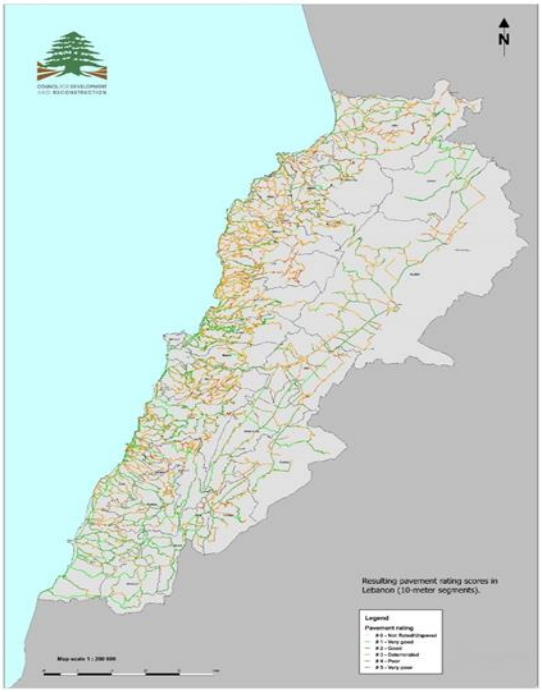
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

LEBANESE REPUBLIC
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION (CDR)

ROADS & EMPLOYMENT PROJECT
LOAN NO. 8705-LB



PRELIMINARY ENVIRONMENTAL & SOCIAL SAFEGUARD INSTRUMENT REPORT FOR

ROADS ROUTINE MAINTENANCE OF REMAINING ROADS LOT 5 – (BCHARRE CAZA)

August 2022

TEAM INTERNATIONAL Engineering & Management Consultants

GEOflint

EXECUTIVE SUMMARY

INTRODUCTION

The Government of Lebanon (GOL) has solicited and obtained World Bank (WB) financing for the Roads and Employment Project (REP). The Council for Development and Reconstruction (CDR) is acting as the executing agency on behalf of the GOL and its Council of Ministers (COM). The REP involves maintenance activities that are confined within the alignments of existing roads with no road widening, no involuntary resettlement, and no land acquisition. As such, the WB classified the REP as a category B project that require the preparation of an Environmental and Social Management Plan (ESMP) for its sub-components. Noting that the Project was signed before October 2018, date of effectiveness of the Environmental and Social Framework (ESF). Accordingly, a series of ESMPs were stipulated to be prepared for these roads and put together by CDR in packages for bidding purposes. In this context, CDR awarded the contract number 20379 to TEAM International, hereinafter referred to as the Consultant, to prepare the assessment, design and ESMPs for roads in the districts of Tripoli, Batroun, Koura, and Bcharre. This ESMP is concerned with roads within the Bcharre district.

PROJECT DESCRIPTION

The REP involves maintenance activities that are confined within the alignments of the previously rehabilitated roads with no road widening. The REP consists of the maintenance activities to be performed during the project vary between one road and the other, depending on the road rating in terms of the condition of the pavement, shoulders, potential flooding and drainage, potential landslide/soil erosion and retaining walls, pedestrian walkways, and addition or maintenance of street lighting. Routine Maintenance activities will be executed for a period of two years, for each Caza in Lot 5- Tripoli, Koura, Batroun and Bcharre Cazas, for Primary roads (including International roads/ Highways) as priority and for Secondary roads where funds are available. This report will further study the Bcharre Caza.

The land acquisition did not occur during the design of any road under study. In the Bcharre district, one primary road is proposed, whose details are elaborated within the ESMP. However, in case the suggested maintenance work is not applicable, the secondary roads will be considered.

During the execution of maintenance activities, roads will not be closed or shutdown. Before the execution of maintenance works, the Contractor will secure the access and traffic movement via other alternative routes (if needed) and means in coordination with the related Municipality. The duration of the project is 24 months. It is assumed that an estimate total number of workers shall range between 10 and 20 labor, 2 Forman, 2 Engineers and 2 skilled drivers. These workers must be hired preferably from the same Caza (including Syrian labors that reside in the concerned project areas).

BASELINE ASSESSMENT

The environmental and social assessment recorded the existing conditions within the project area including physical, biological, and socioeconomic conditions prior the project implementation and operation. Baseline data and field surveys were conducted to describe the status of the following environmental receptors: air quality, water quality, soil quality, geological conditions, climate and meteorology, natural habitats and biodiversity, land-

use/land-cover, acoustic environment, cultural resources, and socio-economic conditions (employment opportunities, labor influx, social tensions, labor induced Sexual Exploitation and Abuse (SEA) Sexual Harassment (SH), occupational health and safety).

The topography shows that the three roads selected for maintenance in the Bcharre Caza are Road 1 which is located at relatively medium elevations varying between 640 and 770 m ASL. Road 2 falls on a relatively high altitudes ranging between 1,300 m and 1450 m. It falls very close to Qannoubine Valley. On the other hand, Road 3 starts at an elevation of approximately 1,450 m near Qnat and continues uphill until it reaches around 1700m at Arz Tannourine.

The geology of the studied roads was investigated for outcropping formations, subsurface stratigraphy, structure (faults, folds, seismic, etc.), hydrogeology (groundwater and sea water intrusions) and hydrology (surface water). Assessments showed that the Bcharre Caza is mainly covered by basalts (βj and βC2) and limestone (J6). It is a mountainous region characterized by relatively steep slopes and cliffs favoring the failure of coherent masses of rocks and rock debris. To the northeast of Bcharre, the Temm Laila Mountain, a dolomitic limestone (C4) exceeding 2,000 m in elevation has steep slopes and it is the source of talus deposits. Elevated rock masses are known to fall, hit the ground, and then bounce and roll.

The climate and meteorological parameters play an important role in the transport and dispersion of pollutants in the atmosphere. Precipitation is negligible in the summer season between the months of June and September, the highest precipitation is recorded for the month of January. The total precipitation in Bcharre, like the rest of Lebanon, shows large variability across years and locations. The wettest month is the month of January with an average rainfall of 221 mm. The average annual precipitation is known to exceed 1,000 mm. In addition, at high elevations, snow is common and is expected to affect maintenance activities. As for temperature, the lowest are recorded in January (average at -4 C) and the highest in August (average at 23 C).

Data regarding air pollution levels in the area was also obtained. The study showed that the major air pollutants induced by traffic include Carbon monoxide (CO), Nitrogen Oxides (NOx), Sulfur oxides (SOx), Hydrocarbons (HC), and Particulate matter (PM). These pollutants are associated with potential adverse health impacts with long-term exposure to atmospheric concentrations exceeding threshold limits. Data were obtained from data gathered from the MOE/ UNDP project, 'Air quality assessment in an East Mediterranean country: the case of Lebanon, 2014' which monitored criteria air pollutants. The study showed that the concentrations collected by the MoE stations for all criteria air pollutants in 2018 for the studied area are within the national ambient air quality standards defined by MOE Decision 16/1 dated 2022.

Regarding natural habitats and biodiversity, given the nature of the project, the direct influence area concerns existing roads. Consequently, a rapid biological assessment has been carried out to draw the ecological profile of the adjacent areas to the concerned roads. The field investigation did not aim for an exhaustive inventory of the biodiversity of the project area but a general overview of present species (mainly flora) and habitats.

Overall, the natural environment in the study area is degraded by heavy urbanization with limited agricultural activity and does not harbor pristine habitats of conservation importance.

Finally, a socio-economic assessment (disk study) was conducted in the project area to map the demographic, social, and economic baseline conditions at the level of Bcharre Caza. The

assessment allowed drawing conclusions regarding the project's potential impacts on the socio-economic conditions of the study area.

Hence, when considering the demographic profile of the study area, the population of all the villages in the Bcharre Caza is determined. In 2016, the total population in the Caza ranged from 21,135 in winter to 40,050 in summer. The Bcharre/ Cedars village alone lodges around 50 percent of the population in the Caza. The total number of households in the Caza is 80,010, with an average household holding around 2-3 persons, as per the winter population and 4-5 persons as per the summer population.

Moreover, there is Only Bcharre Hospital served by the roads selected for maintenance for maintenance, and specifically road 2 serves it the most.

POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

The maintenance phase of any development is known to have potential adverse impacts on several indicators including traffic, air quality, noise level, construction waste, water and soil quality, landscape and visual intrusion, resources consumption, damage to existing utilities, health and safety, as well as socio-economics. During the maintenance phase, these impacts are temporary with the majority being minor or moderately negative (Table I). During operation, the maintenance of the road, combined with the natural increase in the vehicle fleet size, will ultimately increase traffic volume and hence, typical impacts associated with increased traffic will be inevitable in the long term. Yet, improved traffic flow on maintained roads will lead to improved fuel efficiency and better engine performance, thereby reducing vehicle emissions and maintenance. Maintained roads can lead to improved landscape and visual intrusion, albeit some increase in light glare. Finally, improved safety design of roads can reduce the potential for accidents. The magnitude and significance of these impacts is similar along both roads.

Table I. Summary of potential impacts of roads selected for maintenance in Bcharre district

Potential Impact	*Maintenance phase*	*Operation phase*
Traffic	Moderate negative	Minor negative to Positive
Air quality	Minor negative	Minor negative to Positive
Noise	Moderate negative	Minor negative to Positive
Biodiversity	Minor negative	Minor negative
Construction Waste	Minor negative	Neutral
Soil and water	Moderate negative	Minor negative to Zero
Resources consumption	Moderate negative	Neutral
Existing infrastructure	Minor negative	Neutral to Positive
Visual Intrusion	Minor negative	Minor negative to Positive
Health and Safety	Moderate negative	Minor negative to Positive
Socio-Economic	Moderate negative to Positive	Positive
Archaeology / Cultural Heritage	Neutral	Neutral
Expropriation/involuntary resettlement	Neutral	Neutral

As for socio-economic impacts, during the maintenance phase, they are expected to be positive in terms of providing job opportunities and moderately negative in terms of temporary increase

in travel time, impeded accessibility to residences / businesses, and potential health and safety, and social tensions that could lead to exploitation, abuse and harassment. During the operation phase, the maintenance of roads is expected to have positive impacts by improving access to remote areas, reduced trip times, reduced traffic congestion and accidents, and enhanced livelihood opportunities.

ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

Mitigation Plans

While the road maintenance is associated with some potential negative impacts, most of them can be alleviated. Environmental and Social mitigation measures should be adopted to eliminate or minimize these impacts.

Monitoring Plan

Since the project is a category B, monitoring activities for such projects rely primarily on visual observation and documentation with photos although measurements of certain indicators (traffic count, air / water quality and noise level) can be conducted upon public complaints. The project supervising consultant holds the responsibility of monitoring activities during the maintenance phase to ensure the implementation of the mitigation plan by the contractor. Upon public complaints, a third party (consultant) can also be appointed by CDR to conduct periodic monitoring with measurements of environmental indicators depending on the nature of the complaint. Monitoring indicators / activities during the maintenance phase is define in this report as a guidance for the contractor to submit his Construction Environmental and Social Management Plan – CESMP before work commencement. .

