sealing.

- Milling & overlay for sunken but stable trench width less than 1m.
- Removal and reinstatement of damaged trench. Width less than 1m.

3.2.3 Concrete Repair Works

The maintenance and repair works to be implemented for the concrete are represented as follows:

- Cast in situ Reinforced concrete, Class 250/20 (B25) for repair box culverts, headwalls and wingwalls, concrete channels, safety barriers and retaining walls (all types and shapes).
- Plain concrete patching for deteriorated concrete in culverts, channels, walls and safety barriers.
- Cast in situ Reinforced concrete, Class 250/20 (B25) for cover channel.

3.2.4 Traffic Control Devices

The installation of traffic control devices will cover the following activities:

- Thermoplastic reflectorized road paint lines width 20 cm (Thickness 3 mm) including surface preparation and removal of existing paint lines (where needed).
- Thermoplastic reflectorized special road marking including speed limit marking (Thickness 3 mm).
- Cats eye Pavement Studs as specified and to the Engineer satisfaction (3-cluster type).
- Bituminous speed humps completed all as specified and shown on drawings and to the Engineer's satisfaction.
- Rumble strips (TPR materials) completed all as specified and shown on drawings and to the Engineer's satisfaction.
- Delineators and Makers Posts Type J4.
- Small Signs (not exceeding 1 m² area).
- Temporary Signing and Channelizing Devices for Protection of Traffic:
 - Barricade with flashers type k5c.
 - Rectangular sign type KCl.
 - Sign, size greater than or equal to one square meter including posts, supports, foundations and all related works, type K2.
- Temporary Channelizing Devices:
 - Plastic Barrier, 145 cm long and 40 cm wide, type K16.
 - Removable single face concrete safety barrier, 200 cm long and 38 cm wide.
 - Removable double face concrete safety barrier, 200 cm long and 60 cm wide.

3.3 Material and Equipment

Typical equipment used for routine maintenance activities will be used for the maintenance of roads in Jezzine Caza, including but not limited to:

- Steel-wheeled Rollers
- Asphalt Distributor or paver
- Concrete mixing trucks
- Dumper Trucks oTrucks
- Excavators
- Loaders

- Asphalt Milling Machines
- Thermoplastic Road Marking Machines
- Liquid Asphalt Spraying Tanks
- Guardrail Post Driving Machines
- Asphalt Cutters

As for the main material needed for the routine maintenance activities, this include but not limited to:

- Aggregates (fine and coarse)
- Asphalt mix
- Liquid Asphalt
- Concrete mix
- Water
- Fuel
- Thermoplastic Paint Material
- Steel Guardrails
- Stones (for stone pitching)
- Reinforcing Steels
- Manhole Covers
- Rubber Bitumen
- Cat Eyes
- Delineators
- Traffic Signals

3.4 Site Construction Staffing and Facilities

The total number of workers for the roads routine maintenance activities project shall be based on the total volume of each activity as per the bill of quantities of the tender documents, as well as the independent assessment of the awarded contractor subject to the project duration and the planner's effort to produce a relevant program of work to cover all project activities. Accordingly, all maintenance activities will need the involvement of a certain number of workers ranging from unskilled labors to equipment drivers to foremen/engineers. Thus, the number of workers will be determined for each project activity. An estimated number of 6 workers (on average) will be designated for each maintenance activity (4 for application and 2 for safety). Furthermore, the project site will not include any facilities to be installed on-site. The usage of material and equipment for this project will be limited only for the duration of maintenance works.

4. DESCRIPTION OF THE ENVIRONMENT AND SOCIAL CONTEXT

To properly assess the potential impacts of the road routine maintenance activities, an environmental and socioeconomic baseline needs to be developed. The baseline will also play a prominent role in developing and implementing mitigation and monitoring plans. This section presents a description of the baseline information. The description of the baseline conditions was based on literature review within Jezzine Caza and is divided into three sections covering the physical, biological and socioeconomic environment.

4.1 Physical Environment

4.1.1 Topography

The Caza of Jezzine is located in the South Governorate and it is about 70 km away from the capital of Beirut (IDAL, 2020). The Caza is surrounded by Nabatieh and Saida from the West, Chouf from the North-East, Marjayoun from the South and Hasbaya from the South-East. The elevation of Jezzine Caza ranges from 283 m to 1,668 m above sea level. The topographic map representing this Caza is provided in Annex 1.

4.1.2 Geology

The geological formation within the Caza of Jezzine are presented in Annex 2. Based on the geological map, the main geological formation within the study belong to the following (Geocities Website, 2022):

- Chouf Sandstone (C1): this formation belongs to the Cretaceous period. It is an often ferruginous brown to white sandstone with associated clays, shales and lignites. Some of the darker layers contain woody or coaly fragments, often with pyrite, marcasite and amber. Locally, the Chouf Sandstone contains basaltic volcanics and reddish clayey beds which appear to be weathered volcanic tuffs. The Chouf Sandstone is very variable in thickness, ranging from a few metres to 300 m thick and in places showing rapid lateral changes.
- Abey Formation (C2) of the Lower Aptian age: this formation belongs to the Cretaceous period. It consists of a mixture of clay, sand and calcareous material in varying proportions forming clay, sandy clay, marl, marly limestone etc. The calcareous material may be slightly to moderately indurated. Where marl prevails its fresh colour is bluish, weathering to creamish brown. The entire Abey Formation is around 125 m thick at the type section.
- Albian (C3): This formation (Hammana Formation) belongs to the Cretaceous period. It consists of green marl (containing glauconite) intercalated with thick layers of marly limestone forming cliffs 3 - 4 m in height. May contain some thin sand layers in the lower part of the formation.
- Sannine Limestone, of Cenomanian age unit (C4); this unit is divided into three subunits namely:
 - Dolomitic Limestone (C4a): this formation is characterized by geodes of different sizes filled or voided and a thickness of about 300 meter. Within this unit Ammonites and fish fossils were found.
 - Bluish marl and shale (C4b): this formation contains crystals of quartz, chert nodules and bands form. The thickness of this unit is in the range of 80-100 meter
 - Limestone and dolomitic limestone (C4c): The Limestone of this unit is highly karstified. The color of this formation is white to brown and its thickness is about 300 meter.

- Miocene - marly conglomerates and reef limestones (m2): weathered grey marl that was originally loose marine greenish marl. This formation is inter-bedded with marly limestone in some parts. The thickness of this outcropping is around 150 m and is known to be rich in foraminifera fossils.
- White marl and marl-limestones (C6): Cretaceous and lower Tertiary sediments indistinguishable lithologically; stiff bluish plastic Marl with glauconite, interbedded with chalky marly Limestone and nodules of black chert. This formation has a thickness that ranges from 400 m to 150 m and is rich in foraminifera fossils.
- Pleistocene (Q)-(qta, qd, qar): Belongs to the quaternary geological unit. It is composed of loose Eolian and cemented sands. Residual soil including Terra Rosa are also found in this formation. In addition, this geological unit is composed of loose alluvium, unconsolidated soil and sediments.
- Kserouan Limestone (J4)-Bhannes Volcanics (J5)-Bikfaya Limestone (J6)-Salima Limestone (J7): these formations belong to the Jurassic geological period. It is a very variable sequence of brown-yellow ferruginous oolitic limestones, often burrowed and cross bedded, that alternate with brown marls. The unit is mainly fairly thin bedded (although some massive units occur, especially at the top) and a relatively recessive topography occurs. Thickness varies from zero-few meters to 150 m.
- Eocene (E): This rock formation belongs to the Tertiary geological period and is widespread in South Lebanon. It is composed of marly and chalky limestone with a thickness in the range of 4500 m–550 m. With a thick succession, it has a good potential to store groundwater

4.1.3 Hydrogeology

The Caza of Jezzine has abundant water resources and several streams, including the Awali River that passes through the district. Many streams have been identified along or near the proposed primary road (PRI 051, 055, 057, 058). Some streams also pass by or are near to some of the secondary roads. In addition, Jezzine village hosts the famous Jezzine waterfall. The Caza comprises of several springs distributed at different elevations within the Caza including: Nabaa El Zarqa that crosses a secondary road, Nabaa Aazzibe at PRI Road PRI 051, Nabaa Jezzine and Ain Ed Darje at Road PRI 055, and Nabaa El Tasse at a secondary road.

A map showing the major rivers and streams along with the springs in Jezzine Caza is presented in Annex 3.

4.1.4 Climate and Meteorology

The results of Jezzine weather data conditions are used to describe the climate of the Caza. This station is the closest one where data is available. Annex 4 – Figure 1 presents the averages temperatures and precipitation registered at Jezzine during each month of the last 30 years. It shows that the lowest average temperature, which was 4°C was registered in January and February, while August had registered the highest average temperature of 29°C. In Jezzine, most rain events fall in the winter during the months of February and December (101 mm of precipitations). However, the driest months are July and August, with 0 mm of rain (Meteoblue website, 2022).

Figure 2 of Annex 4 shows the wind rose for Jezzine representing how annual wind speed and direction are distributed. The wind rose indicates that the wind direction with the highest frequency within the study area is from the west to east with a speed of greater than 5 km/h occurring most of the times (799 h/year). In addition, strong winds occur during fall and winter mainly from October to January while periods of calm winds usually occur from February till September (Meteoblue website, 2022).

Additional data on climate in the area was obtained from the Lebanese Agriculture Research Institute (LARI) from its station in the village of Machghara located at the altitude 1032 meters a.s.l. This data represents the average temperatures and average precipitation of the year 2018 (Annex 4, Figure 3).

As for the wind data, wind speed and direction data were also obtained from LARI's station in New Nabatiye which was the nearest station to the Caza. The station in New Nabatiye is at an elevation of 498 m. Yet, this station for the wind data was taken into consideration since it was the closest station to Jezzine Caza and had an approximately similar elevation. Annex 4 – Table 1 represents the average monthly and annual wind speed and direction for the year of 2017.

4.1.5 Air Quality and Noise

In 2018, a study (Abdallah et al., 2018) used the National Air Quality Monitoring Network (AQMN) data of 2014, as well as data from a long-term monitoring campaign, to assess an air quality modelling system. The study simulated air quality over Lebanon and Greater Beirut for key gas pollutants including Nitrogen Dioxide (NO₂) and Particulate Matter (PM). At the time of the study, the AQMN that was installed and operated by the MoE consisted of five stations, four of which were used in the study, including two urban stations in Beirut (one at the Beirut Pine Forest and the other at the Lebanese University campus in Hadath). The long-term monitoring campaign was conducted simultaneously by the University of Saint Joseph at an urban site within Beirut City at the Beirut Pine Forest, and at a suburban location outside Beirut namely the university campus in Mansourieh. The results for Lebanon simulation for NO₂ and PM₁₀ are shown in Annex 5. The modelled annual concentration map showed that NO₂ annual concentration at Jezzine is around 25 µg/m³ (below the WHO recommended value of 40 µg/m³ limit) whereas the annual PM₁₀ is around 35 µg/m³ (above the WHO recommended value of 20 µg/m³ limit) (Abdallah et al., 2018).

4.1.6 Land Use/Land Cover

Jezzine Caza is characterized by different types of soil, arable lands, variation of elevations and mild climate conditions. The Caza hosts different agricultural activities and produces a variety of agricultural products such as fruits (apples, grapes, pears, citrus), vegetables, olives, grapes, pine and organic farming. (IDAL, 2017). Land in the Jezzine Caza is used for farming activities and livestock production. The Caza is known for its cattle raising, poultry farming and beekeeping activities. As such it hosts around 430 dairy cows, 8,650 goats, 90 poultry farmers and 3,000 beehives (IDAL, 2017). In addition, the Caza has several urbanized villages (such as the villages Kafarjarra, Lebaa and Jezzine) while others are surrounded with agricultural lands. Refer to Annex 6 for an overview of the LU/LC of the entire Caza.

4.2 Biological Environment

4.2.1 Flora

Jezzine has been known for its pine trees and its agricultural sector (UNDP, 2018). Most of the Jezzine Caza is covered in natural areas (IDAL, 2017). Stone pine (*Pinus pinea*) forests extend on altitudes ranging between sea level and 1,500 m in several regions including on the sandy soil of Jezzine region (FAO, 2016). The area covered by these forests has decreased primarily as a result of war, forest fires, and urban development (UNDP/CEDRO, 2012). Within the Jezzine Caza, the mountain called Jabal el Rihane is named as a UNESCO Biosphere Reserve is around 1000m away from a proposed secondary road (UNDP/MoE/ECODIT, 2010) (Annex 3). The Arabic word "Rihane" refers to "basil" which is an aromatic plant (*Ocimum basilicum*) (Mlikh Website, 2022). This plant is abundant on the hills of this mountain and its slopes. Dense forests are present in Jabal El Rihane and are of various types

including Pine and oaks from the Northern side, from the Eastern side pine forests too. As for the West Southern side oak forests (*Quercus calliprinos*, *Quercus infectoria*), *Crataegus*, *Pistacia* trees *Calicotome villosa*, are present. Jabal El Rihane is also known for its crops due to the fertile soil and abundant water, most notably: grapes, olives, figs, walnuts, apples, quince and tobacco (Lebarmy Website, 2004). Jabal el Rihane Biosphere Reserve is around 1000m away from a secondary road.

In addition, the Bkassine Pine Forest (*Pinus pinea*) is listed as a protected forest and hima (UNDP/MoE/ECODIT, 2010) (Annex 3). The Bisri valley that is located in Jezzine Caza presents different trees associations of Calabrian pine, stone pine, oak, hawthorn, laurel, pistachio, juniper, carob along with a bushy vegetation and river course vegetation that includes willow, alder, tamarisk, oriental plane, Cyprus, stone pine and Casuarinas. Moreover, around 50 species of plants were identified and include *Orchis* species (*Orchis tridentata Scop.*, *Orchis papilionaceae L.*, *Orchis morio L.*, *Orchis romana subsp. libanotica Mt.*) (CDR, 2014). Bkassine Pine Forest is around 600-670m away from Road PRI 055 and Road PRI 058 and is in close proximity to two secondary roads.

4.2.2 Fauna

The Jezzine Caza includes the Bisri village and its valley. The existing species comprise five fish species and one crab that were identified in the Awali River. *Salaria fluviatilis*, *Anguilla Anguilla*, *Capoeta damascina*, *Pseudophoxinus kervillei*, *Oxynoemacheilus leontinae*, *Potamon potamios*. The first three species that were mentioned need to be conserved and are the Freshwater blenny, the European eel and the Middle Eastern Green carp respectively. Moreover, various species of amphibians and reptiles were identified and are the Water snake (*Natrix tessellate*), the Marsh frog (*Pelophylax bedriagae*), the Eastern or Syrian spadefoot (*Pelobates syriacus*), the Green toad (*Bufo viridis*), the European common toad (*Bufo cf. bufo*) which is endangered, the Tree frog (*Hyla savignyi*), the salamander (*Salamandra infraimmaculata*) and the Newt (*Triturus vittatus*). As for the birds in the region, thirty-two species of birds were identified and the most common and frequently spotted were Graceful Prinia (*Prinia gracilis*), Jay (*Garrulus glandarius*), Hooded Crow (*Corvus cornix*), Wren (*Troglodytes troglodytes*), and Sparrow (*Passer domesticus*), Swift (*Apus apus*) and Lesser White Throat (*Sylvia curruca*). Moreover, there was 17 identified mammals' species at Bisri, these include four species that were common to the region and are the wild cats (*Felis silvestris tristrami*), striped hyaenas (*Hyaena hyaena syriaca*), porcupine (*Hystrix indica indica*), and moles (*Spalax leucodon ehrenbergi*). In addition, the otter (*Lutra lutra*) and voles (*Microtus sp.*) are riparian species living on the riverbanks of the Awali River (CDR, 2014).