During the operation phase, regular monitoring activities become more part of the duties and responsibilities of local municipalities and stakeholders. Like the maintenance phase, upon public complaints, a third-party consultant can also be appointed by CDR (up to 2 years after project completion) to conduct periodic monitoring with measurements of environmental indicators depending on the nature of the complaint.

During the maintenance phase, the Supervising Consultant shall submit a quarterly report about the monitoring activities to various stakeholders including the CDR and the municipalities. These reports shall be made readily available or accessible to the public upon submittal. The content of a typical report should mirror the indicators of the mitigation plan with proper documentation with photos taken in the event of accidents, concerns or complaints.

CONSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHANISM

Public Consultation

The public consultation is to inform the local authorities about the project and get their opinion in the project implementation. Due to the project extent over the entire Caza, the union of municipalities is the party that will represent all concerned municipalities. The meeting was conducted in 07/06/2022, Tuesday on at the Federation of Municipalities in the Bcharri Caza in Diman. The number of attendees was 9 with 1 female which included 5 heads of municipalities in the Bcharri Caza, 2 deputies, the Secretary of Union Municipalities of Bcharri, and Kaemkam Bcharri (Mrs. Rouba Chafchak). The complete attendance list is presented in Annex E. In addition, active NGOs in the North of Lebanon was invited in 23/02/2022 for an

online meeting using Microsoft Team program to inform about the project and get their feedback.

The most important issues that were raised by the attendees is enforcing a timely construction schedule, giving priority employment to local people, and using good quality construction material. However, employment is also granted to Syrian workers in such a way that the skilled jobs will be given to the Lebanese workforce and the unskilled jobs are primarily filled by Syrian workers.

Grievance Redress Mechanism (GRM)

A grievance redress mechanism (GRM) is in place to allow stakeholders to voice their concerns during the project phases: pre-construction, construction, and operation. The GRM is designed to allow a timely resolution of concerns, assuring stakeholders that grievances have been heard and that the institutionalized mechanism will yield a fair and impartial outcome. Furthermore, the grievance mechanism is applicable for both Lebanese and Syrian workers with the option to remain anonymous when filing a grievance to encourage workers to speak out without potential fear of repercussions.

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LIST OF ABBREVIATIONS

CDR	Council for Development and Reconstruction
CoC	Code of Conduct
DoA	Department of Antiquities
EA	Environmental Assessment
EIA	Environmental Impact Assessment
ESC	Environmental and Social Consideration
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FI	Financial Intermediary
GIS	Geographic Information Systems
GOL	Government of Lebanon
GRM	Grievance Redress Mechanism
IBA	Important Bird Area
IEE	Initial Environmental Examination
LARI	Lebanese Agricultural Research Institute
MoA	Ministry of Agriculture
MoC	Ministry of Culture
MoE	Ministry of Environment
MoEW	Ministry of Energy and Water
MoIM	Ministry of Interior and Municipalities
MoL	Ministry of Labor
MoPWT	Ministry of Public Works and Transport
MSL	Mean Sea Level
NGO	Non-Governmental Organization
OP	Operational Policy
PHC	Primary Healthcare Center
PIU	Project Implementation Unit
REP	Lebanon Roads and Employment Project
SEA/H	Sexual Abuse and Exploitation and Harassment
WBG	World Bank Group

LIST OF NOMENCLATURES

%	Percent
µg	Microgram
g	Gram
kg	Kilograms
km	Kilometers
Leq	Average equivalent noise levels
Lmin	Minimum noise level
Lmax	Maximum noise level
MJ	Mega Joules
min	Minutes
mm	millimeter
hr	Hour
ha	Hectare
m^2	Square meter
m^3	Cubic meter
ppm	Parts per million
s	Seconds

1 INTRODUCTION

1.1 Project background

The Government of Lebanon (GOL) has solicited and obtained World Bank (WB) financing for the Roads and Employment Project (REP). The Council for Development and Reconstruction (CDR) is acting as the executing agency on behalf of the GOL and its Council of Ministers (COM). The REP seeks to improve transport connectivity along select paved road sections, create short-term employment opportunities for local communities, and support farmers engaged in crop and livestock production.

Therefore, under Lebanese regulations, the REP does not fall under either Annex I (projects requiring a full EIA) or Annex II (projects requiring an Initial Environmental Examination (IEE) of the EIA Decree No. 8633/2012 on the Fundamentals of Environmental Impact Assessment (EIA) in Lebanon. However, the REP triggered the World Bank Operational Policy OP 4.01 requiring Environmental and Social assessment. As such the prepared Environmental and Social Safeguard report will be conducted for the roads within the Bcharre district (Caza) of the North Lebanon governorate (Mohafazah).

This report represents the Environmental and Social Management Plan (ESMP) for Roads Routine Maintenance activities in Bcharre Caza (Lot 5) 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 (primary roads (including International roads/ Highways) as priority and for Secondary roads where funds are available) eligible for maintenance.

1.2 Project Rationale

The ESMF (CDR, 2018) provided the main rationale behind the REP by elaborating about Lebanon's largely adequate extent and coverage of the road network, but with a substantial percentage in poor condition, hindering local and economic development particularly in rural and lagging underserved regions where the condition of the main network is worse than the national average. The ESMF attributed these poor conditions to several factors including years of underinvestment, inefficient spending, weak capacity in road agencies and the absence of asset management tools. The ESMF stressed that this situation was aggravated by the influx of Syrian refugees which has substantially increased traffic demand and the utilization of the road network. Hence, the general objectives of the REP are to improve transport connectivity along select paved road sections and create short term jobs for Lebanese and Syrians through specific components that encompass maintenance improvement of emergency response capacity, and capacity building and implementation support.

1.3 Report Objectives

The main objectives of the report are the design of the activities that include the maintenance/repair of the following items:

- Roadway pavement repair and milling/overlay of localized pavement depressions
- Damaged reinforced concrete retaining walls/Footwalls/ Masonry Walls repair
- Sidewalk and safety barrier repair
- Storm water drainage network repair

- Lighting Networks and all related electrical and civil works repair
- Road marking & signing implementation
- Other ancillary associated works including traffic management during maintenance.

The Maintenance Standards should generally be based on American Association of State Highway and Transportation Officials AASHTO Maintenance Manual for Roadways & Bridges, 4th Edition 2007, guided modified only where needed to suit local conditions.

1.4 Methodology

In order to achieve the ESMP objectives outlined above, we have reviewed relevant project designs and studies particularly the ESMF prepared for the project. In addition, we will:

- Examine the national legislation and World Bank safeguard policies relevant to the project
- Conduct field visits to observe and document baseline conditions and collected data from the relevant municipality
- Synthesize and process information related to coverage using the geographic information systems (AcrGIS Desktop Version 10.61 by ESRI, License type: Advanced) to prepare baseline maps
- Assess environmental and social impacts associated with the project at various stages of the project using factors such as health and safety as well as the natural environment
- Define mitigation measures, wherever relevant, to alleviate or reduce potential adverse impacts
- Develop a monitoring plan with emphasis on the maintenance phase when impacts are expected with estimated implementation resources
- Document public consultation and opinions with potentially affected stakeholders
- Use the grievance redress mechanisms (GRM) that was developed and is operational.

Note that since the project is category B under the World Bank guidelines, no field measurements of environmental indicators were anticipated (i.e. traffic, air quality, noise levels, water quality) under this contract. Instead, we relied on data from existing studies wherever available. We equally used a worst-case condition approach that would form an envelope of the maximum possible impact which when judged to be minor or moderate reflect an acceptable project impact. Details of such an approach are outlined when assessing a specific indicator below (i.e. air quality and noise).

2 LEGAL, INSTITUTIONAL, STANDARDS AND POLICIES FRAMEWORKS

2.1 Legal Framework

Several laws, decrees, and decisions in Lebanon define the environmental standards and regulations to be met while implementing projects. The most basic and general law is Law No. 444 (Environment Protection Law) dated 8 August 2002. Table 2-1 presents a list of selected legislation relevant to the Project.

2.2 Institutional

A statement of the transport/traffic related mission of each including aspects related to road-highway construction is summarized in Table 2-2 below. At this stage, it is expected that the proposed project will involve primarily the CDR. Since some roads selected for maintenance may pass near sensitive areas, close coordination with relevant ministries is also anticipated in the event any finds are made. At the completion of the project, the road becomes under the jurisdiction of the MoPWT for the purpose of maintenance and maintenance whenever required.

Table 2-1 Summary of functional responsibilities of transport/traffic involved ministries/agencies

Agency	***Role in project***
Council for Development & Reconstruction (CDR)	❑ Monitors activities of construction contractors to ensure delivery as per contracts, which will include mitigation and monitoring measures identified in the ESMP
Ministry of Public Works and Transportation (MoPWT)	❑ Responsible for operating and maintaining these roads following project completion.
Ministry of Interior and Municipalities (MoIM)	❑ Municipalities involved in the project have a role in collaborating with the contractor to implement environmental management related measures including solid waste management, wastewater management, traffic management, etc.
Ministry of the Environment (MoE)	❑ Compliance of ESMP with the Lebanese environmental standards and regulations issued by MoE
Ministry of Culture (MoC) – Department of Antiquities	❑ In case of archaeological chance finds, review and approve project specific "Archaeological Chance Find" procedures which would be used by construction contractors, consulting engineer and archaeological consultants to address actions to be taken if unrecorded archaeological materials are encountered during the course of project implementation
Ministry of Energy and Water (MOEW)	❑ Coordinate with relevant authorities under the MOEW in case of accidental damage to water and electricity related infrastructure during project implementation.
Ministry of Agriculture (MoA)	❑ Coordinate with MOA in case of the need for tree cutting
Ministry of Labor (MoL)	❑ Ensure labor laws are adhered to ❑ Issue work permits for foreign labor

Table 2-2 List of selected legislation relevant to the Project

Legislation	***Date of Issue***	***Subject***	***Relevance to the project***
Environment-related legislation			
Law 80	10/10/2018	Integrated solid waste management law	The requirements of the law shall be adhered to for the management of solid wastes generated from the project.
Law 78	13/04/2018	Law for the protection of air quality	The requirements of the law shall be adhered to for the management of air emissions from the project.
Law 77	13/04/2018	Water Resources Law	Penalizes unauthorized discharges or disposal of any kind of waste in water resources
MOE Decree 8803/2002 and its amendments	04/10/2002	Organizes the activity of quarries and crushers, licensing procedures, as well as the operation, management and maintenance of quarries	Ensures the provision of construction material and the disposal of construction waste comply with the decree
Law 444	29/7/2002	Environmental protection framework law, includes the general provisions for the protection of the environment	Ensures project activities are in line with the requirements of the Law, particularly the articles in Chapter 5 on the protection of environmental media (air, coast, water, noise, facilities, natural resources, etc.)
MOE Decision 8/1	30/1/2001	Updates Decision 1/52 and in setting of the National Standards for Environmental Quality by the MOE	Ensures project activities comply with national environmental standards
MOE Decision 1/52	12/9/1996	Setting of the National Standards for Environmental Quality by the MOE	Ensures project activities comply with national environmental standards
Law 558	24/07/1996	Law for the protection of forests	The requirements of the law shall be adhered to for the protection of forests.
Decree 2761	19/12/1933	Guidelines related to wastewater management and disposal	Ensures waste management activity comply with the decree
Decree Law 8735	23/08/1974	Maintaining general cleanliness	Ensures project activities adhere to this decree particularly in terms of waste disposal
Decision 16/1	2022	Sets the National Standards for Environmental Air Quality	Ensures that project activities abide by the National Standard
Cultural heritage related legislation			
Decree law 166	7/11/1933	Antiquity law	Defines chance find procedures that should be followed in case antiquities were identified in the project site
Urban/ rural planning and construction-related legislation			
Law 58	29/05/1991	Expropriation Law	Adhere to provisions in case the project requires expropriation.
Law 118	30/06/1977	Municipalities Law. It stipulates the role of the Municipalities and Municipalities councils.	Defines the roles of municipalities in the provision of environmental services such as solid waste management, wastewater management, etc.

Legislation	*Date of Issue*	*Subject*	*Relevance to the project*
Labor-related legislation			
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
Decree 3791	30/06/2016	Sets minimum wage for employees and workers	Adhere to the requirements of this decree with regards to wages of employees on this project.
Decree 8987	29/09/2012	Prohibition of employment of minors under the age of 18 in work that may harm their health, safety or morals	Adhere to the requirements of this decree with regards to employment for this project.
Decree 11802	30/01/2004	Organizes prevention, safety and occupational health in all institutions subject to the Labor Law	Adhere to the requirements of this decree in terms of occupational health of staff working on the project
Law 400	05/06/2002	Allows the Government to ratify the Minimum Age Convention C-138, 1973	Adhere to the provisions of the convention in terms of prohibition of work to children less than 15 years of age
Law 335	02/08/2001	Allows the Government to ratify the Worst Forms of Child Labor Convention C-182, 1999. (Ratification of ILO convention)	Adhere to the provisions of the convention in terms of prohibition of work which is likely to harm the health, safety or morals of children
Law 28	10/02/2017	The right to access information.	Every person, natural or legal, has the right to access and review the information and documents held by the administration, in accordance with the provisions of this law, taking into account that the right is not abused.
Labor Law	23/09/1946	Labor law and its amendments	Adhere to provisions of the law and its amendments related to employment contracts, employment of children and women; work hours and holidays, wages, dismissal, inspection, health and safety.
Penal Code 340	01/03/1943	Penal code	Abide by Article 522
Decree 6940	08/09/2020	Determining the minutes of implementing Law No. 28 of 10/02/2017	-
Law 205	30/12/2020	This aims to criminalize sexual harassment and help its victims	In case of any sexual harassment in the workplace, this laws protects people subjected to sexual harassment and punish the perpetrators.
Traffic-related legislation			
Law 243	25/10/2012	New traffic law	Adhere to requirements of this Law with regards to traffic movement of construction-related equipment, re-routing schemes, design of road signage, etc.

2.3 World Bank Policies

In addition to the Lebanese legislation, two safeguards policies apply to Lebanon Road and Employment Project (1) OP 4.01 Environmental Assessment and OP 4.12 and (2) Involuntary Resettlement.

2.3.1 Safeguard Policies

OP 4.01 Environmental Assessment.
The ESMP for the selected roads in Bcharre should comply with the safeguard policy of the World Bank, specifically, the OP/BP 4.01 regarding Environmental Assessment. The OP 4.01 is triggered as the project could have impacts on the environment due to the maintenance of roads.

Under the requirements of OP4.01, the proposed project is classified as Category B. Simple and low/moderate cost mitigation measures will be sufficient to restore the potential damage or keep it to the lowest possible since the environmental impacts are expected to be minimal, during the maintenance phase, and can be mitigated via an environmental management plan.

OP 4.12 Involuntary Resettlement.
Despite that OP 4.12 was triggered by this project, in the case of Bcharre and in accordance with site specific design plans, involuntary resettlement or land acquisition will not take place. As the project will be implemented primarily within the existing "right of way" there will be no displaced persons by the project activities (this includes local, street vendors and Syrian refugees).

2.3.2 Access to Information (AI) policy

Introduced in 2010, the World Bank's Policy on Access to Information (AI Policy) has made the Bank a more effective development partner. Based on the concept that any information in the Bank's possession is public, except for that which falls under a defined list of exceptions, the AI Policy remains the standard for international development institutions. It has also provided the basis for the accompanying open initiatives—including Open Data, Open Finances, the Open Knowledge Repository, and the Open Archives—all of which make the Bank's work more transparent, accessible, and accountable.

2.3.3 EHS guidelines

The preparation of this ESMP considered the WBG Environmental Health and Safety General Guidelines which are consistent with the CDR Safety, Health, and Environmental Regulations for Construction Projects.

2.3.4 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. The aim of the consultation is to present to the public the components of the project along with potential environmental and social impacts and take their comments and concerns into consideration.

3 PROJECT DESCRIPTION

The selection of road sections was based on a number of criteria that considers the pavement and safety condition of the road, the level of traffic, the balancing of roads between regions and communities, the balancing of road sections by categories (primary, secondary, and tertiary), and the labor creation potential with broader socioeconomic impacts. Using these criteria, several roads were selected in the Bcharre Caza for maintenance, and minor construction. The land acquisition did not occur during the design of any road under study. Activities to be performed vary between one road and the other, depending on the road rating in terms of the condition of the pavement, shoulders, potential flooding and drainage, potential landslide/soil erosion and retaining walls, and/or pedestrian walkways.

Annex A includes details about type of equipment used and their technical environmental specifications (air emission levels, noise levels, vibration levels, etc.), activities management and staffing, and expected number of Labors. This annex also comprises maps of the roads location and the surrounding villages and/or towns.

3.1 Location

A general layout of the selected roads for maintenance in the Bcharre Caza is presented in Figure 3-1 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. The location and coordinates of the roads selected for maintenance in addition to key characteristic features or potential sensitive receptors are presented in Table 3-1.

Table 3-1 Location and characteristics of Bcharre district roads selected for maintenance

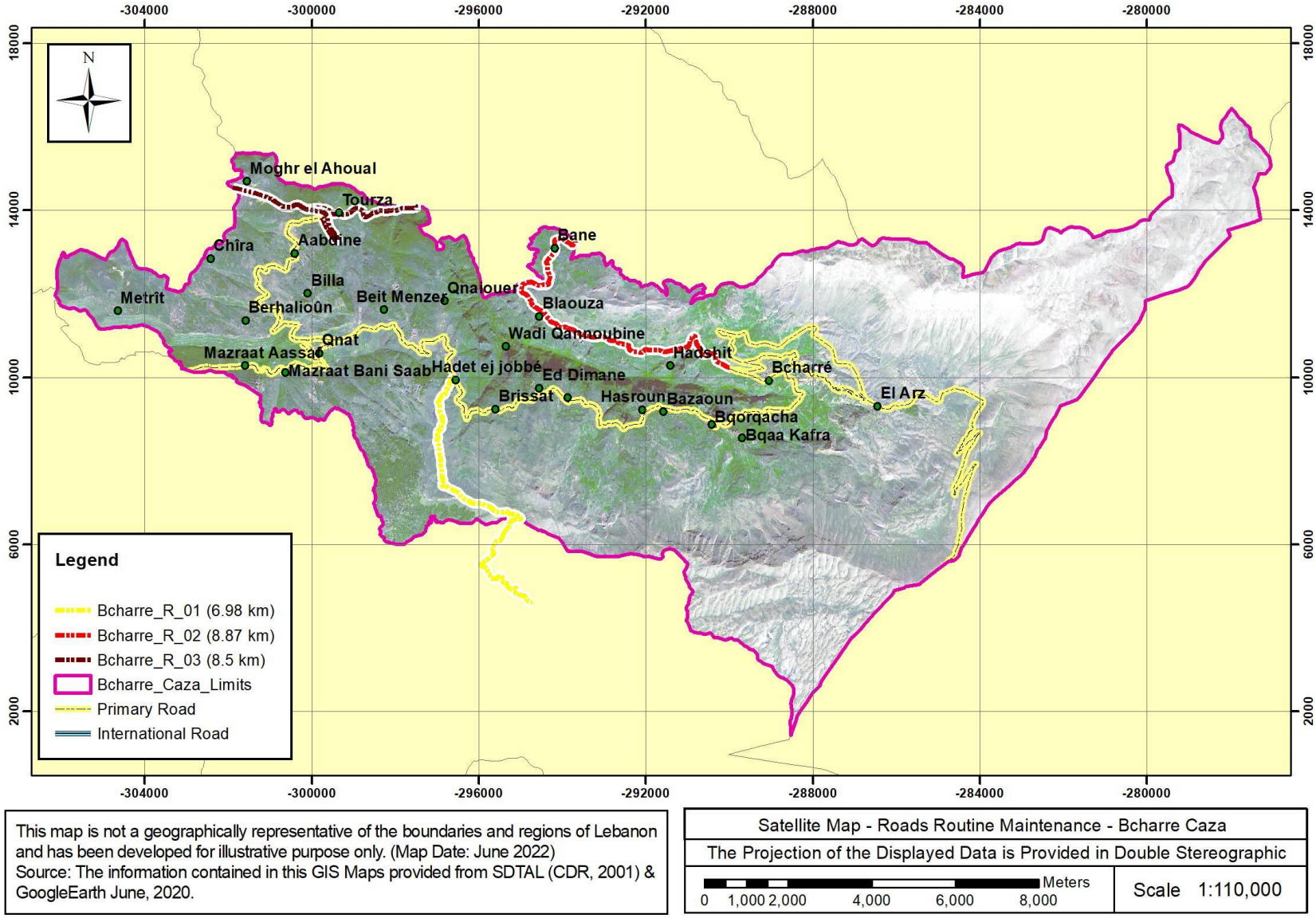
Road code	*Villages: From to*	*Coordinates*		*Classification*	*Length (Km)*	*Width range (m)*	*Elevation range (m)*	*Key features*
		Start	*End*					
Road 1	Moghr El Ahwal to Mazret	34°17'13.21"N	34°17'3.68"N	Primary	6.98	5-7	640-	Valley, Mediumly residential,
	El Nahr	35°52'15.37"E	35°55'7.07"E				770	religious buildings, few Restaurants.
Road 2	Kfarsghab until it reaches Hadchit.	34°16'38.71"N	34°15'5.19"N	Primary	8.87	5-7	1300-	Valley, scattered residencies,
		35°57'38.23"E	36° 0'5.86"E				1450	Restaurants, churches.
Road 3	Hadathe El Jebbeh - Harissa	34°11'58.19"N	34°14'48.51"N	Primary	8.5	5-7	1450-	Few residencies, camping site,
		35°57'8.15"E	35°55'46.22"E				1700	Tannourine nature reserve

The alignment of each road as stated below is stated below (see figure 2-1 Annex B – administrative map):

- Road 1 is of two parts, the first extends for 4.88 km. It starts at Moghe El Ahwal and Reaches Mazret El Nahr. The other part extends for 2.1 km and connects the first part to Qinnat
- Road 2 extends for 8.87 km. It starts in Kfarsghab until it reaches Hadchit.
- Road 3 extends for 8.5 km. It starts in Hadath El Jebbeh and extends towards Harissa, above Tannorine natural reserve.