4.2.3 Ecologically Sensitive Areas

The Caza of Jezzine is home to remarkable natural sites such as the pine forests and the famous Jezzine waterfall and caves providing opportunities for ecotourism and summer activities for many visitors. The Caza hosts Jabal el Rihane which is named as a UNESCO Biosphere Reserve (UNDP/MoE/ECODIT, 2010) and is one of the key Biodiversity Areas (KBA) in Lebanon (UNDP/UNHCR/UNICEF, 2021). Jabal el Rihane Biosphere Reserve is around 1000m away from a proposed secondary roads. In addition, the 200 ha Bkassine Pine Forest is listed as a protected forest and a Hima (UNDP/MoE/ECODIT, 2010)). Bkassine Pine Forest is around 600-670m away from Road PRI 055 and Road PRI 058, and is in close proximity to two secondary roads (Annex 3).

4.3 Socio Economic Environment

4.3.1 Demographic Profile

Jezzine Caza has one of the smallest shares of the population in Lebanon (0.7% of residents of the country) with a total population of around 32,100. Females represent 49.4% of the residents whereas

50.6% are males (CAS, 2020). The average household size in the caza is 3.3 compared to the overall average household size of 3.8 individuals (CAS, 2019). The number of poor Lebanese in the Caza is 9,125 (OCHA, 2016). In addition, there are 69 vulnerable localities in South and El Nabatieh governorates, 10 of which are classified as most vulnerable. Out of these 10 localities, none are located in Jezzine Caza (OCHA, 2016) (Refer to Annex 7 for the distribution of vulnerable localities in the Caza). Concerning specific vulnerable groups, such as Female Headed Households (FHH) and people with disabilities, there is no available information on any of the national, UN or other resources. As for the elderly (seniors above the age of 65), they comprise 18% of the total population in the caza compared with the country's national average of 11% (CAS, 2019).

The Caza hosts 3,050 Palestinian refugees (OCHA, 2016). According to the Syrian Refugee Response (UNHCR, 2021), the total number of Syrian Refugees in the different villages of the Jezzine Caza is around 2,139. Most of the Syrian refugees reside in residential dwellings/apartments within the caza. The South Governorate hosts 130 informal tented settlements for Syrian Refugees. Only a few of these settlements are found in the northern part of Jezzine Caza (OCHA, 2016) none of the secondary roads are in proximity to the informal settlements. However, Primary Road PRI 0057 is at a small distance from some informal settlements (Refer to Annex 7 for the distribution of informal settlement in the Caza).

Moreover, the unemployment rate in Jezzine Caza is estimated at 8.3%, less than the national average 11.4% (CAS, 2019). Out of 25,900 individuals aged 15 years and above living in the Caza, 14,200 were outside the labour force. In Jezzine the total labour force participation rate is 45.2% which is lower than the national rate of 48.8%. However, men labour participation rates were higher than the women labour participation rates and are respectively 62.4% and 28.4% (CAS, 2020).

4.3.2 Economic Activities and Infrastructure

According to CAS (2020), the services sector was the largest employment sector in Jezzine Caza and is followed by the industrial sector and agriculture sector. The Caza hosts different agricultural activities, produces a variety of agricultural products (IDAL, 2017) as well as a winery (IDAL, 2020). Jezzine has been known for and greatly relies on its handicrafts (soap making, knife design, sweets, and others) and restaurants as an important source of business. Given its location and weather, several agricultural businesses started to cater to local needs (UNDP, 2018). In Jezzine, several sectors are at the core of development plans: ecotourism, agribusiness, and public-private partnerships are being encouraged. For instance, UNDP supported the establishment of an agroprocessing factory in Jezzine (UNDP, 2018). Individual activities are mostly concentrated in non-mineral and metal subsectors. Stones, marbles and cutlery are commonly produced have resulted in the development of a handicraft industry (IDAL, 2017). A significant number of the labor force in the Caza is engaged in the food and beverage industry. The village of Jezzine is the center of the industrial activities of the district, hosting around 40% of the industrial companies and around 40% of the total industrial workforce. Moreover, a large number of the products manufactured in Jezzine are exported to Europe and Africa, while the majority of these manufacturing companies rely on raw material import from Europe (IDAL, 2017).

The main source of drinking water in Jezzine is the non-piped water supply with 76.4% connectivity which is almost as much prevalent as at the national level which is 76.9%. Drinking water was in the form of piped supplies connected directly to only 22.4% while 1.2% of residencies have no drinking water supply. As for the public electricity network, almost all households in Jezzine Caza are connected to the public network (99.9%) while 75.1% were subscribed to a private electricity source or have their own generator (CAS, 2020).

4.3.3 Education Services

Jezzine Caza has 11 public schools, five out of which are located in Jezzine village. There are two vocational schools in Jezzine, yet students usually attend one of Saida's 8 universities (IDAL, 2017).

In Jezzine Caza, the illiteracy rate was reported to be 9% which is lower than the national rate (7.4%). This rate was found to be higher for women with an illiteracy rate of 12.5% compared to men which is 5.5%. In addition, the highest illiterate rates of illiteracy (26.8 %) were among residents aged 65 years and above (CAS, 2020).

4.3.4 Health Services

The main hospital in the Caza Jezzine is the Jezzine Government Hospital. It is located around 160m away from Road PRI 055 in Jezzine village. The location of Jezzine Government Hospital can be shown on the sensitive receptors map (Annex 3).

4.3.5 Cultural Heritage

Jezzine has been known for its tourist and religious attractions (UNDP, 2018). According to the Ministry of Tourism (2011), the Jezzine village hosts many cultural sites, including:

- Mar Maroun Church;
- Saydet Al Nabi Church;
- Evangelical Church;
- Mar Antonios Church;
- Saint Coeurs Convent;
- Sports Stadium;
- Public Library.

However, these sites are not identified along any of the road eligible for maintenance.

Moreover, according to the Ministry of Tourism (2011), the Aazour village hosts many cultural sites, including the Old Olive Press located on Road PRI 055. The main archeological sites that are present in Jezzine Caza are represented in Annex 3.

4.3.6 Road Sensitive Receptors

The main sensitive receptors within the Jezzine Caza includes the Nahr El Awali that crosses Road PRI 055 that passes through the district. In addition, Jezzine village hosts the famous Jezzine waterfall and several springs distributed at different elevations within the Caza including Nabaa El Zarqa located on a secondary road, Nabaa Aazzibe located on Road PRI 051, Nabaa Jezzine located on Road PRI 055, Ain Ed Darje located on Road PRI 055 and Nabaa El Tasse loated on a secondary road. The Caza hosts Jabal el Rihane which is named as a UNESCO Biosphere Reserve and is one of the KBA in Lebanon is around 1000m away from a proposed secondary road. In addition, the 200 ha Bkassine Pine Forest is listed as a protected forest and a Hima and is 600-670m away from Roads PRI 051 PRI 058 and is in close proximity to two secondary roads. Moreover Jezzine Government Hospital is ocated around 160m away from at Road PRI 0555 in Jezzine village. As for archaeological site, the Old Olive Press is close to the primary and secondary roads . A map of all these receptors can be found in Annex 3.

5. ENVIRONMENTAL AND SOCIAL IMPACT ANALYSIS AND MITIGATION

This section analyzes the potential anticipated positive and negative environmental and social impacts associated with the maintenance activities to be executed in Jezzine Caza and proposes measures for their mitigation.

5.1 Assessment Methodology

The evaluation of potential environmental and social impacts will be based on relevant scientific evidence, literature review and the professional judgment of the Consultant. The impact assessment approach applied is as follows:

- Identification of project-related activities (during both phases) and environmental aspects;
- Determination of potential impacts on the natural and man-made environment that might arise from these activities;
- Assessment and evaluation of potential impacts based on the criteria set out in the Environmental and Social Management Framework of the project. As such, impacts will be weighted on the scale of P, 2P, O, N, 2N to signify Positive, strongly Positive, Neutral, Negative, and Strongly Negative impacts respectively.

Due to the fact that the location of the maintenance activities will not be defined until execution of the works commence, the impact rating will be based on the presence of the defined sensitive receptors for that impact.

5.2 Potential Positive Impacts during Maintenance

The maintenance of roads in Jezzine Caza is considered as an economic opportunity for the selected contractor and their subcontractors. Local businesses may benefit from maintenance activities through selling raw materials, equipment, machinery and goods and the project will create jobs and could hire labors from the local community (Lebanese and Syrian). For example, small shops may potentially benefit from the maintenance activities as workers will buy food and drinks from these small shops. In addition, local garages will benefit from increased business in vehicle and equipment maintenance and residents will benefit from the rent fees of the offices and residences as well as vehicle and equipment parking area. The potential influx of workers will also increase economic activity in the area as they will likely purchase their daily requirements from the surrounding shops. This will have a ripple effect within the communities where the roads will be maintained. This impact is, however, temporary and jobs will be discontinued as soon as maintenance works are complete.

As such this impact on economic activity in the region is considered as a positive impact (P).

5.3 Impacts and Mitigation during Maintenance Activities

Table 5-1 presents the general positive and negative impacts that might arise from all maintenance activities during the execution of works.

Table 5-1: Environmental and Social Impacts during Maintenance Activities

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
Environmental				
Air, nearby communities and workers	<p>Removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area</p> <p>Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts</p> <p>Removal of damaged galvanized steel guardrail and replacing it by new ones</p> <p>Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course</p>	<p>Air pollution from emissions of machinery, trucks or open burning activities</p> <p>Potential Impact on:</p> <p>Jezzine Government Hospital located 160 m away from Road PRI 055</p> <p>The Old Olive Press on Road PRI 055</p> <p>Bkassine Pine Forest 600 -670m away from Roads PRI 051 PRI 058, and is in close proximity to 2 secondary roads</p> <p>Near densely populated urban areas</p> <p>Refer to Annex 3</p>	N	<p>Prepare and abide by Pollution Prevention Plan that includes:</p> <p>Atmospheric Emissions and Dust Management Provisions (Annex 8)</p> <p>Water the ground when extremely windy</p> <p>Mix material in an enclosed space</p> <p>Cover material when transporting</p> <p>Prepare and abide by Emergency Preparedness and Response Plan (Annex 8)</p> <p>Specific Measures Near Sensitive Receptors (Refer to Annex 3)</p>
Air, nearby communities	<p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p> <p>Milling and overlay for sunken but stable trench</p> <p>Removal and reinstatement of damaged trench.</p>	<p>Dust pollution from maintenance and excavation activities.</p> <p>Potential Impact on:</p> <p>Jezzine Government Hospital located 160 m away from Road PRI 055</p> <p>The Old Olive Press on Road PRI 055</p> <p>Bkassine Pine Forest 600 -670m away from Roads PRI 051 PRI 058, and is in close proximity to 2 secondary roads</p> <p>Near densely populated urban areas</p> <p>Refer to Annex 3</p>	N	<p>Speed limit for project vehicles and machinery within working areas shall not exceed 20 Km/h</p> <p>Ensure optimal traffic routes.</p> <p>Use wet suppression in the dry season, where unpaved roads, the working strip, raw material stockpiles are located <200 m from settlements</p>

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
Nearby communities and workers		<p>Noise pollution a result of transportation or delivery of raw materials, trucks movement, concrete mixing, drilling, construction and operation of heavy vehicle movement such as excavators.</p> <p>Potential Impact on: Jezzine Government Hospital located 160 m away from Road PRI 055 The Old Olive Press on Road PRI 055 Bkassine Pine Forest 600-670m away from Roads PRI 051 PRI 058 and is in close proximity to two secondary roads Jabal El Rihane around 1000m away from a proposed secondary road Near densely populated urban areas Refer to Annex 3</p>	N	<p>Maintenance of vehicles and machinery Excavation and any other noisy activity only to be conducted during working hours In the case where it is absolutely necessary to conduct some activities outside the normal working hours (i.e. at night), prior approval of the concerned municipality and CDR will be obtained Set traffic speed limits Specific Measures Near Sensitive Receptors (Refer to Annex 3) Verify drivers' behavior with respect to driving speed Plan vehicle routes to avoid settlements where possible</p>
Biodiversity and sensitive habitats		<p>Disturbance of nearby areas and animal escape through noise and vibrations</p> <p>Potential Impact on: Bkassine Pine Forest away 600-670m from Road PRI 051 PRI 058 and in close proximity to two secondary roads</p>	N	

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
		Jabal El Rihane around 1000m away from a secondary road		
Water resources, soil, nearby communities	<p>Removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area</p> <p>Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts</p> <p>Removal of damaged galvanized steel guardrail and replacing it by new ones</p> <p>Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course</p> <p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p> <p>Milling and overlay for sunken but stable trench</p> <p>Removal and reinstatement of damaged trench.</p> <p>Cast in situ reinforced concrete for repair box culverts, headwalls and wingwalls, concrete channels, safety barriers, retaining walls and cover channels</p>	<p>Contamination of surface water and pollution of ground water from improper disposal of wastewater from workers and of wash water coming from cleaning of machines and equipment</p> <p>Potential impact on:</p> <p>Streams along and near the proposed primary roads (PRI 051, 055, 057, 058)</p> <p>Nabaa Aazzibe at Road PRI 051</p> <p>Nabaa Jezzine and Ain Ed Darje at Road PRI 055</p> <p>Nabaa El Tasse at a secondary road</p> <p>Nabaa El Zarqa at a secondary road</p> <p>Awali River at Road PRI 055</p> <p>Refer to Annex 3</p>	N	<p>Prepare and abide by Pollution Prevention Plan that includes:</p> <p>Effluent Management Provisions</p> <p>Rainwater run-off Management Provisions (Annex 8)</p> <p>Prepare and abide by Emergency Preparedness and Response Plan (Annex 8)</p> <p>Specific Measures Near Sensitive Receptors (Refer to Annex 3)</p> <p>On-site concrete pouring shall be done in a way to avoid leaching to nearby water bodies.</p> <p>Onsite mixing of concrete shall be performed at least 40 meters away from nearby water bodies</p> <p>Prohibit the disposal of excess concrete mix into the environment or near water bodies</p>

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
	Plain concrete patching for deteriorated concrete in culverts, channels, walls and safety barriers			
Water resources, soil, nearby communities	<p>Removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area</p> <p>Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts</p> <p>Removal of damaged galvanized steel guardrail and replacing it by new ones</p> <p>Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course</p>	<p>Water pollution due to accidental spill of oils and chemicals from trucks and from transportation of chemicals and oils.</p> <p>Potential impact on:</p> <p>Rivers along and near the proposed roads</p> <p>Nabaa Aazzibe at Road PRI 051</p> <p>Nabaa Jezzine and Ain Ed Darje at Road PRI 055</p> <p>Nabaa El Tasse at a secondary road</p> <p>Nabaa El Zarqa at a secondary road</p> <p>Awali River at Road PRI 055</p> <p>Refer to Annex 3</p>	N	<p>Prepare and abide by a Spill Prevention and Management Plan under Pollution Prevention Plan (Annex 8)</p> <p>Minimize soil exposure time</p> <p>Minimize the use of chemicals</p> <p>Regular maintenance of vehicles</p> <p>Prepare and abide by Waste Management Plan and Hazardous Materials Management Plan (Annex 8)</p> <p>Prepare and abide by Emergency Preparedness and Response Plan (Annex 8)</p> <p>Specific Measures Near Sensitive Receptors (Refer to Annex 3)</p> <p>Fuel, oil or hazardous materials required to be temporarily stored onsite shall be stored within secondary containment located further than 100m from a watercourse or water body</p> <p>Fuel and hazardous chemical storage areas shall not be allowed within 30m of a minor watercourse, within 100m of a major watercourse, or where there is the potential for spilled fuel to enter groundwater</p> <p>Keep the area free of litter and garbage and prevent random disposal of waste</p> <p>Specific locations shall be designated for consuming food and snacks away from sensitive receptors.</p>
Water resources	<p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p> <p>Milling and overlay for sunken but stable trench</p> <p>Removal and reinstatement of damaged trench.</p>	<p>Improper disposal of cut volume may cause contamination of water bodies in rainy weather</p> <p>Potential impact on:</p> <p>Rivers along and near the proposed roads</p> <p>Nabaa Aazzibe at Road PRI 051</p> <p>Nabaa Jezzine and Ain Ed Darje at Road PRI 055</p> <p>Nabaa El Tasse at a secondary road</p>	N	