Still, depending on the quantities of maintenance works required to these selected primary roads, the remaining of funds and contract duration; other secondary selected roads may be included to this maintenance and in this case the ESMP shall be updated accordingly. In this case, the same E&S safeguards and policies applied to the primary roads will be applied to the secondary ones.

Figure 3-1 Location overview of roads selected for maintenance within the Bcharre district



3.2 Project activities

The main civil works, which are expected to take place in general under the REP including the Bcharre district, may include:

- Roadway pavement by Deep & shallow pothole patching, crack sealing repair
- milling and overlay of localized pavement depressions such as failed pavement applied over utility trenches/ depressions repair
- damaged reinforced concrete retaining walls/Footwalls/ Masonry Walls repair
- Sidewalk including tiles, curbstones repair
- Safety barriers: New Jersey/ Texas barrier and steel guardrail repair
- Storm water drainage network repair
- Lighting Networks and all related electrical and civil works repair
- Road marking & signing implementation
- Other ancillary associated works including traffic management during maintenance.

The following tasks shall also be presented separately for each road:

- Reference road layout plan based on an aerial map,
- Select photos reflecting defects of selected roads and the required maintenance works,
- Assess the existing roads conditions and the required maintenance works, this shall cover the following:
  - Travel Way & Shoulder including road pavements.
  - Roadsides stability, including retaining system and slope protection
  - Drainage networks and the related pipes and box culverts
  - Traffic Control & service facilities
- Propose methodology for the required maintenance works in conformity with the relevant manual and standards,
- Require preventive measures,
- Propose materials for roadway Maintenance

During the execution of maintenance activities, roads will not be closed or shutdown. Works will be executed on the road right of way/passageway only and will not use or undermine any existing adjacent facilities. In addition, the maintenance activities will maintain a passing corridor within the alignment to grant access to nearby properties.

In case the works imply any temporary closure of the road, the project contractor will assign alternative routes to secure traffic and reach relevant destinations. Detours and diversions were not included in the design. Therefore, before the execution of maintenance works, the contractor based on the schedule of works and if needed, will secure the access and traffic movement via other alternative routes and means in coordination with the related Municipality. Accordingly, all detours will be on existing alternative roads (public domain properties) and there is no need to use or rent some land to create the detour. The duration of the project is 18 months with a one -year liability period

4 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

The preparation of the ESMP report included field surveys to observe and document baseline conditions. Information related to coverage deemed important in the context of the ESMP was synthesized and processed to prepare the maps presented in this report. Field observations coupled with reported literature form the basis for defining the physical, biological, and socio-economic characteristics of the general project area as outlined below.

All baseline related figures, tables and photos are included in Annex B.

4.1 Physical environment

4.1.1 Topography

Road 1 is located at relatively medium elevations varying between 640 and 770 m ASL. Road 2 falls on a relatively high altitudes ranging between 1,300 m and 1450 m. It falls very close to Qannoubine Valley. On the other hand, Road 3 starts at an elevation of approximately 1,450 m near Qnat and continues uphill until it reaches around 1700m at Arz Tannourine. See figure 2-2 Annex B – Topographical map of the project.

4.1.2 Geology

4.1.2.1 Lithology and main geological formations

As evident in the geological map, adapted from Wetzel (1945), Dubertret and Wetzel (1945), and Dubertret (1949; 1951), the Bcharre Caza is mainly covered by basalts (βj and βC2) and limestone (J6). It is a mountainous region characterized by relatively steep slopes and cliffs favoring the failure of coherent masses of rocks and rock debris. To the northeast of Bcharre, the Temm Laila Mountain, a dolomitic limestone (C4) exceeding 2,000 m in elevation has steep slopes and it is the source of talus deposits. Elevated rock masses are known to fall, hit the ground, and then bounce and roll. This is inferred from the different cone shaped accumulations of broken rock fragments that eventually generate debris flows (a saturated sediment flow of variable sized particles). These risky zones are abundant in the north, east and southeast of Bcharre Caza and even affect its main road. They are also a concern in regions to the west of the Caza, for instance on the road leading to Hadchit. Geological map (Figure 2-3 Annex B),

The topmost layer in the area is the Quaternary semi-aquifer, which is made of alluvial deposits and is a conglomerate of different lithologies. It is usually found uncomfortably lying on top of the Jurassic and Cretaceous aged rocks that are very good aquifers (Kesrouane J4 and Sannine C4). The Sannine- aquifer of the Cenomanian age consists of finely bedded limestone, dolomitic limestone and marly limestone and its thickness can range between 750-900 m. Underlying the C4 (Sannine) Aquifer is the Hammana Aquitard, which is made of brown and green marls, with a carbonaceous lithology. The Jurassic age aquifers in this area are mainly the Bikfaya and Keserouane Formations, which alternate with the basaltic aquitard of the Bhannes Formation. The Kesserouane Formation, which is a highly permeable limestone aquifer, can be as thick as 1,000 in certain regions of Bcharre. The distribution of the formations within a 50 m buffer of the selected roads are shown in Table 3-1 (Annex B). As can be seen in the table, the roads selected for maintenance cross predominantly Jurassic

(Kesrouane) J4 limestones, regions with Pliocene Basalts or limestone from the Cenomanian Sannine (C4) formation and the Chouf sandstone and to a lesser extent through the basaltic aquitard of the upper Jurassic Bhannes, Bikfaya, Salima formation.

4.1.2.2 Faults, erosion, landslides, and earthquakes

Several faults crisscross the Bcharre Caza (shown in geology map Annex B). None of the roads selected for maintenance are crossed by a fault line or are within 300 m of one. The risk for erosion across the roads selected for maintenance is overall high. Seismic risks in the study area exist, given that it lies along the 1,000-km-long left-lateral Levant fault system (LFS). This fault system is responsible for a significant amount of seismic events in the eastern Mediterranean (Hujeir et al., 2011). For the study area, the EZ-FRISK^{TM} model developed by Hujeir et al. (2011) predicts that the 10% probability of peak ground accelerations (PGA) exceedance in 100 years, ranges between 0.3 and 0.35 g. With these levels of seismic hazards, civil engineering projects such as bridges should adopt reinforcement (in reinforced concrete structures) of "high seismic hazard" as established in international codes of practice (Hujeir et al., 2011).

4.1.3 Hydrology

The study area is characterized by the presence of several springs, streams, and groundwater wells (seen in Figure 2-4 & Table 4-1 (Annex B). Hydrogeology Map). The most important river in the Bcharre Caza is Nahr Abou Ali/ Qadisha River[12].This River flows in the near proximity of roads 1 & 2. Road 1 intersects the river at Mazret El Naher. Several studies have looked at the water quality of the Abou Ali/ Qadisha River. Jabali et al. (2018) reported no or very low polycyclic aromatic hydrocarbons (PAHs) concentrations in groundwater sampling locations across the basin, while considerable concentrations (ranging from 0 to 28.72 ng/mL) were detected in surface water at several locations in the lower parts of the river (Jabali et al. 2018). A previous study by Massoud et al. (2006) reported relatively good water quality in the upper sections of the Abou Ali River/ Qadisha as can be seen in Figure Table 4-1 (Annex B). Seasonal variations were largely significant in the upper sub-catchment due to runoff.

4.1.4 Climate and meteorology

The climate and meteorological parameters play an important role in the transport and dispersion of pollutants in the atmosphere. Wind speeds and wind directions are responsible for carrying pollutants from the roads selected for maintenance to nearby communities both during the maintenance and operation phases. On the other hand, precipitation controls the rates of runoff. Meteorological data for the study region are best represented through long term monitoring stations in that region. The closest stations to the roads selected for maintenance are in Bcharre and the Cedars.

Long-term average representative precipitation and temperature for the Bcharre Caza are presented in Figure 5-1 and 5-2 (Annex B), respectively. While precipitation is negligible in the summer season between the months of June and September, the highest precipitation is recorded for the month of January. The total precipitation in Bcharre, like the rest of Lebanon, shows large variability across years and locations. The wettest month is the month of January with an average rainfall of 221 mm. The average annual precipitation is known to exceed 1,000 mm. In addition, at high elevations, snow is common and is expected to affect maintenance activities. As for temperature, the lowest are recorded in January (average at -4 C) and the highest in August (average at 23 C) (Figure 5-2). Across two snow seasons (1

November to 30 June 2014 - 2016) surface air temperature in the Cedars averaged -1.4 (Fayyad, 2017). The maximum snow cover duration between 2014 and 2016 was 160 days (Fayyad, 2017). With respect to wind, the closest weather station equipped with a functional anemometer is in Bcharre and is operated by LARI. The windrow for the year 2018 from that station is shown in Figure 5-3. Calm winds are predominant (0 to 0.5 m/s) blowing from the West (17 percent of the time) and South-West (35 percent of the time). Strong winds seldom exceed 25 m/s at the Cedars although during storm events, maximum wind gusts up to 40.1 m/s were reported by Fayad et al. (2017).

4.1.5 Ambient air quality and noise levels

Traffic emissions represent the main source of air pollution in the project area with generators constituting another source in residential areas at times of electricity disconnection. Major air pollutants induced by traffic include Carbon monoxide (CO), Nitrogen Oxides (NO_x), Sulfur oxides (SO_x), Hydrocarbons (HC), and Particulate matter (PM). Air quality monitoring in Lebanon in general is weak and adhoc with no systematic continuous monitoring. It is based mostly on individual efforts at academic institutions with a recent effort through the MoE that acquired several stations spread throughout Lebanon, particularly in urban areas. Unfortunately, the stations have stopped because of lack of resources and the existing data is not reliable because of lack of equipment calibration, to the best of our knowledge.

Annual average ambient air quality data were reported by MoE (2018) for part of the Bcharre Caza (Figure 6-1 – Annex B). Data were obtained from data gathered from the MOE/ UNDP project, 'Air quality assessment in an East Mediterranean country: the case of Lebanon, 2014' which monitored criteria air pollutants. Data for Cells 4 and 5 are considered to be representative, being close to this study area in terms of distance as well as prevalent socio-economic activities, i.e. mostly rural and light residential. Table 6-1 (Annex B) shows that the annual concentrations for all criteria air pollutants for cells 4 and 5 are below the national ambient air quality standards defined by MOE Decision 16/1 dated 2022.

Similarly, vehicles and some generators in residential areas constitute the main source of noise. While no noise measurements are available along the roads selected for maintenance, various studies have been conducted on noise measurements in specific projects / studies although no systematic noise monitoring in the country exists. In the context of the roads selected for maintenance it is expected that the baseline average continuous A-weighted noise levels during the day time will vary between 41 to 81 dBA depending on time of day, traffic conditions and proximity to the roads, with an average of 61 dBA. This range was deduced from noise measurements conducted in 2017 along segments of a nearby rural road of similar nature in the Bcharre Caza. Note that these levels exceed the national standards of 30-40 dBA for rural areas. However, as mentioned earlier, the national standards are very stringent and hard to meet along roads. Hence, it is more realistic to consider the FHWA (1997) noise criterion of 67 dBA for residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, recreational areas, playgrounds, parks.