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
		Nabaa El Zarqa at a secondary road Awali River at Road PRI 055 Refer to Annex 3		
Water resources, soil, subsoil and land	<p>Removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area</p> <p>Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts</p> <p>Removal of damaged galvanized steel guardrail and replacing it by new ones</p> <p>Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course</p> <p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p>	<p>Contamination of soil and surface water bodies from the improper disposal of solid waste generated from workers and the used materials, construction waste from excavation and drilling activities</p> <p>Potential impact on: Rivers along and near the proposed roads</p> <p>Nabaa Aazzibe at Road PRI 051 Nabaa Jezzine and Ain Ed Darje at Road PRI 055 Nabaa El Tasse at a secondary road Nabaa El Zarqa at a secondary road Awali River at Road PRI 055 Refer to Annex 3</p>	N	<p>Prepare and abide by Waste Management Plan (Annex 8)</p> <p>Reuse or recycle the generated waste whenever possible</p> <p>Prepare and abide by Emergency Preparedness and Response Plan (Annex 8)</p> <p>Specific Measures Near Sensitive Receptors (Refer to Annex 3)</p> <p>Waste bins shall be located at a distance of over 100 m from any natural sensitive area or water bodies and over 500 m from any socioeconomic sensitive area</p>
Energy resources	<p>Milling and overlay for sunken but stable trench</p> <p>Removal and reinstatement of damaged trench.</p> <p>Cast in situ reinforced concrete for repair box culverts, headwalls and wingwalls,</p>	<p>High consumption rates of electricity, fossil fuel, etc. contributing to overconsumption and depletion of fuel</p>	N	<p>Maintenance of the generators and trucks</p> <p>Light in the site offices shut down during the night</p> <p>Construction workers must be trained and provided with awareness sheets on efficient energy use</p> <p>Machinery and equipment must be turned off when not in use</p>

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
Water resources	concrete channels, safety barriers, retaining walls and cover channels	High consumption rates of water for construction related activities	N	Use water in the most efficient way and reduce wastage
Water resources, soil, nearby communities	Plain concrete patching for deteriorated concrete in culverts, channels, walls and safety barriers	Reduction in overall ground and surface water quality due to improper disposal of construction waste	N	Regular site inspection to detect water leakages Whenever possible, use dry-cleaning instead wet cleaning Training and awareness should be raised to workers concerning water usage best practices and water conservation Proper disposal of construction waste
Water resources, soil, subsoil and land		Depletion of natural resources due to the unsustainable extraction of borrowing material (sand, aggregates, ...)	N	Ensure that the borrow material are extracted from legal sites Avoid agricultural lands to extract borrowing material
Biodiversity and sensitive habitats		Removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts Removal of damaged galvanized steel guardrail and replacing it by new ones Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course	Potential damage of existing flora: Potential impact on: Bkassine Pine Forset 600m-670m away from Roads PRI 055 and PRI 058, and is in close proximity to two secondary roads Jabal El Rihane Biosphere Reserve around 1000m away from a proposed secondary road.	N

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
	<p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p> <p>Milling and overlay for sunken but stable trench</p> <p>Removal and reinstatement of damaged trench.</p>			
Social				
Local workers, socio-economic activities	Removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area	Creation of job opportunities for local communities	P	Workers are paid their wages in full and on time
Nearby communities, socio-economic activities	<p>Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts</p> <p>Removal of damaged galvanized steel guardrail and replacing it by new ones</p>	Local garages will benefit from the equipment oil maintenance and residents will benefit from the rent fees of the offices and the equipment parking area.	P	
Shop owners/renters	Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course	Small snack shops and coffee stations are expected to benefit from workers buying food and drinks	P	
Foreign Workers	<p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p> <p>Milling and overlay for sunken but stable trench</p>	Temporary potential Labor Influx	N	Priority hiring to qualified local community GRM for local communities (public notice including GRM to be posted at relevant municipalities and on project sign boards)

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
	<p>Removal and reinstatement of damaged trench.</p> <p>Cast in situ reinforced concrete for repair box culverts, headwalls and wingwalls, concrete channels, safety barriers, retaining walls and cover channels</p> <p>Plain concrete patching for deteriorated concrete in culverts, channels, walls and safety barriers</p>			
Shop owners/renters	<p>Removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area</p> <p>Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts</p> <p>Removal of damaged galvanized steel guardrail and replacing it by new ones</p> <p>Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course</p> <p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p> <p>Milling and overlay for sunken but stable trench</p>	Economic Activities and its effect on the livelihood of the shop owners	N	<p>Install overpass structures from the road to the shops</p> <p>Maintain a passing corridor within the alignment to grant access to nearby properties</p> <p>Ensure that access to small snack and coffee stations is not blocked by installing wooden boards where necessary</p> <p>Inform the shops' owners ahead of time about maintenance date and coordinate with relevant municipalities</p> <p>Regularly inform road users and local communities in relation to changed traffic conditions or access</p> <p>Proper installation of sign boards in culturally appropriate languages that are clear and understandable to the public</p> <p>Timely completion of the maintenance activities</p> <p>Ensure access to external GRM (public notice including GRM to be posted at relevant municipalities and on project sign boards)</p> <p>Prepare and abide by Traffic Management Plan (Annex 8)</p>

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
	Removal and reinstatement of damaged trench.			
Foreign workers influx	Removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts	Discrimination from the local community against the potential influx of foreign workers	N	Prevent discrimination at the workplace Conduct awareness campaigns for the local community regarding foreign workers influx Inform the local community that worker will sign code of conduct before starting the work GRM for local communities and all relevant stakeholders
Locals and foreign, skilled and unskilled)	Removal of damaged galvanized steel guardrail and replacing it by new ones Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course	Possible unequal wage benefits between local and foreign workers	N	Ensure that all workers (locals and foreign, skilled and unskilled) shall be compensated and are contracted equally as per the scale of market price rates, have equal contractual benefits and working conditions, and have access to internal GRM
Local and foreign children	Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses Milling and overlay for sunken but stable trench Removal and reinstatement of damaged trench. Cast in situ reinforced concrete for repair box culverts, headwalls and wingwalls, concrete channels, safety barriers, retaining walls and cover channels	Possible recruitment of children who are under the legal age as workers on the site, especially in the case of the day laborers	2N	Daily registrations of workers and verification of their age to prevent child labor Abide by the National Labor Law Ensure the contractor is aware of the penalties that Labor Law imposes in the case of child labor Oblige the contractor to strictly abide by the Labor Law through the CDR tender documents that should include prohibition of child labor

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
	Plain concrete patching for deteriorated concrete in culverts, channels, walls and safety barriers			
Nearby communities, socio-economic activities	<p>Removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area</p> <p>Cleaning of waterways, hydraulic structures , drainage pipes, and box culverts</p> <p>Removal of damaged galvanized steel guardrail and replacing it by new ones</p> <p>Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course</p> <p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p> <p>Milling and overlay for sunken but stable trench</p> <p>Removal and reinstatement of damaged trench.</p>	Disruption of local community to access services due to maintenance activities and temporal road closures	N	<p>Prepare and abide by Traffic Management Plan (Annex 8)</p> <p>Traffic shall be secured via alternative routes to reach relevant destinations in case the works imply the temporary closure of this road</p> <p>Inform the local community about the location of detours, road blockages or diversions through public announcements and proper diversion signage</p> <p>Ensure access to external GRM (public notice including GRM to be posted at relevant municipalities and on project sign boards)</p>
Existing infrastructure and nearby communities	Removal of all vegetation, surface debris and scattered stones and rocks within the limits of working area	Damage of existing infrastructure	N	<p>Regular coordination with relevant municipalities</p> <p>Conducting trial pits</p>

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
	<p>Cleaning of waterways, hydraulic structures , drainage pipes, and box culverts</p> <p>Removal of damaged galvanized steel guardrail and replacing it by new ones</p> <p>Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course</p> <p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p> <p>Milling and overlay for sunken but stable trench</p> <p>Removal and reinstatement of damaged trench.</p>			<p>Ensure access to external GRM (public notice including GRM to be posted at relevant municipalities and on project sign boards)</p>
Nearby communities	<p>Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts</p> <p>Removal of damaged galvanized steel guardrail and replacing it by new ones</p> <p>Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and</p>	<p>Potential occurrence of gender-based violence and sexual exploitation and abuse incidents and all forms of GBV incidents</p> <p>Potential impact on:</p> <p>Informal settlements near road PRI 0057</p>	N	<p>Draft Codes of Conduct and the guidelines for a GBV and VAC Action Plan</p> <p>Conduct training sessions for workers on Sexual Exploitation and Abuse and/or Sexual Harassment</p> <p>All workers should understand, and sign codes of conduct written in their native language</p> <p>Respond to the reported incidents of sexual abuse exploitation as a matter of priority</p> <p>Regular training on gender-based aspects, internal and external GRM that includes an</p>

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
	<p>applying one layer of asphalt binder course and one layer of asphalt wearing course</p> <p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p> <p>Milling and overlay for sunken but stable trench</p> <p>Removal and reinstatement of damaged trench.</p> <p>Cast in situ reinforced concrete for repair box culverts, headwalls and wingwalls, concrete channels, safety barriers, retaining walls and cover channels</p>			<p>anonymous channel for protection of complainants' identity and confidentiality</p> <p>Availability of a GRM with multiple channels to initiate a GBV complaint, which ensures confidential reporting with safe and ethical documenting of GBV cases, including Sexual Exploitation and Abuse and Sexual Harassment</p> <p>GRM will be sensitive to complaints related to SEA/SH grievances and ensure implementation of the necessary referral pathways</p> <p>Ensure that there is a survivor centric approach for SEA/SH complaints and trained personnel handling these calls</p>
Nearby communities	Plain concrete patching for deteriorated concrete in culverts, channels, walls and safety barriers	<p>Slight increase in traffic due to the transport of construction materials or due to the material that may fall</p> <p>Potential Impact on:</p> <p>Near densely populated urban areas</p> <p>Jezzine Government Hospital located 160m away from Road PRI 055</p> <p>Refer to Annex 3</p>	N	<p>Prepare and abide by Traffic Management Plan (Annex 8)</p> <p>Ensure traffic is not blocked during transportation</p> <p>Inform residents and place signs near the working areas in culturally appropriate languages and written in clear and understandable manner</p> <p>Ensure communities have access to GRM</p> <p>Cover transported material</p> <p>Abide by traffic regulations</p> <p>Operate well maintained vehicles</p>
Nearby communities		<p>Traffic congestion in the town due to temporal road closure</p> <p>Potential Impact on:</p> <p>Jezzine Government Hospital located 160 m away from Road PRI 055</p> <p>Refer to Annex 3</p>	N	

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
Nearby communities, socio-economic activities		Material falling from vehicles during transport may cause traffic accidents or congestion Potential Impact on: Jezzine Government Hospital located 160 m away from Road PRI 055 Near densely populated urban areas Refer to Annex 3	N	
Health and Safety				
Workers	Thermoplastic reflectorized road paint lines including surface preparation and removal of existing paint lines Thermoplastic reflectorized special road marking including speed limit marking, Bituminous speed humps Rumble strips	Accident and injuries to workers and public because of maintenance activities	2N	Develop a site-specific Public Health and Safety Plan and Occupational Health and Safety (Annex 8)
Nearby communities	Cleaning of waterways, hydraulic structures, drainage pipes, and box culverts Removal of damaged galvanized steel guardrail and replacing it by new ones Shallow patching works including milling and re-instating wearing asphalt course, full asphalt removal and repair with maintaining base course layer and applying one layer of asphalt binder course and one layer of asphalt wearing course	Dust generation and noise may cause health related problems for workers and disturbance to residents. Potential Impact on: Jezzine Government Hospital located 160 m away from Road PRI 055 Near densely populated urban areas Refer to Annex 3	N	

Receptor	Activity Generating Impacts	Impact Description	Rating	Mitigation Measure
	<p>Deep patching works including excavation maintaining base course and asphalt binder course and asphalt wearing courses</p> <p>Milling and overlay for sunken but stable trench</p> <p>Removal and reinstatement of damaged trench.</p> <p>Cast in situ reinforced concrete for repair box culverts, headwalls and wingwalls, concrete channels, safety barriers, retaining walls and cover channels</p> <p>Plain concrete patching for deteriorated concrete in culverts, channels, walls and safety barriers</p>			

6. ENVIRONMENTAL AND SOCIAL MONITORING PLAN

6.1 Monitoring Plan

Continuous monitoring during the implementation of the maintenance activities will be required to ensure the effectiveness of the proposed mitigation measures. The plan includes a list of indicators to monitor, responsibility of monitoring, schedule and location of monitoring activities, monitoring methods and the estimated cost.

Through sound environmental and social management and implementation of a monitoring plan, the maintenance activities in Jezzine Caza will avoid incurring the major adverse impacts. The aims of the monitoring plan are:

- Verify the environmental and social impacts predicted in the ESMP study;
- Determine project compliance with national and international requirements and standards;
- Monitor the performance of the project and the effectiveness of mitigation measures;
- Take remedial action if unexpected problems and unanticipated impacts arise.

Environmental monitoring activities/indicators during the execution of the maintenance activities are included in Table 6-1.

Table 6-1: Environmental and Social Monitoring Plan during Maintenance Activities

Impact	Monitoring Indicators	Frequency / Duration	Location	Methods	Estimated Cost
Environmental					
Air pollution (Dust /GHG Emissions)	Total Suspended Particles (TSP), PM10, PM2.5 (wherever feasible), SOx, NOx and CO	Weekly and during activities that generates significant amount of air pollutants	Throughout the project area near sensitive receptors	Visual observation of dust dispersion (scale and direction) and 1-hr and 24-hr measurements when significant amount of air pollutants are generated	\$1,500/event
Noise Pollution and Light	Leq, Lmin and Lmax	Weekly and during activities generating significant noise levels	Throughout the project area near sensitive receptors	Single sample per location (average 1hr reading-15min intervals) during morning (7-8am), evening (1-2pm) and night (4-5pm)	\$300 (cost of noise monitoring machine)
Contamination of surface water bodies and soil from the generated domestic wastewater from workers and liquid waste from maintenance activities	Check for leakages in the connections between the porta cabin toilets and the existing network or polyethylene tank Check the discharge endpoint of the pumped wastewater from the polyethylene tank Effluent from construction activities (Concrete mixing, dust minimizing, washing of equipment...)	Weekly	Throughout the project area and at the porta cabin toilet sites	Visual inspection	-
Contamination of surface water bodies and soil from the generated solid waste	Ensure active solid waste management plan Construction and demolition waste Waste of the workers on site	Weekly	Collection points present on sites and near nature reserve and forest	Visual inspection	-

Impact	Monitoring Indicators	Frequency / Duration	Location	Methods	Estimated Cost
Reduction in overall surface water and soil quality Accidental Releases	Ensure active spill prevention and management plan Chemicals, oils and fuel spill incidents	Weekly	Active maintenance locations	Visual inspection	-
Depletion of non-renewable energy resources	Inspection of the quantities and types of the used fuel and oils	Weekly	Fuel and oils purchase bills	Visual inspection	-
Depletion of water resources	Inspection of water quantities Monitoring the different drilling and construction activities Ensure active spill and accident prevention plan	Weekly	Water purchase bills	Visual inspection	-
Destruction of existing Land Resources	Check the infrastructure locations and that excavation works do not interfere with it	Weekly	In location where excavation and drilling is planned (mainly where new pavement is assigned)	Visual inspection	-
Tree and floral species disturbance near the site during maintenance activities	Site observation	Weekly	Around maintenance activities and near the nature reserve and forest		-
Social					
Traffic congestion	Check traffic conditions during transportation of materials Ensure traffic is not blocked	Daily	Throughout the project area	Visual inspection	-

Impact	Monitoring Indicators	Frequency / Duration	Location	Methods	Estimated Cost
	Ensure traffic is relocated properly Ensure all safety precautions are abided by				
Labor conditions	Proportion of Lebanese vs Syrian workers Worker's age GRM log Attendance sheets to GBV trainings Number of workers trained to SEA Number of workers who signed Code of Conduct	Weekly	Throughout the project area	Visual inspection	-
Labor Influx	Number of report Sexual abuse and exploitation incidents Number of inappropriate communication and language among the workers	Weekly	Throughout the project area	Visual inspection	
Health and Safety					
Accident and injuries to workers	Ensure signs are in place before works begin Visual inspections to ensure that all workers are wearing their PPEs Recorded injuries and accidents within the workers	Daily	At maintenance activity locations	Visual inspection Accidents records	-
Accident and injuries to the public	Ensure the installation of pedestrian and vehicular passages near residential areas	Daily	At maintenance activity locations	Visual inspection Accidents records	-

Impact	Monitoring Indicators	Frequency / Duration	Location	Methods	Estimated Cost
	Ensure road diversion and construction attention signs are in place before works begin Record injuries and accidents within passers-by Ensure the development of a site-specific Occupational and Public Health and Safety Plan and that the best practices are applied				

6.2 Institutional Setup and Capacity Building

6.2.1 Roles and Responsibilities

The project works will be executed on the main road network which is under the jurisdiction of the Ministry of Public Works and Transportation (MOPWT). In Lebanon, donor-funded road works projects are implemented by CDR upon the request of the Council of Ministers (CoM). Therefore, in the context of REP project, CDR (Road and Transport Department) will execute the project on behalf of the Government/MOPWT.