4.1.6 Land use land cover

The land use and land cover in an area refers to both natural landscape and anthropogenic activities occupying the regions. The three roads selected for maintenance in the Bcharre Caza pass largely through rural areas. Figure 2-5 (Annex B) shows the main land use land covers of the Bcharre Caza as well as those in the immediate vicinity of the 4 roads selected for maintenance. Refer to Section 4.2 for more details on the biological environment.

The beginning of Road 1 (Mogher El Ahwal – Mazret El Nahr) is characterized by few residences few to low agriculture in Mogher El Ahwal. As the road goes towards its end, evergreens including dense pines and oaks are evident, as it gets closer to the Qadisha Valley.

The land use cover along Road 2 (Kfarsghab - Hadchit) is of two parts, The first part is on the Qadisha Valley where there exists clears oaks, clear pines, and field corps in small fields. The other part, which falls above the road on the other side of it, is predominantly field scrublands and some dispersed trees.

As for Road 3 (Hadath El Jebbeh - Harissa) The land use land cover ais predominantly abandoned agricultural lands and bare rocks. Some vegetations exists at its start at Hadath El Jebbeh where clear oaks and pines are present. The road is is in the vicinity, but far enough, from the Tannourine Natural Reserve. Finally, towards its end, some agricultural fields are present.

4.2 Biological Environment

As mentioned in the previous section, the roads in the Bcharre Caza pass through various land cover types that harbor different habitats. More specifically, the roads selected for maintenance pass through clear pine forests and scrublands. Also, the area is characterized by the Qadisha Valley, the presence of the Abu Ali River and most importantly the Cedars of God Forest.

4.2.1 Flora

In Bcharre, one can identify the following 3 vegetation zones: the Supramediterranean (1,000-1,500 m ASL), the Mediterranean mountains (1,500-1,800 m ASL) and the Oromediterranean (> 1,800 m ASL) (Abi-Saleh et al., 1996). The roads selected for maintenance in the Bcharre Caza lie in the Supramediterranean Zone, which is situated between 1,000 and 1,500-1,600 m on the western slopes of Mount Lebanon.

In Bcharre, the supramediterranean series of oak, *Quercus calliprinos* (common oak), is widespread covering many slopes in the lower elevations (1000-1500m). In general, the Qadisha Valley is covered mainly by a community of *Quercus calliprinos* (common oak). Other species accompanying the *calliprinos* (common oak) are *Pistacia palaestinia* (Palestine terebinth), *Arbutus andrachne* (Eastern strawberry tree), *Cercis siliquastrum* (Juda's tree), and *Rhamnus* (buckthorn) sp. These are evident on the side of the valley under Deir Mar Lichaa. In the Qnat – Berhalioun area are pine trees, *Pinus brutia* (Calabrian pine) population (mainly), and *Quercus calliprinos* (common oak) where high density forests are evident. In addition, to *Quercus calliprinos* (common oak), *Quercus infectoria* (Aleppo oak) is present at the higher elevations of the Qadisha valley as well as in Tourza/Beit Mounzir/Qnaiouer. The *Quercus infectoria* (Aleppo oak) series is made up of *Cytisus syriacus* (common broom), *Juniperus oxycedrus* (prickly juniper), *Origanum ehrenbergii* (oregano), and *Andenocarpus* complicates. A third series of oak that is mostly present at altitudes of 1,200 m is *Quercus cerris* (Turkey oak). The tree grouping corresponds to small forests of *Quercus cerris* (Turkey oak) which include some other characteristic species like *Bromus bikfayensis* (Brome grass), *Carex phyllostachys*, *Lathyrus digitatus*, *Lathyrus niger* (blackening flat pea). These groups are most likely the most endemic in the Lebanese mountains because they do not appear to have any affinities with the other groups of *Q. cerris* (Turkey oak) in the Eastern Mediterranean. In addition to oak trees, the supramediterranean zone includes the series of

Pinus pinea (Umbrella pine) found on sandstone. The tree grouping corresponds to forests which include the following species: *Cytisus syriacus* (common broom), *Adenocarpus complicatus*, and *Halimium umbellatum* (rock rose). The originality of these communities is marked by the endemism of their characteristic species, mainly *Cytisus syriacus* (common broom) and *Halimium umbellatum* (rock rose). The herbaceous grouping corresponds to grasslands of *Tuberaria guttata* (spotted rock rose), *Aira elegans* (annual silver grass), and *Briza maxima* (rattlesnake grass). Grasslands of *Isoetes hystrix* (quillworts) develop in the lower humid areas of the zone (PADECO ltd., 2004a).

According to the field visit and the land cover land use map (Figure 2-5 (Annex B)). The most predominant natural cover was clear oaks, fruit trees, dense pines and clear cedars.

4.2.2 Fauna

The Mount Lebanon range and the riversides are also considered rich in fauna. Species that are or might be present in the study area include: one species of land tortoise, terrapin and aquatic tortoise; 20 species of lizards of which one endemic (Lizard *Lacerta frastii carnivorous*) living at high altitudes (Bcharre); 13 species of non-venomous grass snakes, two species of venomous grass snakes, and two species of venomous vipers. (PADECO ltd., 2004a).

With regards to birds, according to the analysis of the national biodiversity report study team (MoA/UNEP, 1996), the forests and woods of Mount Lebanon provide shelter to 87 species, which is considered as an underestimation due to the difficulty to spot migratory birds in thick woods. None of the bird species are endemic. Three threatened bird species that might be found in the project area include Greater spotted eagle (*Aquila clanga*) Imperial eagle (*Aquila heliaca*) Lesser Kestrel (*Falcon aumanni*). As for mammals, there are 52 reported mammal species in Lebanon. Seven species are already extinct. Figure 8-1 presents a list of species potentially found in the Bcharre district (PADECO ltd., 2004a).

4.2.3 Ecologically Sensitive Areas

Road 1 is situated at the beginning of the Qadisha valley. The Qadisha ecosystem Valley is an important and rich ecosystem as evident from the following (El Haber, 2000):

- Flora taxa named after Lebanon in the Qadisha Valley: 26 species, 7 subspecies, and 9 varieties;
- A high degree of endemism in the valley
- Recorded data of flora in the Qadisha Valley: 912 species (32 % of Lebanese flora), 163 subspecies (5.6 %), and 118 varieties (4%);
- Status of plant taxa in Qadisha Valley: 74 taxa Endangered, 174 taxa Rare, 138 taxa Localized, and 37 taxa Sporadic
- Life span of Qadisha Valley flora: 291 Annual species, 43 Biennial species, 568 Perennials species, and 27 arborescent species.

As mentioned above, the area under study is characterized by the Forest of the Cedars of God that is situated in the Mediterranean mountain vegetation zone and is the innate land of Cedrus libani. Other associated trees include Quercus, Cupressus, Pinus, Abies, Populus, Platnaus, and Juniperus. The fauna described in this type of unique ecosystem ranges from the various types of birds (eagles, owls) to wild animals (boars, wolves, squirrels, rats, etc.) (PADECO ltd., 2004a).

4.3 Socioeconomic Environment

4.3.1 Demographic Profile

Road 1 serves mainly the three villages that it passes through. Moghr El Ahwal where it starts, Tourza in its middle, and Mazret El Naher where it ends. It also serves the tourists visiting the Qadisha valley, estimated by the Federation of Municipalities of Bcharre at 250,000 tourists in the summer season.

Road 2 is a primary road in the Bcharre Caza that directly serves the villages of Kfarsghab, Hadchit, and all the villages in between (Bane, Houket El Nhar, Blouza, etc.) It also serves all of the Bcharre Caza indirectly, linking the villages in the west of the road to those in its East. As for Road 3 it does not serve residencies much, but it serves those reaching Arz Tannourine and camping sites in that era in Bcharre.

Hence, when considering the demographic profile of the study area, the population of all the villages in the Bcharre Caza was considered, as presented in Table 9-1 (Annex B). In 2016, the total population in the Caza ranged from 21,135 in winter to 40,050 in summer. The Bcharre/ Cedars village alone lodges around 50 percent of the population in the Caza. The total number of households in the Caza is 80,010, with an average household holding around 2-3 persons, as per the winter population and 4-5 persons as per the summer population.

As for the total number of officially registered Syrian refugees in the Bcharre Caza, it was reported by the Federation of Municipalities in Bcharre Caza (2019) to be 2,400 in 2016. No camps were observed during the field visits. In addition, the municipalities indicated that Syrian Refugees are living in rented apartments. The total number of officially registered Syrian refugees in the villages in the immediate vicinity to the three roads was estimated at around 40 (UNHCR, 2018). No Palestinian camps are present in the Caza.

Around 53 percent of the population is between 15 and 64 years old and 10 percent is aged above 65 years. The average dependency ratio is high, reaching 56.9 %. School enrollment in the Bcharre Caza is 92.2 and the illiteracy rate among the population aged 10 years and above is 16 %. Moreover, 13% of the residents have a high school degree and 6% a university degree. (MOPH, 2016)

4.3.2 Social Activities

Besides being a summer destination for many visitors, the Bcharre district offers a well know ski resorts during the winter as well as a series of open air festivals during the summer. Otherwise, social activities in relevant Bcharre villages are relatively limited to in or out of village visits between family or friends, picnics, church visits, periodic municipal or parliamentary elections, or other range of celebrations of births / anniversaries / weddings to condolences in funerals. Larger villages / towns may house a school or a clinic or an NGO. A detailed social survey at the level of each village was not conducted. To the extent available and accessible, some data was collected from reported literature and outlined below.

4.3.3 Economic Activities

Standard of living refers to the level of wealth, comfort, material goods, and necessities available to a certain socioeconomic class in a country. About half of the residents (45.4 percent) in the Bcharre caza are classified in the intermediate living index category, while

34.8 percent are classified as low and 19.8 percent as having high standard of living (CAS/ UNDP/ MOSA, 2004). The unemployment rate in the Bcharre Caza is 16.5 %, which is higher than the national average of 11.4 % (CAS & ILO, 2019). Around 5,500 Lebanese in the Bcharre Caza were categorized as 'deprived' as per the Living Conditions and Household Budget Survey (CAS/MOSA/UNDP, 2004).

PADECO ltd (2004) reported the employment by sector in the Bcharre Caza to be as follows: 22% commerce and construction, 29% government and community health and education, 27% financial, transportation and communication services (including some tourism-related services), 20% agriculture and farming and 2% in direct tourism services (hotels and restaurants). Agriculture consists primarily of fruit trees (mainly apples, citrus and pears, olives, almond and grapes). Besides a minority of remaining farmers, residents in the overall caza tend to work elsewhere in urban areas along the coastal region with many residing there and visiting their villages in the summer. Evidently, this is the case for most of the Lebanese villages, where income from agriculture is not adequate to maintain livelihood and has become a supplement rather than the main source of living.