In order to achieve proper environmental and social management and monitoring, a clear, functional institutional structure will be defined along with the roles and responsibilities of each institution/personnel (refer to **Error! Reference source not found.**). In fact, during the execution of works, the contractor would be the primary actor; ensuring compliance of works with the different items specified in the environmental and social management plan. Accordingly, the contractor will be supervised by several entities appointed by CDR. CDR will be responsible for constant monitoring of the maintenance works through weekly and/or monthly reports (sent by the contractor) and site visits, ensuring and enforcing mitigation measures.

- More specifically, roles and responsibilities will be defined for the following:
- CDR: Project Implementation Unit (PIU) dedicated to the project which includes social and environmental specialists
- Contractor: project director, project manager, site engineer, environmental expert, social expert, Occupational Health and Safety (OH&S) expert, Road Safety Expert, and Health, Safety and Environmental (HSE) officer
- Supervising Consultant: environmental and social expert
- Municipalities: relevant municipalities in Jezzine Caza Caza

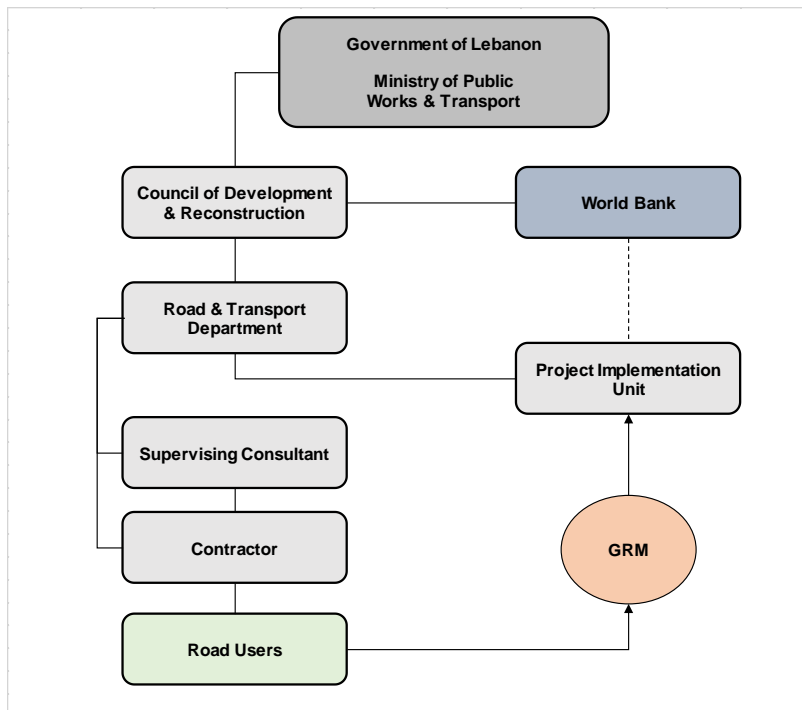


Figure 6-1: Roads and Employment Project Management Structure

6.2.2 Staff Training

In the context of the proposed project, the supervising consultant will prepare environmental and social training course (environmental and social management, health and safety issues) prior to the handover of the road project for the contractors and field supervision staff.

The main objective of the training is to:

- Meet regulatory requirements in capacity development in support of road maintenance;
- Develop technical and administrative procedures for monitoring air quality, traffic scheme recording accidents number;
- Implement data collection for monitoring activities;
- Establish a continuous improvement process for safety;
- Ensure that staff knows and understands the potential risks associated with road safety;
- Enhance knowledge and skills of municipality employees, enabling them to perform their responsibilities in the areas of health and safety.

Training programs must be incorporated with a feedback loop to ensure their relevance and acceptance by staff and will be reviewed periodically and updated when necessary. The implementation of the training programs will raise awareness to the involved workers and municipalities of the Caza in the following topics:

- National environmental and social laws, regulations, and standards;
- WB safeguard policies;
- Identified Management and Monitoring Plans;
- GRM and referral pathways and prevention against SEA/SH;
- Codes of Conduct.

6.2.3 Documentation and Reporting

During the maintenance phase, regular monitoring results must be documented in order to track and analyze the frequency of potential impacts and accidents that might occur. The project supervision engineer is responsible for the reporting and establishing a comprehensive database for all monitoring activities. The report must include key indicators such as:

- Type of the activity monitored;
- Date of monitoring and weather conditions;
- Photographic documentation;
- Name of the person that is conducting the monitoring;
- Method of monitoring (sampling, visual inspection, etc.);
- Number and type of samples;
- Results of the monitoring (concentrations, accidents, frequency, etc.);
- Number of internal and external grievances as per the log;
- Code of conduct trainings and number of signed forms, attendance sheets to GBV trainings, worker's age, GRM log, etc...
- Dates of trainings;
- Mitigation measures undertaken;
- Title and dates of training programs.

After documenting, the supervision engineer must submit the reports to the CDR and the WB on a monthly and quarterly basis. In addition, any incident should be recorded using an Incident Record and the details shall be entered into a register (health and safety reporting, accident reporting procedure, case of serious misconduct). There should be immediate reporting of severe incidents (such as fatal accidents).

7. CONSULTATION, DISCLOSURE AND GRM

7.1 Public Consultation

The purpose of conducting public consultation is to inform the stakeholders and the local NGOs about the proposed project and the routine maintenance activities that will be executed in Jezzine Caza and to take into account their concerns and feedback. Due to the Covid-19 situation in Lebanon at the moment and high level of community transmission, public consultation was held virtually on Tuesday, 8 February 2022 using Zoom Application. An announcement was prepared for this purpose and can be found in Annex 9.

It is worth mentioning here that all relevant municipalities will be informed upfront before the commencement of works about the Project since public consultation was conducted back in February 2022. In addition, a public notice will be posted at each relevant municipality including the GRM procedure. This will disseminate the Project and ensure that its activities are implemented in a transparent manner.

In addition to the unions and municipalities, local and international NGOs were invited to the public hearing. Invitations were sent by the consultant to the concerned municipalities, union of municipalities and NGOs. A sample of the invitation can be found in Annex 9. Annex 9 also include the names of the invited NGOs and their field of activity. Those NGOs may serve as advocates to reduce projects' social and environmental risks and promote good practice. However, the international and local NGOs listed in the Annex were invited but did not attend the consultation.

During the session, participants were asked to write their names along with their organization and/or position in the Chat on Zoom Application. Annex 9 presents the list of attendees of the session. A total of 10 participant attended the session out of which 3 were women.

The public hearing opened with a word from ACE representative who introduced the overall project and its objectives and relevant organizations including CDR and the World Bank. The Consultant presented a description on the maintenance activities, purpose of the hearing, a summary of the ESMP process, and a list of potential environmental and social issues associated with implementation of maintenance activities. Participants were also informed that a GRM procedure has been developed for the project and were given contact information of the Project Consultant in order to inquire about it as well as the GRM channels. The floor was then opened for discussion and questions. The presentation made to the public hearing participants along with some screenshots from the Zoom meeting can be found in Annex 9.

The proceedings which describe in detail the raised concerns and complaints by the participants and how all have been addressed are presented in the following paragraph.

- Mr. Khalil Harfouche, Head of the Union of Municipality of Jezzine mentioned that it is important to coordinate with each municipality as they know where the problems at each road are. Mr Harfouche also mentioned that the road from Lebaa towards Jezzine needs road marking. ACE representative stated that municipalities will be involved before the implementation of the maintenance activities. ACE representative also clarified that this project phase includes routine maintenance activities of already existing road features (including road marking) and does not include rehabilitation activities.
- Mr. Maroun Chalhoub, Head of Kfarjarra Municipality stated that the asphalt of Jezzine – Kfarjarra road is ruined and that some retaining walls, rain water pathways and sidewalks need maintenance. He also mentioned that with time the cat eyes get damaged and that the color of the road safety signs as well as road marking become faint. ACE representative clarified that

the installation of cat eyes is included within this project phase. ACE representative also clarified that road marking cannot be done on already existing asphalt layer as the quality of the road marking will only be in good conditions if it is applied on newly paved roads.

- Mr. Maroun Chalhoub, Head of Kfarjarra Municipality mentioned that light is needed at Jezzine main road. In fact, he stated that solar panels were installed for the road light poles under a UNDP project. However, these solar panels are no more functional (need new batteries) as they were installed 7 years ago. ACE representative stated that this project will only cover maintenance works and he suggested to send a letter to CDR in order to draw their attention about this issue.
- Mr. George Antoun, Head of Chouliqe Municipality asked about the budget and implementation timeframe of the project and if the project will include maintenance activities at secondary roads. He also asked when the municipalities can meet with the consultant. ACE representative mentioned that the budget of the project is based on the remaining funds from the rehabilitation activities which is already being implemented in the Caza under the same project. Regarding the implementation timeframe, ACE representative mentioned that as a first step an assessment of the road conditions was done on 25% of the primary roads. ACE representative also clarified that Bills of Quantities (BOQ) was prepared for several road maintenance items based on the 25% assessment. Then in coordination with the relevant municipalities, maintenance activities will be identified before the implementation of the project. Supervision on road maintenance activities will be done to ensure that the contractor is implementing all items and quantities mentioned in the BOQ.
- At the end, ACE representative clarified that the project includes routine maintenance activities of already existing road features (classical road maintenance activities) and not rehabilitation activities to upgrade the road. He also mentioned that the BOQ will be shared with Mr. Khalil Harfouche, Head of the Union of Municipalities of Jezzine in order to review it and see if additional road maintenance items can be added based on each municipalities' needs. ACE representative also clarified that there is no identified maps showing the location of the maintenance activities and that only BOQs were prepared for the contractor. ACE representative concluded by pointing out that municipalities can coordinate with CDR and the contractor before the implementation of the routine maintenance activities.

7.2 Grievance Redress Mechanism (GRM)

The purpose of a grievance mechanism is to ensure that all feedback and complaints received from stakeholders, customers, employees, contractor staff and the public in general are documented, considered and addressed in an acceptable and timely manner. It is important to note that this mechanism will be shared with the participants and two mechanisms are used for filing a grievance, one for the surrounding communities and one for the workers. Moreover, GRM will be disseminated to the affected municipalities prior to roads routine maintenance works. The GRM will also be responsible for tracking and resolving worker grievances and maintain records about grievances/complaints received, recommendations and resolutions made and notice of resolution of grievance to the complainant. In addition, the GM will be sensitive to complaints related to SEA/SH grievances and ensure implementation of the necessary referral pathways. Anonymous grievances will be addressed in both levels and the maximum anticipated time needed to close a GRM case. The online GRM form that is designed for the REP at the CDR level can be used in the meantime.

7.2.1 GRM for Communities

The GRM will be accessible to all relevant stakeholders who can use this mechanism to send their suggestions, concerns and complaints related to the project. The complaints, suggestions and concerns can be sent by email, mail, phone (through a hotline), in person and other means such as a grievance compliant logging sheet where grievances are registered in writing and maintained as a

database. The phone number, e-mail address, and address for receiving complaints will be disclosed among the population and will be posted at the maintenance sites in Jezzine Caza, before commencement of project implementation. Moreover, the information on how to access the GRM should be available through billboards, CDR website, etc..

The GRM levels of the project are the following (see Figure 8-1):

- Level 1: If any person has any complaint or concern regarding the project implementation, he/she can lodge an oral or written grievance to the site engineer. In case an oral complaint is made, it should be written by the Contractor Social expert. The issue must be resolved within a maximum duration of one week.
- Level 2: If the person is not satisfied with the action of the Contractor, he/ she can send the complaint to the PIU social specialist through Phone: 01980096 ext:317, Email: GRM.REP@cdr.gov.lb or official letter registered at the CDR. The issue shall be resolved within a maximum of two weeks
- Level 3: If the person is not satisfied with the decision of the social specialist of PIU, he or she can bring the complaint to the attention of the PIU Director's Office. Once the PIU Director receives the complaint, it needs to be resolved within a maximum of two weeks.

All complaints will be individually followed up on and documented accordingly in a GRM log. The designated person at each level should report to the PIU on the number and subject of new complaints received, and the status of the already existing complaints, if any (i.e. the Contractor social expert will report to the Supervising Consultant expert who will report monthly to the PIU (CDR) who will, in turn, submit the consultants' monthly reports to the WB). The Complaints Register form and GRM log are included in Annex 9.

The GRM does not exclude the formal legal process of the national law. If a grievance remains unresolved following application of the project GRM process, the affected person can initiate legal proceedings in accordance with national law and may have recourse to the Appeals Court as warranted.

Finally, an online form has been designed using the IMPACT platform to allow citizens to share their feedback. For each worksite in Jezzine Caza, a link to the form will be shared with the local communities via location-based SMS, email and social media. At each worksite, a QR code will also be added on the project sign board (which already includes the project GRM) to automatically direct participants to the online form.

7.2.2 GRM for Workers

A GRM for internal employees, namely the laborers onsite are also necessary. It aims to allow labors to report any wrongdoings in their favor or important concerns they might have. This internal GRM is similar in nature to the one previously discussed (in terms of accessibility, reporting means, etc...). The only main difference is the contact people for each level. In this context, the first level involves reporting to the health and safety officer and has a duration of one week. The second level involves reporting to the PMU Director and should be resolved within one weeks. It also follows the Complaints Register form (refer to Annex 9).

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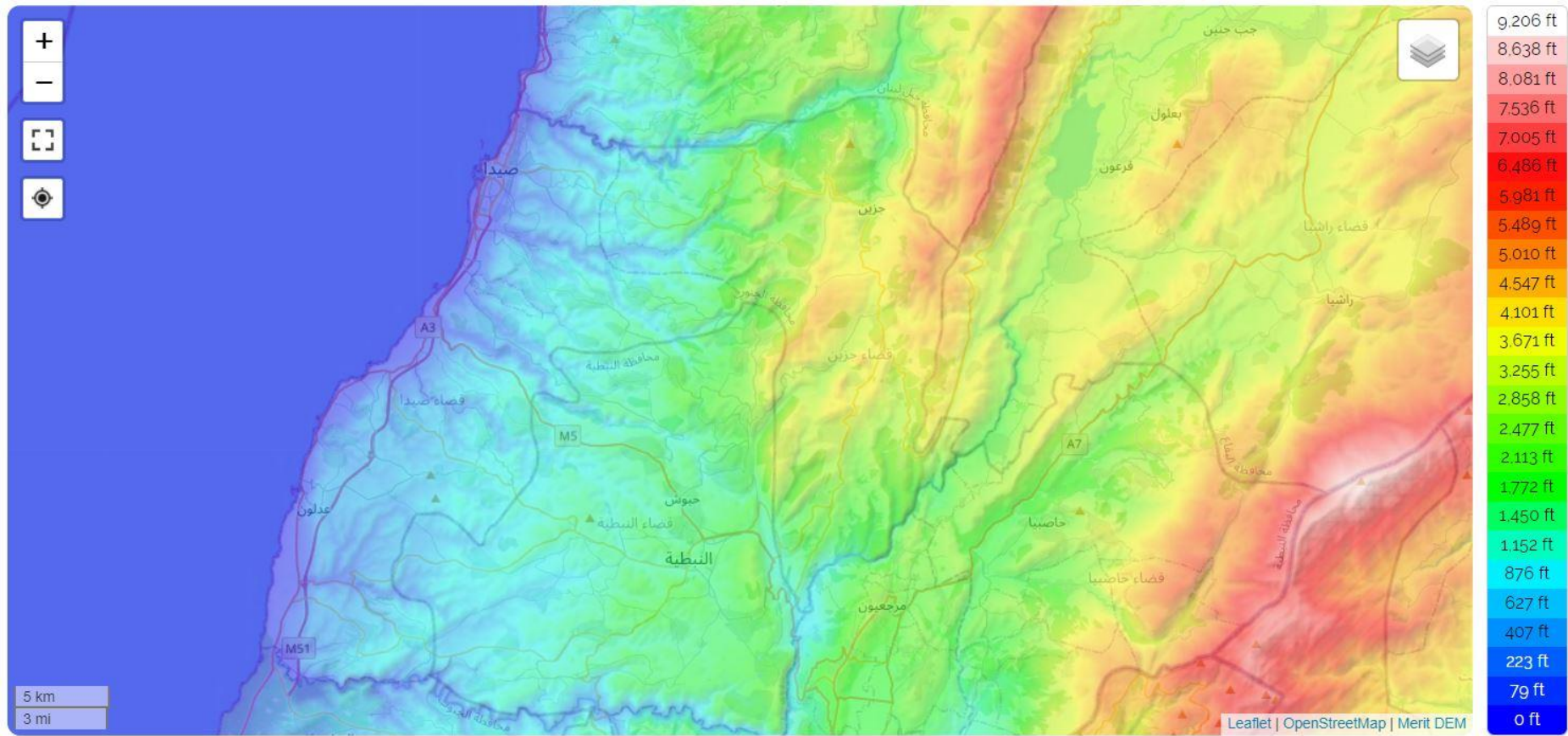
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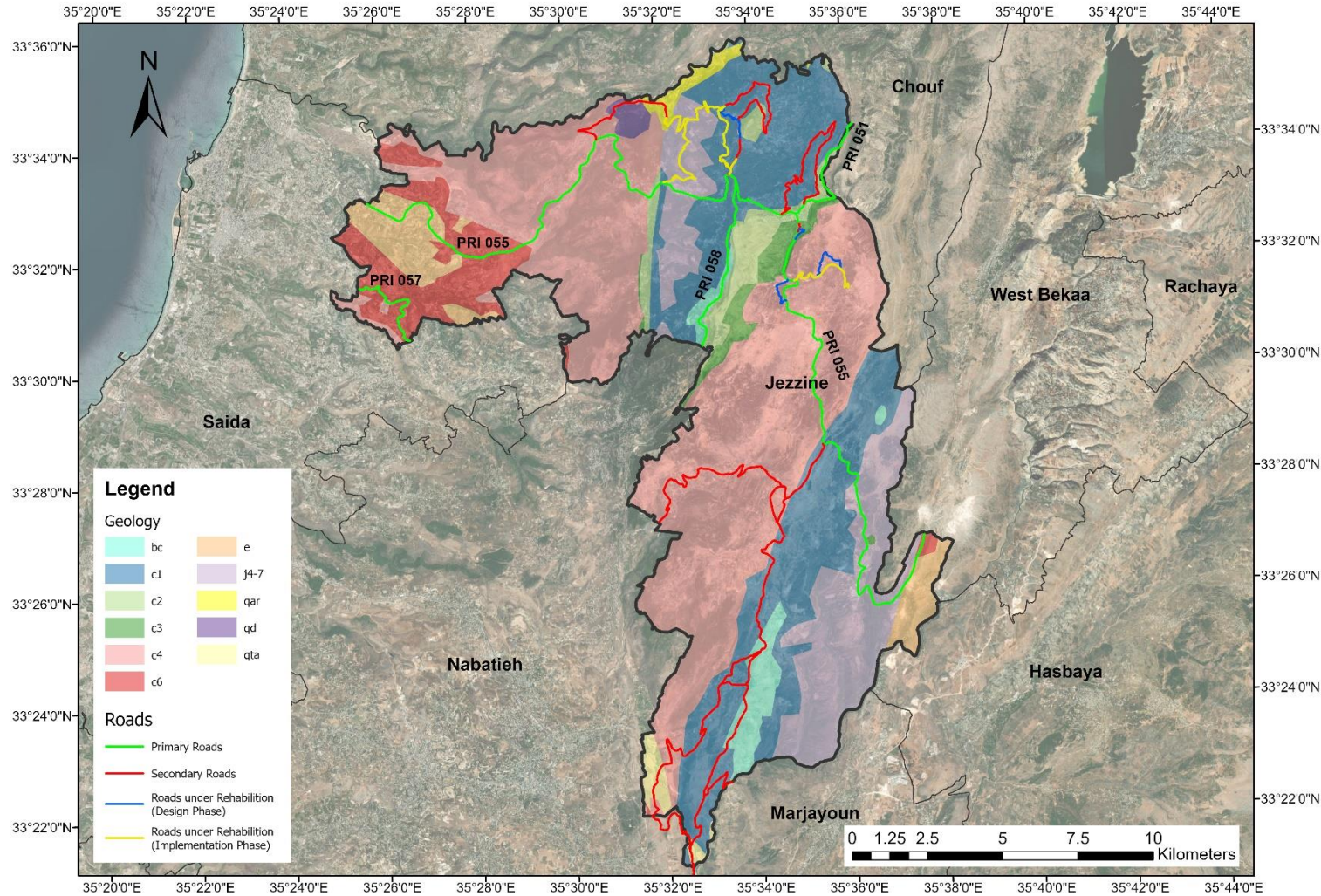
ANNEX 1: TOPOGRAPHIC MAP OF JEZZINE CAZA



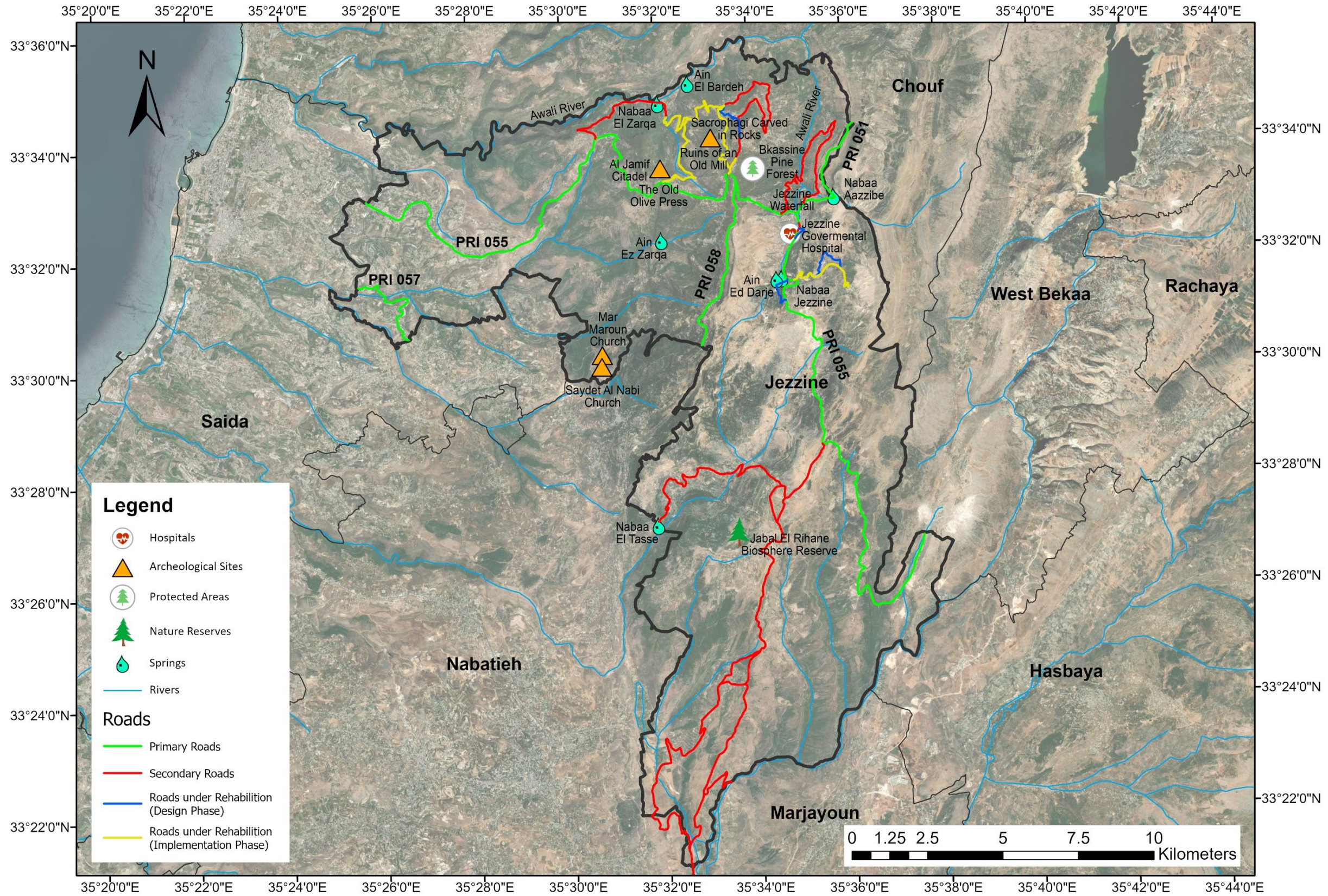
South Governorate, Lebanon (33.33971 35.29259)

Source: Topographic-Map Website, 2022

ANNEX 2: GEOLOGY MAP OF JEZZINE CAZA

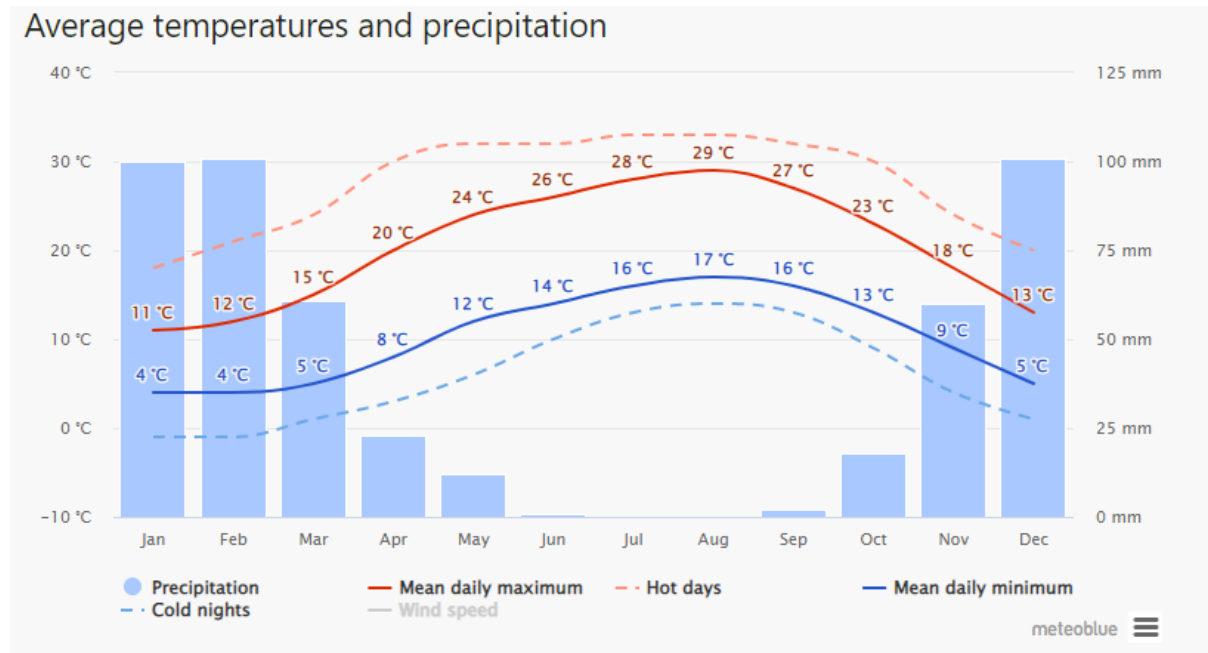


ANNEX 3: SENSITIVE AREAS MAP



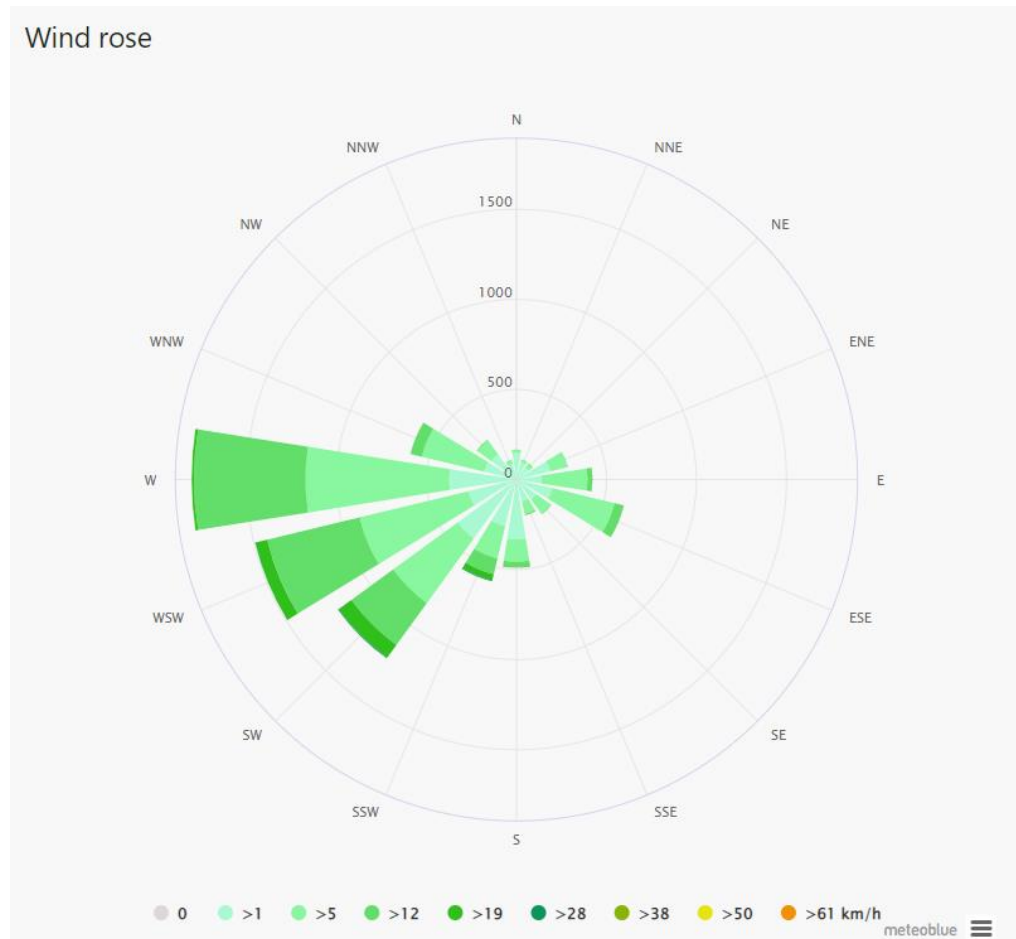
ANNEX 4: CLIMATE DATA

Figure 1: Climograph of Jezzine in Jezzine Caza (for the last 30 years)