4.3.4 Educational Services

There are several public and private school in Bcharre District. However, Rosarie Abdine school is the only school that falls on road 1 (Figures 1-5 & 1-6 Annex B). Where by, Hadchit Public School, Nuns School, Gibran Khalil Gibran High school, and Saint Joseph School are directly served by Road 2. As for Public School, Hadsheet Intermediate Mixed Public School, Hasroun Mixed Public School are in the vicinity of road 2. And no schools are located directly on road 3 or within the villages directly linked by it.

4.3.5 Traffic Assessment

No specific data were recorded regarding traffic flow, as the proposed project is not limited to a specific location, and the type of maintenance works do not cause any blockage of the roads.

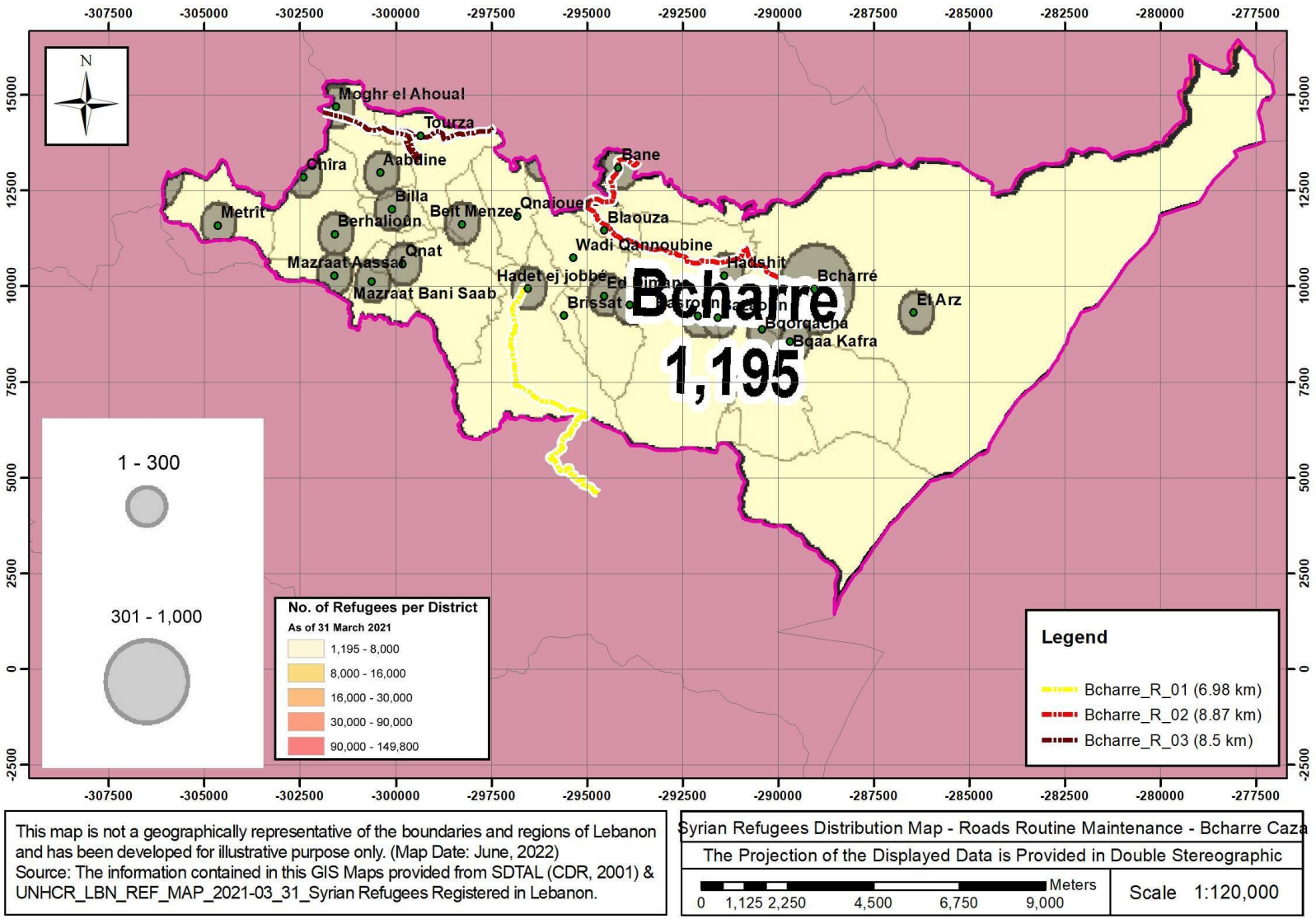
4.3.6 Healthcare Services

Only Bcharre Hospital is served by the roads selected for maintenance for maintenance, and specifically road 2 serves it the most as shown by the figure 1-7 (Annex B).

4.3.7 Road Sensitive receptors

In summary, sensitive receptors that need to be considered along Bcharre Road 2 (Deir Mar Lichaa– Wadi Qadisha) include the restaurants at the beginning and end of the road, the Deir Mar Lichaa Monastery, the residents at the bottom of the Qadisha Valley who have no alternative roads, the tourists visiting the valley in the summer season, the Qadisha cultural and archaeological richness and natural ecosystem. As for Road 3 (Beit Mounzir - Qnat) and Road 4 (Qnat - Mazraat Aassaf), the sensitive receptors are limited to the residences, shops, and religious buildings scattered along the roads and the nearby pine forests and scrublands. See figure 2-6 (Annex B).

Figure 4-1 Syrian refugees distribution within Bcharre Caza



5 POTENTIAL ENVIRONMENTAL & SOCIAL IMPACTS

This chapter describes the environmental and social impacts that are likely to result from the maintenance of the roads. Due to the nature of the activities, the anticipated negative environmental and social impacts are expected to be minor to moderate during the maintenance phase and of temporary nature including dust, noise, waste generation, disruption to traffic and movement and possible damage to existing utilities; and of little consequence during the long-term operational phase. Such impacts can be minimized by implementing the environmental and social management plan.

The assessment methodology is attached in Annex A.

1.1 Potential Environmental impacts during the maintenance phase

Table 5-1 Environmental and Social Negative Impact for the Bcharre district roads during the maintenance phase

Potential Impact	*Receptor*	*Activity generating impacts*	*Impacts Description*	*Rating*
Environmental Impact				
Air quality	Surrounding Communities, Fauna and Flora, and Water resources.	▪ Usage of construction equipment Shallow excavation ▪ Levelling works ▪ Transport vehicles delivering construction materials, ▪ Disturbances of stockpiles by winds and material handling	Negative impact from Dust Emission	Minor negative impact
Noise	Surrounding Communities, and Fauna.	▪ Excavation and milling works ▪ Labours shouting ▪ Evacuation of materials	Negative impact creating stress on local inhabitants, and close vicinity to road works	Moderate negative impact
Biodiversity	Surrounding Fauna and Flora	▪ Dust from construction works ▪ Wastewater from construction and domestic disposal ▪ Destruction of surrounding trees and plantations ▪ Disturbance of surrounding inhabit ate with load sounds	Negative impact that could cause loss of surrounding inhabitant	Minor negative impact
Construction and excavation waste	Biodiversity, surface and ground water and soil	Soil waste, milling materials, domestic wastes improperly disposed	Negative impact from contamination water resources and soil. Also, possible blocking of streams.	Minor negative impact
Water and soil quality	Surrounding Communities, Fauna and Flora, and Water resources.	▪ Runoff and erosion from site surfaces, drainage channels, earth working areas and stockpiles; ▪ Wash water from dust control; Fuel, oil, solvents and lubricants leakage from machinery and equipment ▪ Domestic wastewater from project offices	Negative impact from contamination water resources and soil.	Moderate negative impact
Resources consumption	Surrounding Communities, Fauna and Flora, and	▪ Increase quarrying causing raw materials depletion ▪ Increase quarrying causing dust, noise, and vibrations	Negative impact from fill and construction	Moderate negative impact

Potential Impact	*Receptor*	*Activity generating impacts*	*Impacts Description*	*Rating*
	Water resources.	▪ Increase transportation of heavy vehicles ▪ Increase water pumping	material, and water depletion	
Landscape and visual intrusion	Surrounding Communities	▪ Soil erosion ▪ Excavation activities	Negative impact from depletion of the vegetative cover on the side roads and visual impact on the landscape	Minor to low negative impact
Social Impact				
Traffic	Surrounding Communities and road users, and workers	▪ Reducing traffic flow ▪ Possible temporary block of accessibility	Negative Impact due possible traffic congestions or accidents occurrence.	Moderate during short time negative impact
Existing infrastructure	Surrounding Communities	▪ Cut-off water supply pipes ▪ Destruction of electricity cables or/and phone lines. ▪ Block of drainage channels and/or wastewater collection network	Negative Impact due to possible loss of services	Minor during short time negative impact
Social tensions	Surrounding Communities and workers	The feeling of discrimination or harassment due to hiring of forging labours	Negative impact due to conflict over jobs or dissatisfaction	Minor to low negative impact
Child labour	Refugee and poor communities	Allowing child to work in unsafe construction environment and preventing him the right of proper education	Negative Impact due to abuse and exploitation	high during long time negative impact
Labour Influx	Women and children	Verbal and/or action harassment	Negative Impact due to possible Sexual Abuse and Exploitation and Harassment (SEA/H)	high during short time negative impact
Health and safety impacts	Surrounding Communities and road users, and workers	▪ Improper traffic management ▪ Work accident due to PPE noncompliance ▪ Land obstacles and uncovers holes ▪ Speedy project heavy machineries ▪ Improper covering of pointy construction materials.	Negative Impact due to accident occurrence	Moderate during long time negative impact

1.2 Potential positive impacts during maintenance

During maintenance, the project is expected to have positive impacts on socio-economics. Being labor intensive, construction projects will result in job creation and in business opportunities for skilled and unskilled labor among local residents and Syrian refugees, such as construction labor and the supply of construction material and provision of food to the construction workers. Based on the past experience of construction work in the country, there is a higher probability of Syrians-refugees to apply and work in unskilled and low-skilled labor positions. The number of jobs created for roads maintenance within the Bcharre Caza could not be estimated at this stage, however, compared to other similar projects, the project shall require between 10 and 20 workers.