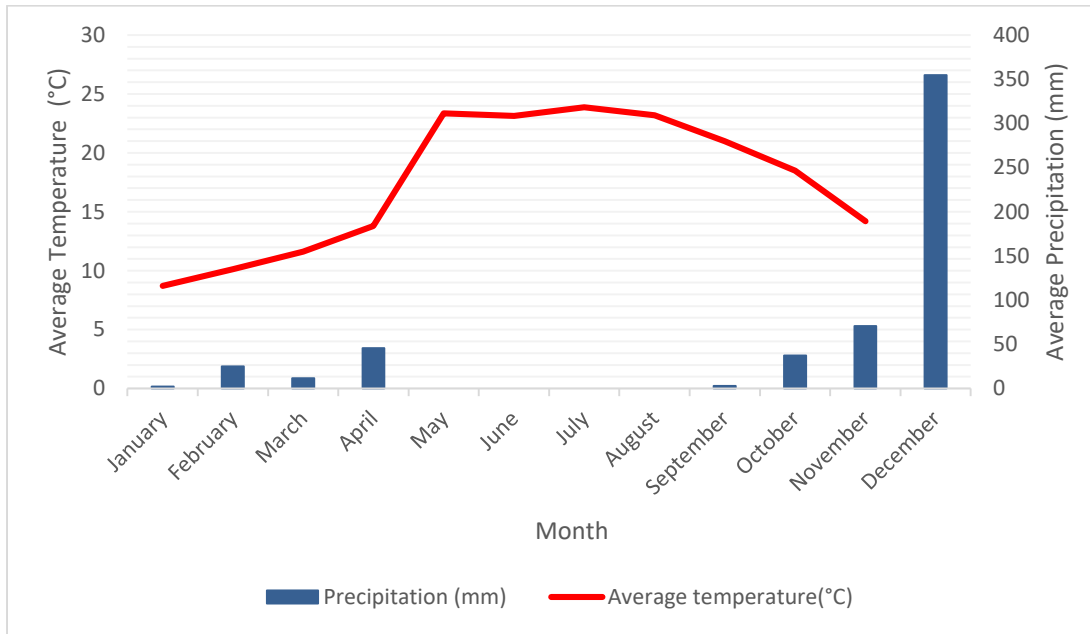
Source: https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/jezz%c3%aene_lebanon_273360

Figure 2: Wind Rose for Jezzine in Jezzine Caza (for the last 30 years)



Source: https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/jezz%c3%aene_lebanon_273360

Figure 3: Climograph of Machghara at 1,032 m from LARI Station for the Year 2019



Source: LARI, 2019

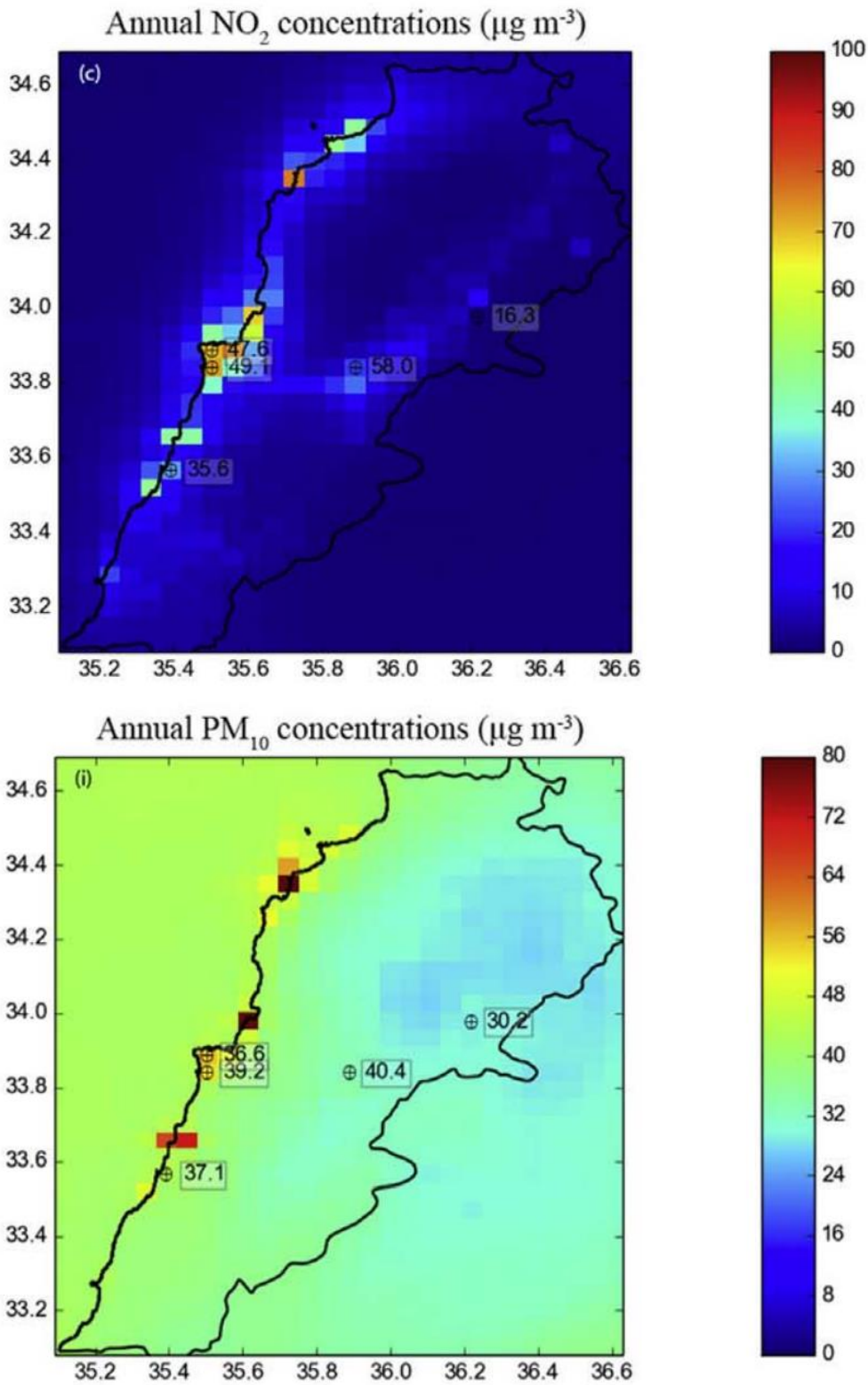
Table 1: Monthly and Yearly Averages of Wind Speed (m/s) and Direction (degrees) registered by New Nabatiye LARI Station in 2017.

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Average per year 2017
Monthly Average Wind Speed (m/s)	0.05	0.055	0.18	0.16	0.08	0.09	0.1	0.14	0.15	0.14	0.04	0.12	0.109
Monthly Average Wind Direction (Degrees)	166.8	151.78	181.87	183.1	203.3	218.43	231.48	226.16	201.86	193.81	163.93	150.54	189.42

Source: Data provided by LARI on January 21, 2020

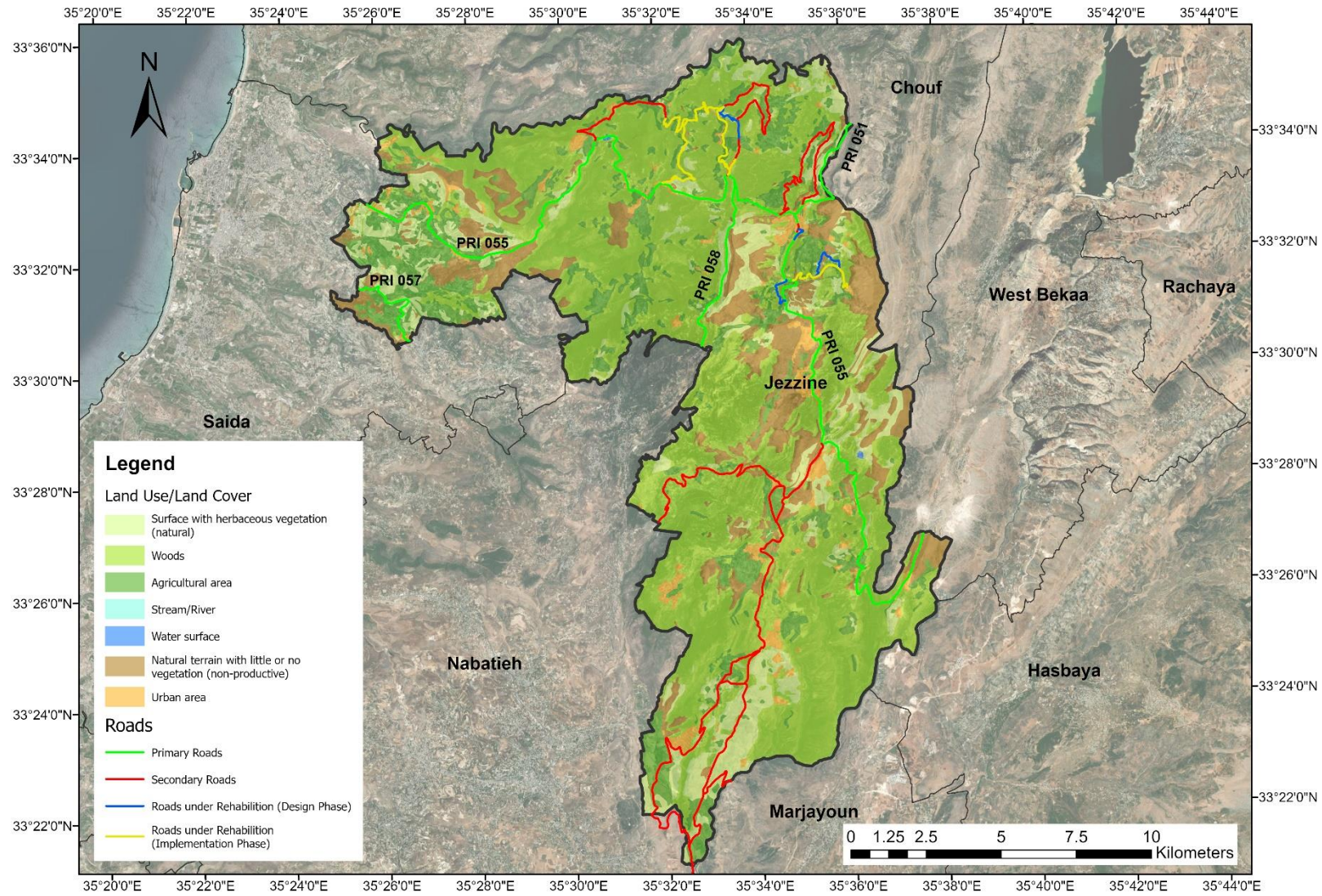
ANNEX 5: AIR QUALITY DATA

The mean modelled annual concentrations maps for NO₂ and PM₁₀

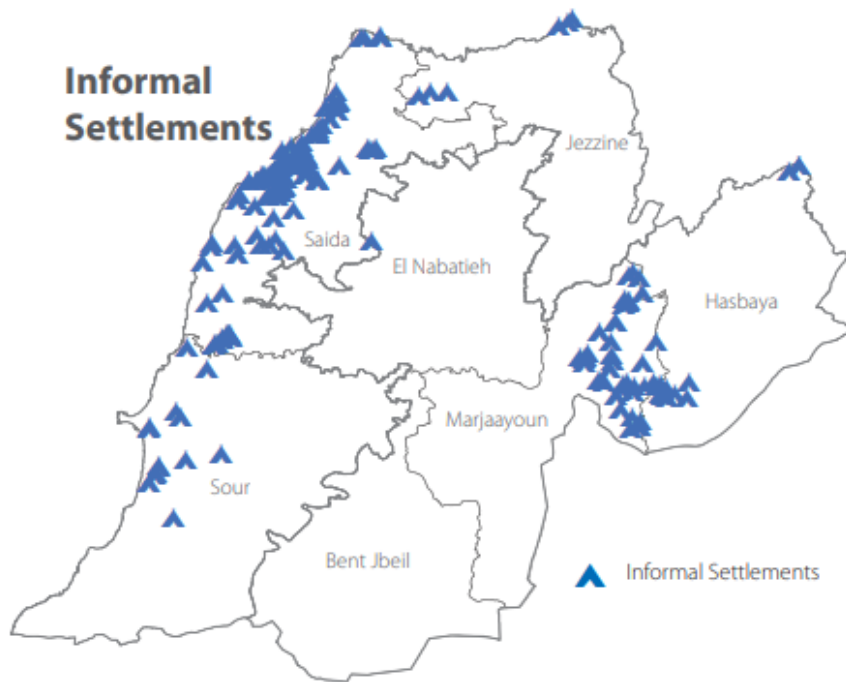


(Source: Abdallah et al., 2018)

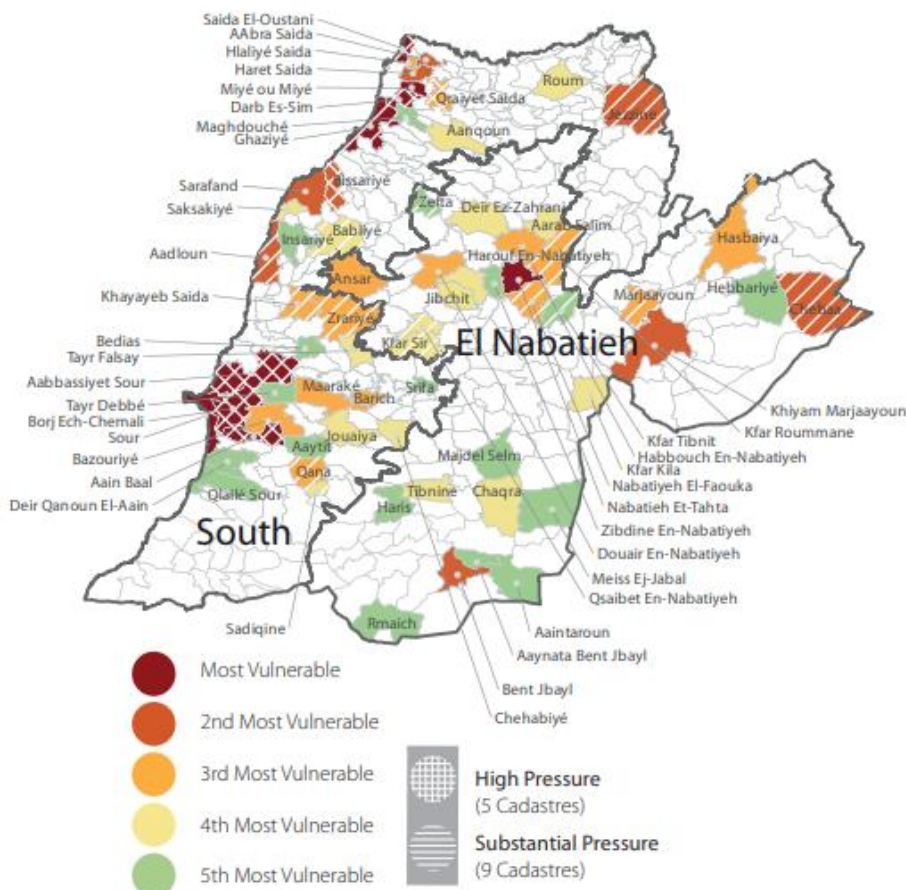
ANNEX 6: LAND USE/LAND COVER MAP OF JEZZINE CAZA



ANNEX 7: INFORMAL SETTLEMENTS AND PALESTINIAN CAMPS



Most Vulnerable Localities



Source: OCHA, 2016

ANNEX 8: PLANS AND PROCEDURES DURING MAINTENANCE ACTIVITIES

Pollution Prevention Plan

The Contractor shall prepare and abide by a Pollution Prevention Plan to ensure that pollution to air, water or land is prevented or, where this is not possible, reduced and mitigated as far as practicable during the construction phase. The Pollution Prevention Plan will be developed for managing:

- liquid effluents
- air emissions
- noise and vibration
- fuel, oil, and chemical storage and handling
- hazardous, non-hazardous, and household waste handling, storage and final disposal
- vehicle and equipment selection and maintenance

Effluent Management Provisions

- No effluent shall be discharged under any condition neither into water courses or bodies including surface water bodies nor to ground surface or infiltrated into subsoils
- Install mobile porta-cabins and connect the generated wastewater from workers to the existing sewage network or to polyethylene tank
- Empty the tank in the sewer network or into nearby operational wastewater treatment plants either by municipality-owned or contracted wastewater tankers

Rainwater run-off Management Provisions

- Install temporary structures to prevent runoff from reaching nearby water bodies
- Remove base coarse and sand from active maintenance sites to prevent the transfer of suspended solids in rainwater
- All platforms where generators or hydrocarbon storage tanks are installed have an impervious layer
- Restrict excavation activities during periods of intense rainfall

Atmospheric Emissions and Dust Management Provisions

- Exercise care to minimize emissions of dust from its activities, including traffic, at work sites, in residential areas and on access roads.
- Stop dust generating activities during windy weather especially in residential areas
- Where it is deemed that dust is impacting or may have an impact on human, plant or animal receptors or where dust may cause sedimentation of watercourses/water bodies or unacceptable levels of soil loss, water shall be applied to the area creating the dust
- Control vehicle speeds to reduce traffic-induced dust dispersion and resuspension by setting and enforcing speed limits
- Post speed limit signs in sensitive areas
- Ensuring trucks hauling sand, dirt or other loose materials are covered (sheeting trucks)
- Cover dusty stockpiles
- Suspending topsoil stripping and replacement during strong winds
- Using a dust collection system for bulk materials unloading
- Ensure proper handling and storage of materials thus minimising the areas of stockpiled materials

- When storage, transport and handling of bulk materials is made in the open air and exposed to the wind, necessary dust abatement measures shall be implemented
- Regular maintenance of construction machinery, equipment and vehicles

Spill Prevention and Management

- Spill clean-up procedure to reduce the risks of accidental leakages
- Carry out all re-fuelling in designated areas with impervious surfaces and guarantee no fuel spills
- A spill collection tank must be installed under generators and specific equipment
- All chemicals shall be stored in dedicated areas on a paved or sealed floor and in tightly closed containers and be protected from adverse weather conditions
- Used oil or chemical must be stored in an appropriate area until it is collected and disposed in licensed sites
- Use of secondary containment basins for long term storage of lubricants and fuels
- Ensure that the plan is present at the construction site and that oil spill response kits are available
- Ensure proper housekeeping conditions are maintained at the oil/chemical storage areas
- Train all workers to implement this plan in case of accidental spillage

Waste Management Plan

This plan shall be developed and implemented by the Contractor to manage the generated waste effectively. The plan shall include the following components:

- Establish and maintain a waste register which is at the disposal of the Engineer. This register will record all waste management operations: production, collection, transport and disposal. Waste shall be categorized according to the following definitions:
 - Non-hazardous solid waste generated at maintenance sites and offices includes excess fill materials from grading and excavation activities, scrap wood and metals, and small concrete spills. Other non-hazardous solid wastes include office and kitchen wastes.
 - Hazardous solid waste includes contaminated soils, oily rags, used oil filters, used oil, as well as spill cleanup materials from oil and fuel spills
- Waste shall be collected from each maintenance sites and from offices at the same rate that it is produced
- All the waste materials generated at work sites and offices shall be segregated into domestic (organic/ paper and cardboard/ metals, glass and plastics) and hazardous waste and disposed into the color-coded containers (one for the disposal of organic waste, one for paper and cardboard and one for aluminium, glass and plastics)
- The domestic waste containers shall be emptied 2 to 3 times per week by the municipality to maintain maintenance sites sanitation
- Segregated recyclables shall be sent to recycling facilities in the area where possible
- Reuse of excavation materials generated during cutting and filling activities whenever possible and disposal of remaining material in controlled disposal site to be identified by the contractor in coordination with the relevant municipality
- Approval letters shall be obtained from the concerned municipalities for domestic and construction waste disposal
- Reuse or recycle the generated waste whenever possible
- Train workers on waste reduction procedures
- Provide workers with nearby sanitation facilities and inform them about their location

- The work zone shall be cleaned on a daily basis. Construction leftovers that are external to the working zone shall be removed regularly. Site housekeeping must be maintained

Hazardous Materials Management Plan

A Hazardous Materials Management Plan will be developed for hazardous materials that pose a potential risk to human health or the environment and include cleaning chemicals, solvents and fuels. The plan shall include the following:

- Fuel and hazardous chemicals/materials shall be stored in designated areas, except for quantities generated or required for the daily construction activities.
- All fuel and hazardous chemical storage facilities shall be located on flat or gently sloping ground and shall be contained within a bund designed to contain at least 110% of the total capacity of the storage containers plus 10% of the aggregate tank volume within the containment area or as otherwise specified by regulatory requirements. The bund walls and floor shall be constructed of concrete or other suitably impermeable material. The filling connection must be within the bund. No drain valves or other connections through the bund walls shall be permitted. Tanks shall be fitted with a gauge to allow the fill level to be monitored during refilling and preferably with a high-level alarm.
- Hydrocarbons, lubricants, paints, solvents and batteries are transported in drums to suitable waste management facilities, if available

Emergency Preparedness and Response Plan

An Emergency Preparedness and Response Plan (EPRP) will be developed so that the Contractor is prepared to respond to accidental and emergency situations in a manner that prevents and mitigates harm to people and the environment. The EPRP needs to be discussed and disclosed to service providers and local affected communities prior to construction. The EPRP shall cover the following emergency situations as a minimum/;

- Medical emergency
- Fire or explosion;
- Hazardous Material Spill or Release;

The EPRP will identify

- Accidents and emergency situations and the communities and individuals that may potentially be impacted
- Response procedures, provision of equipment and resources, designation of responsibilities, communication systems and channels and periodic response training

The Project will need to ensure that the Contractor shall

- Maintain fit-for-purpose Emergency Response Capability, which shall be clearly documented
- Make contingency arrangements for calling a Doctor and transporting injured persons to hospital. The telephone numbers of the emergency services and the name, address and telephone number of the Doctor and the nearest hospital shall be prominently displayed in the Contractor's office.
- Ensure that all personnel are informed and aware of how to react in an emergency situation, and responsibilities are defined. Information and awareness training shall be documented, and available on all Project Areas
- Organize and document emergency simulation exercises within 3 months of the physical start of the works, and subsequently once every 12 months

Traffic Management Plan

A Traffic Management Plan (TMP) will need to be developed by the main contractor. The TMP shall be a starting point for further discussion between the main contractor, local authorities and road agencies. The plan will include preventative measures to manage the risks from potential increases in traffic from construction activities including transportation of material and workers to and from the maintenance activity sites. In addition, it will include measures to protect workers and manage the risks from civilian traffic within close proximity to maintenance activities especially within residential areas. The TMP will be refined and updated as access routes are confirmed and the timing and type of abnormal loads become known.

The TMP shall include the following:

- Proposed program of works;
- Details of key stakeholders;
- Details regarding the proposed method of construction;
- Proposed Temporary Traffic Control/ Management Plans (TTCP/ TMP);
- Various traffic diversion plan layouts for various type of activities;
- Diversion signs;
- Regulatory signs;
- Informative signs;
- Analysis of impacted roads;
- Risk Assessment;
- Proposed working hours; and
- Protection of Work Zones and road users including pedestrians

The TMP shall be approved by the Consultant prior the execution of work.

A special TMP shall be prepared regarding works on Highways.

Noting that Works on Highways shall be minimized during Peak- Hours and maximized during off-peak hours, 7 days a week.

Public Health and Safety Plan

An effective Public Health and Safety Plan for construction shall include at least the following components:

- Secure the site and restrict access to it
- Prohibit unattended/unauthorized public access
- No children are allowed to be present on the work site, reminding workers and community members of this in all related communications
- Install barriers with warning lights at night around excavations, material dumps or other obstructions at the maintenance sites
- Install warning signs for drilling and maintenance at the external part of the site and at a distance of 100 meters
- Inform residents and place proper safety and diversion signs at sensitive areas within the project area (i.e. near schools, shops hospitals and agriculture areas)
- Install pedestrian and vehicular passages near residential areas
- Accidental oil spillage shall be well controlled
- Make sure at least three sets of first aid kits are present on the construction site.
- Access to hospitals should not be impeded at any time

- Properly manage trucks and heavy machinery entering and exiting the construction site.
- Training of heavy machinery drivers about road safety
- Equip Project drivers with telephones for contacting the emergency services to enact the EPRP if necessary in case of emergency.
- Keep stakeholders informed of maintenance schedule and abide by assigned timing
- Manage the grievance mechanism through which community members can make complaints about project activities
- The community health and safety plan shall cross reference with other relevant management plans such as the TMP and EPRP. Local health care and emergency services shall be consulted in the development of the plan.

Occupational Health and Safety (OHS) Plan

In addition, the Contractor shall ensure the workers' health and safety against possible accidents and injuries from the various maintenance activities. The plan shall include the following:

- Hazard Identification and assessment including (Physical injuries from: Traffic accidents, Falling from moving vehicles, Loss of stability and overturning of equipment, Falling from height, Hit by construction materials, Slips, trips and falls, Electrical incidents, Burns from hot works, Health problems due to: Fumes and dust, Noise and vibration, Excessive manual handling, Disease outbreaks, Asphyxiation in confined spaces and Fire)
- OHS protection measures for the identified hazards
- OHS protection measures for Unexploded Explosive Ordnance
- Prevention and precaution measures for COVID-19
- Identify the mandatory personal protective equipment (PPE) to be used including hard hats, safety boots, reflective vest as well as specific PPEs
- Identify and manage dangerous substances planned to be used on the project area
- Work Permit System for Confined Space Entry, Hot Works, Excavation, Lifting, Working at Height, Handling of Hazardous Materials, and Electrical works
- Safe Work Method Statements
- Hazard communication
- Emergency and Evacuation procedures
- Accident and incident reporting and investigation

The Contractor shall implement mitigation measures as per the Occupational Health and Safety Plan. Measures include but not limited to:

- Personnel and visitors to maintenance activity areas shall be equipped with a safety helmet, safety shoes and a reflective jacket as a minimum.
- Adequate quantities of PPE shall be available on the project areas and stored properly
- Personnel shall be trained on how to use and care for PPE
- Conduct training and awareness meetings including correct use of PPE, health and safety procedures, and handling hazardous material containers and related wastes
- Ensure refreshing training session on occupational health and safety measures is conducted on a monthly basis
- Ensure that supervision, directly in charge of construction activities, fully brief and discuss with Personnel HS Tool Box Talks at the start of each work day and prior to commencing new activities. These talks shall be conducted in a language understood by the workforce. A checklist shall be utilised for this purpose. At a minimum it shall include the following: Nature

of the job, associated hazards, safe working methods to be adopted and requirements of the Permit to Work

- Ensure a minimum of first-aid provisions on any work site, including: suitably stocked first-aid kits; a person, respectively an adequate number of staff appointed and trained to take charge of first-aid arrangements and ensure that staff and workers are informed about first-aid arrangements
- Equip the project area with a communication system exclusively for the purposes of communication with the first aid services. Information on how to communicate with the first aid services shall be clearly indicated near the communications equipment
- Collaborate with local health authorities and make arrangement with an appropriate number of local doctors, and/or nurses, hospitals and ambulance services to ensure that medical staff, first aid facilities, and ambulance service are available within the project area
- Measures as per national guidelines published by WHO and Ministry of Public Health regarding COVID-19 prevention and quarantine procedures
- Workplace inspections

Chance Finds Procedure

The chance find procedure is a project-specific procedure that identify actions necessary if previously unknown heritage resources, particularly archaeological resources, are unexpectedly encountered during project construction phase. As described in ESS8: Cultural Heritage, a Chance Find Procedure will set out how chance finds associated with the project will be managed and will include the following requirements:

- Notify relevant authorities (Directorate of General of Antiquities) of found objects or sites
- Fence the area of finds or sites to avoid further disturbance
- Conduct an assessment of found objects or sites by cultural heritage experts in order to identify and implement actions consistent with the requirements of ESS8 and national legislation
- Train project personnel and project workers on chance find procedures

ANNEX 9: PUBLIC CONSULTATION

Announcement

إعلان



COUNCIL FOR DEVELOPMENT
AND RECONSTRUCTION



ACE



ضمن إطار مشروع الطرق والعمالة الممول من قبل البنك الدولي، كلف مجلس الإنماء والإعمار المكتب الهندسي الاستشاري (ACE) للقيام بإعداد ملفات تلزيم "للصيانة الروتينية" للطرق الرئيسية التي تقع ضمن نطاق قضاء جزين.

إن المشروع سيضم أنشطة الصيانة الروتينية لمدة سنتين (٢) للطرق الرئيسية المؤهلة للصيانة داخل قضاء جزين بعد تقييم وضعها الحالي وإدراجها ضمن الطرق المؤهلة لنشاط الصيانة الروتينية.

ووفقاً لمعايير البنك الدولي، إن المكتب الهندسي الاستشاري يقوم بإعداد خطة إدارة بيئية واجتماعية (ESMP) لهذا المشروع من أجل تحديد ومعالجة وتقليص أي آثار ضارة محتملة أثناء أعمال تنفيذ الصيانة وبالتالي سيتم عقد لقاء عام لعرض مكونات المشروع ومناقشة المواضيع البيئية والاجتماعية المتعلقة بالمشروع يوم **الثلاثاء بتاريخ ٢٠٢٢/٠٢/٠٨ الساعة العاشرة صباحاً** على تطبيق Zoom، ستجد الرابط هنا:

<https://zoom.us/j/96215134011?pwd=bkVXYjZGcHpnU2xXVFhwYVJ4M3NXQT09>

أو بإمكانك مسح رمز الإستجابة السريعة (QR Code) أدناه للانضمام الى الإجتماع:



شاكرين لكم تعاونكم وتجاوبكم، وآملين استمرار التعاون لكل ما فيه خدمة وصحة وسلامة الوطن والمواطن.



Local NGOs

Name of NGO	Activity
Environmental Protection Society in Jabal Al-Rayhan	Works to maintain a balance between human development and natural resources protection
Green Future Society	Promotes health education, healthy community, healthy environment, preventing pollution and improving agricultural production by educating farmers
Social Cultural Association	Works to develop cooperation and friendship among the members of the community of the town, to encourage and highlight cultural energies and to establish charitable, social, cultural activities in cooperation with the active bodies in the town
The Cultural Council of Jezzine District	Promotes the importance of culture and its preservation through several activities (literary, artistic and developmental)
Lebanese Association for Rural Development	Promotes environmental and human sustainable development through the mobilization of the local communities
SOS	Supports the right of the children who are deprived of parental care or at risk of losing it by providing them with family-based care and preventing child abandonment

International NGOs

NGO Name	Contacts	Intervention Sector(s)
ANERA Lebanon	Mrs. Dima Zayat Deputy Country Director T: 01382590 (ext: 105) M: 70051813 E: dzayat@aneralebanon.org	Children & Youth Development Education Relief Services Water sanitation and hygiene
ACTED	Mr. Jack French Deputy Country Director T: 01324331 M: 79160375 E: jack.french@acted.org	Development Infrastructure & Services Rehabilitation Labor & Livelihoods Shelter Water sanitation and hygiene

List of Attendees

Name	Position/Institution/Municipality
Khalil Harfouche	Head of Jezzine Union of Municipalities
Maroun Chalhoub	Head on Kfarjarra Municipality
Joseph Azoury	Head of Azour Municipality
Wadiha Aoun	Project Manager at Jezzine Union of Municipalities
Amir Bazzi	ACE
Boutrous	Topographer and resident in Jezzine
George Antoun	Head of Choualiqe Municipality
Joseph Salloum	
Lara Keryakos	
Sara El Helu	Jezzine-Resident
Pierre Chalfoun	ACE
Rabih Moussa	ACE
Célestie Nassar	ACE
George Charbel	ACE
Sania El Nakib	ACE
Joanna Zaghrini	ACE

Public Hearing Presentation and Photos



مشروع الطرق والعمالة
في لبنان



خطة الإدارة البيئية والاجتماعية

LOT 3
قضاء جزين

جلسة مشاركة عامة

08/02/2022
جزي



نقاط حوار الجلسة

- مقدمة
- أهداف اللقاء
- الجهات المعنية بالمشروع
- مراحل اعداد الخطة البيئية والاجتماعية
- وصف المشروع وأبرز مكوّناته خلال مرحلة التنفيذ
- الآثار البيئية والاجتماعية الايجابية المحتملة للمشروع
- الآثار البيئية والاجتماعية السلبية المحتملة للمشروع
- أسئلة ومناقشة عامة