1.3 Potential positive impacts during the operation phase

Table 5-2 Environmental and Social Impact for the Bcharre district roads during the operation phase

Potential Impact	*Receptor*	*Activity generating impacts*	*Impacts Description*	*Rating*
Environmental Impact				
Air quality & Traffic	Surrounding Communities , Fauna and Flora, and Water resources.	Improve traffic flow that lead to improved fuel efficiency and better engine performance,	Positive impact due to reducing vehicle emissions Dust Emission	Minor to moderate positive impact
Noise	Surrounding Communities , and Fauna.	Reduce traffic congestion	Positive impact by reducing stress on local inhabitants	Minor positive impact
Water and soil quality	Surrounding Communities , Fauna and Flora, and Water resources.	Improve the water drainage collection system	Positive impact protection of water resources and soil.	Minor negative during long time impact
Landscape and visual intrusion	Surrounding Communities	Elimination of road holes, falling retaining walls and improving stress lights and guardrails	Positive impact due to the road refurbishment to improved appearance	Minor negative during long time impact
Social Impact				
Traffic	Surrounding Communities and road users, and workers	Reducing traffic congestion	Positive Impact due to reducing traffic travel time.	High during long time positive impact
Socio-economics	Surrounding Communities and road users	▪ Improve accessibility of people (including school and university students), goods and services ▪ Reduced trip times and less traffic congestion ▪ Smoother road surfaces may lead to fewer vehicle repairs	Positive Impact due to improvement in local economic and social development and enhanced livelihood opportunities	Positive impact
Health and safety impacts	Surrounding Communities and road users, and workers	With proper maintenance and signage, the roads can be safer with less potential for accidents	Positive Impact due to of accident occurrence	Minor negative to positive

1.4 Summary of impact analysis

The maintenance phase of any development is known to have potential adverse environmental and social impacts. The potential environmental and social impacts during both phases of the project were assessed to range from minor to major negative, with the majority being moderate negative.

Table 5-3 summarizes the significance of impacts associated or expected with both the maintenance and operation phases. Negative impacts are mostly temporary or not significant in nature with similar size projects.

Table 5-3 Summary of potential impacts of roads selected for maintenance in Bcharre district

Potential Impact	*Maintenance phase*	*Operation phase*
Traffic	Moderate negative	Minor negative to Positive
Air quality	Minor negative	Minor negative to Positive
Noise	Moderate negative	Minor negative to Positive
Biodiversity	Minor negative	Minor negative
Construction Waste	Minor negative	Neutral
Soil and water	Moderate negative	Minor negative to Zero
Resources consumption	Moderate negative	Neutral
Existing infrastructure	Minor negative	Neutral to Positive
Visual Intrusion	Minor negative	Minor negative to Positive
Health and Safety	Moderate negative	Minor negative to Positive
Socio-Economic	Moderate negative to Positive	Positive
Archaeology / Cultural Heritage	Neutral	Neutral
Expropriation/involuntary resettlement	Neutral	Neutral

2 MITIGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS

Mitigation measures are typically recommended whenever the potential impact is moderately significant with the ultimate purpose to eliminate or reduce the potential negative impacts of the proposed project. Mitigation measures are highly dependent on the significance of the predicted impact, the nature of the impact (permanent vs. temporary), or the phase of the project (maintenance vs. operation). Possible measures to mitigate potential impacts described in the previous section are outlined below, particularly during the maintenance phase. The operation phase will experience mostly general socio-economic improvements which is the purpose of the project although minor impacts are inevitable such as the increase of noise and vehicle emissions due to traffic increase.

2.1 Environmental Mitigation Measures during maintenance

Table 2-1 Environmental and Social Mitigation Measures for the Bcharre district roads during the maintenance phase

Receptor	*Activity generating impacts*	*Impacts Description*	*Mitigation Measure*
Environmental Impact			
Surrounding Communities, Fauna and Flora, and Water resources.	▪ Usage of construction equipment Shallow excavation ▪ Levelling works ▪ Transport vehicles delivering construction materials, ▪ Disturbances of stockpiles by winds and material handling	Negative impact from Dust Emission	▪ Ensuring adequate maintenance and repair of construction machinery and vehicles ▪ Maintaining good housekeeping practices ▪ Turning off all equipment when not in use ▪ Sprinkling water on the construction site on windy days ▪ Proper handling of cement material ▪ Covering all vehicles hauling materials ▪ Ensuring good fuel quality is used in trucks transporting construction material to and from site ▪ Ensuring optimum and regular transportation of construction materials to minimize storage of large heaps ▪ Restricting vehicle speeds to 15km/h on unpaved roads and trucks
Surrounding Communities, and Fauna.	▪ Use of heavy machinery ▪ Excavation and milling works ▪ Labours shouting ▪ Evacuation of materials	Negative impact creating stress on local inhabitants, and close vicinity to road works	Use of quiet equipment and noise mufflers, proper maintenance of equipment, and limiting noisy activities to normal daylight working hours.
Surrounding Fauna and Flora	▪ Dust from construction works ▪ Wastewater from construction and domestic disposal	Negative impact that could cause	▪ Workers' movement and activities should not infringe on

Receptor	*Activity generating impacts*	*Impacts Description*	*Mitigation Measure*
	▪ Destruction of surrounding trees and plantations Disturbance of surrounding inhabit ate with load sounds	loss of surrounding inhabitant	the nearby ecosystems including agricultural areas. ▪ Workers should be instructed to protect flora and fauna when feasible as well as their habitats. ▪ Solid and liquid waste should not be dumped into the natural environment (See below).
Biodiversity, surface and ground water and soil	Soil waste, milling materials, domestic wastes improperly disposed	Negative impact from contaminati on water resources and soil. Also, possible blocking of streams.	▪ Properly dispose construction waste at suitable permitted locations by local municipalities ▪ Ensure proper handling of fuels, lubricants and other chemicals while maintaining construction equipment and prevent possible leakage. Maintain equipment in dedicated repair shops. ▪ Collect waste to hand to recycling entity
Surrounding Communities, Fauna and Flora, and Water resources.	▪ Runoff and erosion from site surfaces, drainage channels, earth working areas and stockpiles; ▪ Wash water from dust control; Fuel, oil, solvents and lubricants leakage from machinery and equipment ▪ Domestic wastewater from project offices	Negative impact from contaminati on water resources and soil.	▪ Building materials, asphalt, oil, fuel and chemicals should be stored away from river banks in well controlled areas ▪ Any stockpiled construction material should be covered with an impermeable layer ▪ All refueling operations shall take place off-site. ▪ Each container should be marked with the correct technical name of the substance it contains ▪ A spill response plan shall be in place and all workers should be trained on its implementation ▪ Used or waste fuel or other waste chemicals shall be stored in an isolated area until collected for off-site disposal by an approved waste contractor ▪ Vehicle and equipment wash-down should only be done in designated areas. ▪ A collection system shall be provided under any machinery or equipment that may leak hydrocarbons (e.g. mobile generator)
Surrounding Communities, Fauna and Flora, and Water resources.	▪ Increase quarrying causing raw materials depletion ▪ Increase quarrying causing dust, noise, and vibrations ▪ Increase transportation of heavy vehicles ▪ Increase water pumping	Negative impact from fill and construction material, and water depletion	▪ Using water-efficient equipment during maintenance operations to avoid excessive and overuse of water ▪ Recording monthly fuel consumption.

Receptor	*Activity generating impacts*	*Impacts Description*	*Mitigation Measure*
			▪ Dry clean-up methods should replace wet cleaning methods to reduce water consumption ▪ Appropriate plastic sheeting or waterproof paper should be used to cover the concrete after water curing to preserve moisture and reduce the evaporation ▪ Turn off equipment when not in use ▪ Regularly maintain machinery and generators ▪ Do not leave vehicles idle for long periods ▪ Site offices shall be well insulated to retain heat or cool, ▪ Reuse excavated material whenever feasible ▪ Accept construction material only from permitted quarrying sites
Surrounding Communities	▪ Soil erosion ▪ Excavation activities	Negative impact from depletion of the vegetative cover on the side roads and visual impact on the landscape	▪ Documenting existing conditions prior to initiation of the works ▪ Preserving existing vegetation when feasible ▪ Restoring depleted vegetative cover by replanting with endemic trees (pine, oak, etc.) where cutting is necessary during maintenance. ▪ Clearance of all equipment, spoil heaps, and other materials after construction ▪ Ensuring that lights are turned off when not needed
Social Impact			
Surrounding Communities and road users, and workers	▪ Reducing traffic flow ▪ Possible temporary block of accessibility	Negative Impact due possible traffic congestions or accidents occurrence.	▪ Scheduling transportation of construction material during off -peak traffic hours and during night time. ▪ Informing the public about the schedule of maintenance activities ▪ Maintaining access to roadside businesses and ▪ Ensuring adequate warning, signing, delineation and channeling ▪ Providing personnel to manage traffic at the maintenance site, supported by Municipal police if needed ▪ Ensure the GRM is readily available for use by sensitive receptors
Surrounding Communities	▪ Cut-off water supply pipes ▪ Destruction of electricity cables or/and phone lines.	Negative Impact due to possible	▪ Avoid damaging any possible existing infrastructure and try to obtain plans prior to

Receptor	*Activity generating impacts*	*Impacts Description*	*Mitigation Measure*
	▪ Block of drainage channels and/or wastewater collection network	loss of services	commencement of any maintenance works. ▪ Procedures for rapid notification in the case of disruption of any existing utility, ▪ Immediate assistance with re-instatement, and close follow-up with concerned authorities.
Surrounding Communities and workers	The feeling of discrimination or harassment due to hiring of forging labours	Negative impact due to conflict over jobs or dissatisfacti on	▪ Keep close coordination with municipal authorities to avoid any tension escalation and provide working vacancy for local community ▪ Ensure requirements in CoCs are clearly understood. ▪ Ensure that the sanctions embodied in the CoC are be clearly explained. ▪ Verify that GRM is adequately implemented
Refugee and poor communities	Allowing child to work in unsafe construction environment and preventing him the right of proper education	Negative Impact due to abuse and exploitation	Prevent any child labour and keep close monitoring to avoid any similar action
Women and children	Verbal and/or action harassment	Negative Impact due to possible Sexual Abuse and Exploitation and Harassment (SEA/H)	Provide workers with the necessary training and awareness raising session on issues regarding SEA/H, prior to signing the CoC.
Surrounding Communities and road users, and workers	▪ Improper traffic management ▪ Work accident due to PPE noncompliance ▪ Land obstacles and uncovers holes ▪ Speedy project heavy machineries ▪ Improper covering of pointy construction materials.	Negative Impact due to accident occurrence	▪ Work within work zone only ▪ Comply with the standard safety, health and environmental regulations of the CDR and the WB. ▪ Installing proper warning signs, ▪ Providing personnel protective clothing and equipment PPEs.
Health and Safety			
Surrounding Communities and road users, and workers	Accident and injuries to workers and public because of maintenance activities	Negative Impact due to accident occurrence	Develop a site-specific Public Health and Safety Plan and Occupational Health and Safety (Annex E)

3 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

Effective mitigation and monitoring plans require the presence of adequate capacity for environmental management at the national level. For the REP, the CDR plays a major role in ensuring the implementation of environmental mitigations by:

Table 3-1 Environmental and Social Monitoring Plan for the Bcharre district roads during the maintenance phase