مقدمة

- تتمتع شبكة الطرق في لبنان بقطاع وتغطية كافيين بشكل عام
- لكن نسبة كبيرة من تلك الطرق في حالة سيئة وهو الأمر الذي يؤدي إلى إعاقة التنمية المحلية والاقتصادية، خاصة في المناطق الريفية التي تعثر فيها حالة شبكة الطرق أدنى مستوى من حالة الطرقات على المستوى الوطني ككل



مقدمة

- يخطّط مجلس الائتماء والاعمار لتنفيذ مشروع الطرق والعمالة في لبنان عبر تمويل من البنك الدولي
- يشمل المشروع أعمال صيانة عدة طرق في بلدات من كافة الأفضية اللبنانية
- يهدف هذا المشروع إلى تحسين كفاءة قطاع الطرق من خلال تحديد أولويات أعمال الطرق وتحسين تقنيات إدارة شبكة الطرق والسلامة العامة



1. أهداف اللقاء

- إعلام الرأي العام بالمشروع لإبداء ملاحظاتهم وفقاً لسياسة ضمانات البنك الدولي (سياسة تشغيلية رقم 4.01)
- عرض لأهم الآثار البيئية والاجتماعية والتدابير التخفيفية المرتبطة بتنفيذ المشروع
- مشاركة الحضور بمناقشة القضايا المطروحة وطرحهم لقضايا جديدة لم تكن
- مناقشة خطة الإدارة البيئية والاجتماعية للمشروع التي تهدف لحماية المسحة البشرية، السلامة العامة والموارد البيئية



2. الجهات المعنية بالمشروع

الجهة	الصفة
البنك الدولي	ممول المشروع
مجلس الائتماء والاعمار	إدارة وتنفيذ
المكتب الهندسي الإستشاري ACE	إستشاري هندسي و بيئي



3. مراحل إعداد الخطة البيئية والاجتماعية



ASB

4. وصف المشروع

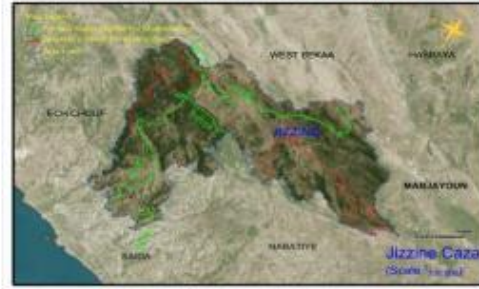
ان المشروع يهدف لتقييم :

- باعمال صيانة معظم الطرقات الرئيسية في قضاء جزين بالإضافة الى بعض الطرقات الثانوية في حال توفر اموال من الميزانية المعتمدة للقضاء

- مجموع طول الطرقات الرئيسية 54 km

ASB

4.2 موقع المشروع في قضاء جزين والطرقات المقترحة صيانتها



ASB

تمت زيارة الطرقات القابلة للصيانة لتحديد:

- اوضاع طبقات الرصف الاسفلتية (مستويات الاضرار ومدى انتشارها)
- اوضاع المنشآت (منشآت تصريف مياه الامطار، حواجز السلامة والعبارات)
- اوضاع العناصر غير الرصفية كاللوحات الارشادية والخطوط المرورية والعلامات

ASB

4.4 صور لعدة مواقع ضمن المشروع في قضاء جزين



Failed retaining wall

ASB

4.4 صور لعدة مواقع ضمن المشروع في قضاء جزين



No berm, no slope protection

ASB

4.4 صور لحة مواقع ضمن المشروع في قضاء جزين



Deteriorated top of wall due to rock falling



4.4 صور لحة مواقع ضمن المشروع في قضاء جزين



Fair and complete vertical signage wherever needed



4.4 صور لحة مواقع ضمن المشروع في قضاء جزين



good footwall has been mounted



5. ماذا يتضمن المشروع خلال مرحلة التنفيذ؟

- أنشطة الصيانة الروتينية لمدة (2) سنتين ، في القسمية 3 - قضاء جزين للطرق الرئيسية كاولوية والطرق الثانوية حيث تتوفر الأموال .
- ستشمل أنشطة الصيانة الروتينية العناصر التالية:
- إصلاح وصيانة رصيف الطريق عن طريق ترقيع الحفر العميقة والضحلة ، سد الشقوق.
- الإصلاح والصيانة عن طريق الطحن والتراكب لانخفاضات الرصيف الموضعية مثل الرصف الفاتل المطلق فوق الخنادق / المنخفضات.
- إصلاح وصيانة الجدران الاستنادية الخرسانية المسلحة الثالثة / جدران القدم / جدران البناء.



5. ماذا يتضمن المشروع خلال مرحلة التنفيذ؟

- إصلاح وصيانة الأرصفة بما في ذلك البلاط وحجر الأرصفة.
- إصلاح وصيانة حواجز الأمان: حاجز بوجيرسي / نكساس وسكة حماية فولاذية.
- تنظيف منشآت تصريف مياه الأمطار والقيام بالإصلاحات البسيطة اللازمة للمنشآت الخرسانية. - تجديد وإصلاح وتنفيذ وصيانة علامات الطرق وتوقيعها.
- الأعمال المساعدة الأخرى المرتبطة بما في ذلك إدارة حركة المرور خلال العقد.



6. الآثار البنينة والاجتماعية الإيجابية للمشروع

- تقليل الازتحام المروري وتسهيل للتنقل في وإلى القضاء
- خلق فرص عمل لأبناء المنطقة والمساهمة في التنمية الاقتصادية المحلية
- المحافظة على السلامة العامة في الطرقات من خلال تقليل حوادث السير والانجرافات
- تشجيع الشركات المحلية من خلال بيع المواد الخام والآلات والسلع
- ازدهار التنمية الاقتصادية والاجتماعية في المناطق الريفية
- التقليل من تلوث الهواء والغبار



7. الآثار البيئية والاجتماعية السلبية المحتملة للمشروع خلال مرحلة التنفيذ

التشاطر	الآثار المحتملة
أعمال بناء اصلاح مجازي مياه الأمطار	أضرار على البيئة المحلية
قطع البساتين	خسار على التنوع الحيوي
التخلص غير السليم من الفضلات الصلبة	تلوث التربة والمياه
احتمال لحالة حوادث تسرب	تلوث التربة والمياه

- التدابير التخفيفية**
- التنسيق المنتظم مع البساتين المحلية
 - التخلص السليم من الفضلات الصلبة الناجمة عن أعمال التنفيذ وحظر التخلص منها في مواقع غير مخصصة
 - معالجة كافة الإثبات بشكل دوري لمنع حوادث التسرب



7. الآثار البيئية والاجتماعية السلبية المحتملة للمشروع خلال مرحلة التنفيذ

التشاطر	الآثار المحتملة
حركة الآليات والمركبات	زيادة احتمال حوادث السير
البعائلات الجار وزيادة نسبة الضجيج	خسار على السلامة العامة وسلامة العمال

- التدابير التخفيفية**
- إدارة حركة المرور أثناء تنفيذ المشروع وتعيين موظف لجهة البلدية
 - التأكد من أن الإشارات التحذيرية والنظافة الإضاءة ظاهرة وموجودة في الأماكن المكثفة وخاصة قرب المدارس والمستشفيات والمناطق التجارية
 - إعلام السكان ووضع لافتات بالقرب من مناطق العمل
 - حصر الضجيج وأي نشاط ضوضائي خلال ساعات العمل فقط
 - وجود آلية لمراجعة الشكاوي للبيئات المحيطة



7. آلية مراجعة الشكاوى

يمكن للأشخاص المعنيين الاستفسار عن معلومات إضافية أو تقديم أية شكاوى (في حال وجودها) بالتواصل مع وحدة آلية مراجعة الشكاوى من الاثنين حتى الجمعة بين 9:00 صباحاً و15:00 بعد الظهر، عبر:

الهاتف: 01980096 مقسم 317

البريد الإلكتروني: GRM.REP@cdr.gov.lb

تسجيل كتاب رسمي لدى مجلس الأمان والاعمال

(العنوان: تلة السراي - رياض الصلح، بيروت - لبنان)

كما يمكن إبداء الرأي حول تنفيذ المشروع من خلال تعبئة النموذج الموجود عبر الرابط التالي

<https://cdr.impact.gov.lb/worldbankmobile/home/main?lang=ar>

أو عن طريق مسح هذا الباركود



سيكون رأيك مجهول المصدر



أسئلة ومناقشة عامة

يمكنكم إبداء رأيكم:

عبر التواصل مع

المكتب الهندسي الاستشاري

هاتف: 01/497250

فاكس: 01/497550

بريد الإلكتروني: ace@ace-inf.com

أو

عبر التواصل مع

وحدة مشروع الطرق والعمالة

في مجلس الأمان والاعمال

هاتف: Ext. 317 01/980096

بريد الإلكتروني: rstephan@cdr.gov.lb



شكراً لحضوركم
ومشاركاتكم



ANNEX 10: GRIEVANCE REDRESS MECHANISM FORM AND LOG

Reference No:	
Contact Information Please mark how you wish to be contacted (mail, telephone, e-mail).	<input type="checkbox"/> By Post: Please provide mailing address: _____ _____ _____ <input type="checkbox"/> By Telephone: _____ <input type="checkbox"/> By E-mail _____
Preferred Language for communication	<input type="checkbox"/> Arabic <input type="checkbox"/> English
Description of Incident or Grievance: What happened? Where did it happen? Who did it happen to? What is the result of the problem? <div style="border: 1px solid black; height: 100px;"></div>	
Date of Incident/Grievance	<input type="checkbox"/> One time incident/grievance (date _____) <input type="checkbox"/> Happened more than once (how many times? _____) <input type="checkbox"/> On-going (currently experiencing problem)
What would you like to see happen to resolve the problem? <div style="border: 1px solid black; height: 100px;"></div>	

Signature: _____

Date: _____

GRM Log Book

Name/group of commenter/complainant	Complaint Received date	Description of Issues	Proposed Corrective Actions	Date of Response	Status		
					Solved	Ongoing	Pending

ESMP Risk Classification Criteria Checklist

Eligibility Criteria for Sub-Projects

Criteria	YES / NO	Description
Subproject is classified as Category A according to World Bank classification.	NO	
Subproject activities have significant adverse environmental or social impacts that are sensitive, diverse, or unprecedented.	NO	
Activities affect an area broader than the sites or facilities subject to physical works	NO	
Subproject will result in conversion/alteration of natural habitats	NO	
Generation of significant quantities of hazardous waste	NO	
Will the sub-project trigger a new World Bank Policy other than OP4.01 and OP4.12?	NO	
Will the sub-project increase the footprint or includes new construction of roads?	NO	
Subproject Project is Eligible to be financed under REP		

Checklist of Possible Environmental and Social Impacts of Projects

Subcomponent Related Issues

S No	ISSUES	YES	NO	Comments
A.	Zoning and Land Use Planning			
1.	Will the subproject affect land use zoning and planning or conflict with prevalent land use patterns?		√	
2.	Will the subproject involve significant land disturbance or site clearance?		√	
3.	Will the subproject land be subject to potential encroachment by urban or industrial use or located in an area intended for urban or industrial development?		√	
B.	Utilities and Facilities			
4.	Will the subproject require the setting up of ancillary production facilities?		√	
5.	Will the subproject require significant levels of accommodation or service amenities to support the workforce during construction (e.g., contractor will need more than 20 workers)?		√	
C Water and Soil Contamination				
6.	Will the subproject require large amounts of raw materials or construction materials?	√		For all the maintenance activities combined, a large amount of asphalt, base

S No	ISSUES	YES	NO	Comments
				course, concrete, stones.
7.	Will the subproject generate large amounts of residual wastes, construction material waste or cause soil erosion?	√		For all the maintenance activities combined, a large amount of asphalt, base course, concrete, stones.
8.	Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?	√		This risk will be eliminated if correct measures were followed.
9.	Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals (e.g., calcium chloride) for dust control?		√	
10.	Will the subproject lead to an increase in suspended sediments in streams affected by road cut erosion, decline in water quality and increased sedimentation downstream?		√	
11.	Will the subproject involve the use of chemicals or solvents?	√		
12.	Will the subproject lead to the destruction of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards?		√	
13.	Will the subproject lead to the creation of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors?		√	
D. Noise and Air Pollution Hazardous Substances				
14.	Will the subproject increase the levels of harmful air emissions?	√		For a limited period during the execution of maintenance activities
15.	Will the subproject increase ambient noise levels?	√		For a limited period during the execution of maintenance activities
16.	Will the subproject involve the storage, handling or transport of hazardous substances?	√		
E. Fauna and Flora				
18.	Will the subproject involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)?		√	
19.	Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?		√	

S No	ISSUES	YES	NO	Comments
20.	Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?		√	
F. Destruction/Disruption of Land and Vegetation				
21.	Will the subproject lead to unplanned use of the infrastructure being developed?		√	
22.	Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?		√	
23.	Will the subproject lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?		√	
24.	Will the subproject lead to landslides, slumps, slips and other mass movements in road cuts?		√	
25.	Will the subproject lead to erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains?		√	
26.	Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?		√	
27.	Will the subproject lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?		√	
G. Cultural Property				
28.	Will the subproject have an impact on archaeological or historical sites, including historic urban areas?		√	
29.	Will the subproject have an impact on religious monuments, structures and/or cemeteries?		√	
30.	Have Chance Finds procedures been prepared for use in the subproject?		√	
H. Expropriation and Social Disturbance				
31.	Will the subproject involve land expropriation or demolition of existing structures?		√	
32.	Will the subproject lead to induced settlements by workers and others causing social and economic disruption?		√	
33.	Will the subproject lead to environmental and social disturbance by construction camps?		√	
34.	Will the sub-project lead to physical displacement (title-holders, squatters, and vulnerable groups)?		√	
35.	Will there be economic displacement?		√	
36.	Will there be loss of assets/infrastructure?		√	
37.	Will the sub-project impact livelihood of non-titled persons and vulnerable groups?		√	

Site Characteristics

S. No	ISSUES	YES	NO	Comments
1.	Is the subproject located in an area with designated natural reserves?			This cannot be determined at this stage

S. No	ISSUES	YES	NO	Comments
2.	Is the subproject located in an area with unique natural features?			This cannot be determined at this stage
3.	Is the subproject located in an area with endangered or conservation-worthy ecosystems, fauna or flora?			This cannot be determined at this stage
4.	Is the subproject located in an area falling within 500 meters of national forests, protected areas, wilderness areas, wetlands, biodiversity, critical habitats, or sites of historical or cultural importance?			This cannot be determined at this stage
5.	Is the subproject located in an area which would create a barrier for the movement of conservation-worthy wildlife or livestock?			This cannot be determined at this stage
6.	Is the subproject located close to groundwater sources, surface water bodies, water courses or wetlands?			This cannot be determined at this stage
7.	Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?			This cannot be determined at this stage
8.	Is the subproject in an area with religious monuments, structures and/or cemeteries?			This cannot be determined at this stage
9.	Is the subproject in a polluted or contaminated area?			This cannot be determined at this stage
10.	Is the subproject located in an area of high visual and landscape quality?			This cannot be determined at this stage
11.	Is the subproject located in an area susceptible to landslides or erosion?			This cannot be determined at this stage
12.	Is the subproject located in an area of seismic faults?			This cannot be determined at this stage
13.	Is the subproject located in a densely populated area?			This cannot be determined at this stage
14.	Is the subproject located on prime agricultural land?			This cannot be determined at this stage
15.	Is the subproject located in an area of tourist importance?			This cannot be determined at this stage
16.	Is the subproject located near a waste dump?			This cannot be determined at this stage
17.	Does the subproject have access to potable water?			This cannot be determined at this stage
18.	Is the subproject located far (1-2 kms) from accessible roads?			This cannot be determined at this stage
19.	Is the subproject located in an area with a wastewater network?			This cannot be determined at this stage
20.	Is the subproject located in the urban plan of the city?			This cannot be determined at this stage
21.	Is the subproject located outside the land use plan?			This cannot be determined at this stage

CONCLUSION

	High	Substantial	Moderate	Low
RISK CLASSIFICATION OF THE SUBPROJECT				