Impact	***Monitoring indicators***	***Responsibility***	***Frequency/ Duration***	***Location***	***Methods***	***Estimated Cost[1]***
Traffic	Periodic site inspection by traffic expert with documentation and photos of mitigation measures (traffic management plan-TMP)	Contractor under supervision of the Consultant	Daily	At maintenance site	Visual observation and documentation with photos	TMP experts employment salary of about $1,500/month salary
Air quality	Periodic site inspection by EHS expert with documentation and photos of mitigation measures (vehicle and excavation emissions, turning off of equipment not in use, equipment maintenance, ect)	Contractor under supervision of the Consultant	Daily	At maintenance site	Visual observation and documentation with photos	Environmental, Health & Safety, and Social EHS expert employment salary of about $2,500/month
	Total Suspended Particles (TSP), PM_{10}, $PM_{2.5}$ (wherever feasible), SOx, NOx and CO	Contractor under supervision of the Consultant	Upon public complaint	At site and at sensitive receptors within 100 m from site	1-hr measurements, and visual observation of dust dispersion (scale and direction)	1,800$/event
Noise	Periodic site inspection by EHS expert with documentation and photos of mitigation measures (equipment mufflers, equipment maintenance, equipment turned etc) and measurements of indicators in case of public complaints	Contractor under supervision of the Consultant	Daily	At maintenance site	Visual observation and documentation with photos	Environmental, Health & Safety, and Social EHS expert employment salary of about $2,500/month
	L_{eq}, L_{min} and L_{max}	Contractor under supervision of the Consultant	Upon public complaint	At site and at sensitive receptors within 100 m from site	Single sample per location (average 1hr reading-15min intervals) during morning (7-8am), evening (1-2pm) and night (4-5pm)	500$/ event

Impact	*Monitoring indicators*	*Responsibility*	*Frequency/ Duration*	*Location*	*Methods*	*Estimated Cost*[1]
Construction and other solid waste	Periodic site inspection by EHS expert with documentation while maintaining a record of waste generation, collection, segregation, storage, transportation and disposal in terms of type, quantity, and disposal location of generated waste	Contractor under supervision of the Consultant	Daily	At maintenance site	Visual observation and documentation with photos	Environmental, Health & Safety, and Social EHS expert employment salary of about $2,500/month
Runoff water/ drainage	Periodic site inspection by EHS expert with documentation	Contractor under supervision of the Consultant	Daily	At maintenance site	Visual observation and documentation with photos	Environmental, Health & Safety, and Social EHS expert employment salary of about $2,500/month
	Water quality analysis	Contractor under supervision of the Consultant	Upon public complaint	At nearby river/ stream	Totals suspended solids, BOD, COD, Oil and grease	1000$/ event
Resource consumption	Periodic site inspection by EHS expert with documentation of excavated material, water and energy conservation practices and design elements	Contractor under supervision of the Consultant	Daily	At maintenance site	Visual observation and documentation with photos	Environmental, Health & Safety, and Social EHS expert employment salary of about $2,500/month
Existing infrastructure	Periodic site inspection by EHS expert with documentation of excavation works and response to disruption of underground utilities	Contractor under supervision of the Consultant	Daily	At maintenance site	Visual observation and documentation with photos	Environmental, Health & Safety, and Social EHS expert employment salary of about $2,500/month
Visual intrusion	Periodic site inspection by EHS expert with documentation of excavation and re-planting / re-vegetation while checking on culverts particularly following rainfall events	Contractor under supervision of the Consultant	Daily	At maintenance site	Visual observation and documentation with photos	Environmental, Health & Safety, and Social EHS expert employment salary of about $2,500/month
Health and Safety	Periodic site inspection by EHS expert with documentation (PPE, site enclosure, buffer zones, warning signs, first aid kit), while maintaining a record of injuries	Contractor under supervision of the Consultant	Daily	At maintenance site	Visual observation and documentation with photos	Environmental, Health & Safety, and Social EHS expert employment salary of about

Impact	*Monitoring indicators*	*Responsibility*	*Frequency/ Duration*	*Location*	*Methods*	*Estimated Cost*[1]
						$2,500/month
Socio-economic	Periodic site inspection by EHS expert with documentation of employment and grievance, sharing construction schedule with the public, access to roadside businesses, vendors and residences, and grievance record. Documentation of training and raising awareness for SEA/H and signing of the CoC as well as record of age verification against child labor.	Contractor under supervision of the Consultant	Daily	At maintenance site	Visual observation and documentation with photos	Environmental, Health & Safety, and Social EHS expert employment salary of about $2,500/month

3.1.1 Training

In the context of the proposed project that encompasses simple maintenance activities, environmental management during the maintenance and operation activities are relatively simple to ensure environmental protection. This can be accomplished through competent personnel with appropriate educational and professional background and instituting a periodic training program and site-specific plans that are adequate for protecting the general public and the environment as well as contributing to the mitigation of potential environmental impacts. Thus, contractor's personnel who will be involved in the construction of the proposed project as well as personnel who will be involved in monitoring activities from the supervising Consultant may attend an environmental training workshop prior to the initiation of project activities. Relevant staff from the concerned municipalities are encouraged to attend, as they will be indirectly supervising the works on the ground. The objective of this training is to ensure appropriate environmental awareness, knowledge and skills for the implementation of environmental mitigation measures. Environmental training sessions will be conducted twice a year for a period of one day during the construction phase. The training program will emphasize on pollution prevention measures and techniques during both phases. The cost and schedule of this training program will be 1,000 USD per day including material preparation. Repeat workshops will be at 500 USD per day.

3.1.2 Reporting

Progress reporting on safeguards compliance will take place as indicated in the ESMF (CDR, 2018) and listed below:

- Contractor's environmental compliance reports to the Environmental Supervision Consultant on monthly basis;
- Environmental Supervision Consultant reviews and approves the contractor reports and submits to the PIU at the CDR Roads and Transport Department on monthly basis
- PIU environmental/social progress reports to the WB, on a quarterly basis.

3.1.3 Documentation and Reporting

During the maintenance phase, the Supervising Consultant shall submit a monthly report about the monitoring activities to various stakeholders including the CDR and the municipalities. These reports shall be made readily available or accessible to the public upon submittal. The content of a typical report should mirror the indicators of the mitigation plan with proper documentation with photos and actions taken in the event of accidents, concerns or complaints.

3.1.4 Guidelines for Health and Safety Plan during maintenance

During maintenance, the contractor shall abide by the CDR Safety, Health, and Environmental Regulations for Construction Projects as well as the WBG Environmental Health and Safety General Guidelines.

4 CONSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHANISM

4.1 Public Consultation

A public consultation meeting was conducted in 07/06/2022, Tuesday on at the Federation of Municipalities in the Bcharre Caza in Diman. The number of attendees was 9 with 1 female which included 5 heads of municipalities in the Bcharre Caza, 2 deputies, the Secretary of Union Municipalities of Bcharri, and Kaemkam Bcharri (Mrs. Rouba Chafchak). The complete attendance list is presented in Annex E. An online public consolation was held on February 23, 2022 with a number of NGOs operating mainly at the North of Lebanon Governance. Many NGOs were invited by few attended the meeting on Google Team (list is presented in Annex F).

Figure 4-1 Pubic participation session with Bcharre stakeholders

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 & June 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.

The main objectives and points discussed were as follows:

- There will be maintenance of the main roads and then depending on the intensity of the work and the budget, the secondary roads will undergo maintenance.
- Jobs will be provided to the local community and to the Syrian when needed

- Taking into consideration the climate and weather conditions during the maintenance works
- Protecting the environment, having a solid environmental management plan and to achieve sustainability
- The main laws and decisions followed were discussed
- The description of the surrounding environment and its baseline conditions
- The main mitigation measures that will applied during the works

The main issues raised by the attendees were as follows.

- The concerned municipalities want to see the roads design maps to provide their opinion on the proposed maintenance elements. It was agreed that this can be accommodated in subsequent meetings upon the request of the Federation either with the Consultant's Engineer or with the Contractor prior to initiation of construction activities. The attendees also stated that they will contact the CDR to propose other roads they think also need maintenance
- Enforcing construction schedule in a timely fashion.
- Public concerns should be respected during project execution.
- Using construction material that is of good quality and that does not deteriorate rapidly, as per the agreed terms of reference.
- Contractor to give priority employment to local people from the towns where the roads maintenance is taking place.
- Employment opportunities were discussed for both Lebanese and Syrian workers. The latter contributes significantly in the construction sector throughout Lebanon including the Bcharre District. Besides private entities, the municipalities are resorting to Syrian labor in this sector in particular. There appears to be a clear split in job types between local communities. The delineation line is between skilled jobs (mainly taken by the Lebanese workforce) and unskilled labor (filled primarily by Syrian workers). This split has resulted in a control of potential tensions or conflict between the communities.

No disputable issues were raised from the NGO's side on the project components, however; all discussion was related to the type of works, the funder, the duration and the executer of the project. All requested explanation were tackled as the presenter mentioned that this project is WB funded project and it is part of REP that is already executing a rehabilitation activates, will extend for two years and can be extendable depending on the funds availability, and the contractor is not yet selected waiting for the tendering procedure to completed.

4.2 Grievance Redress Mechanism

4.2.1 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 PIU. 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 Bcharre Caza, before commencement of project implementation. Moreover, the information on how to access the GRM should be available on CDR website.

As well, the contract will have to coordinate with the relevant municipalities prior to the works commencement to disseminate the availability of a GRM to the public and affected communities. The social expert of the contractor is responsible for addressing and explaining the grievances arising from to the municipality officials and the surrounding communities. The experts will make sure to clarify that in the occurrence of any Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) (SEA/SH) complaints, these will be immediately reported to the CDR who will in turn report to the World Bank.

The GRM levels of the project are the following:

- Level 1: If any person has any complaint, concern or suggestion regarding the project implementation, he or she can lodge an oral or written grievance through e-mail (GRM.REP@cdr.gov.lb), phone call or text message (01980096 ext:317), or website link (http://www.cdr.gov.lb/study/RoadsEmp/RoadsEmp.htm) to the site engineer or manager of the roads to be maintained in Bcharre Caza. In case an oral complaint is made, it should be written on paper by the receiving unit. The above issue will be resolved within a maximum duration of one week.
- Level 2: If the person is not satisfied with the action of the site manager's Office, he or she can bring the complaint to the attention of the Environmental and Social Specialist of the PIU for the project through e-mail (rstephan@cdr.gov.lb), phone call or text message (01980096 ext.: 317), or website link (http://www.cdr.gov.lb/study/RoadsEmp/RoadsEmp.htm). The issue shall be resolved within a maximum of two weeks.
- Level 3: If the person is not satisfied with the decision of the Environmental and Social Specialist of PMU, he or she can bring the complaint to the attention of the PMU Director's Office through e-mail (elieh@cdr.gov.lb), phone call or text message (01980096 ext:159), or website link (http://www.cdr.gov.lb/study/RoadsEmp/RoadsEmp.htm). Once the PIU Director receives the complaint, it needs to be resolved within a maximum of two weeks.

Meanwhile, it is recommended that the aggrieved party is consulted and be informed of the course of action being taken, and when a result may be expected.

Moreover, reporting of the complaints to the PIU should be done regularly. 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. The report should also inform the PIU of complaints that could not be resolved at the lower levels and are being elevated to the PIU Director's attention. The PIU aggregates information received into a status report each quarter, indicating the number and subject of complaints. The quarterly status report also provides up-to-date information on the number and subject of complaints that have been resolved, and the manner in which they have been resolved. This information will be shared with the Bank.

The Complaints Register form (refer to Annex F) includes the following:

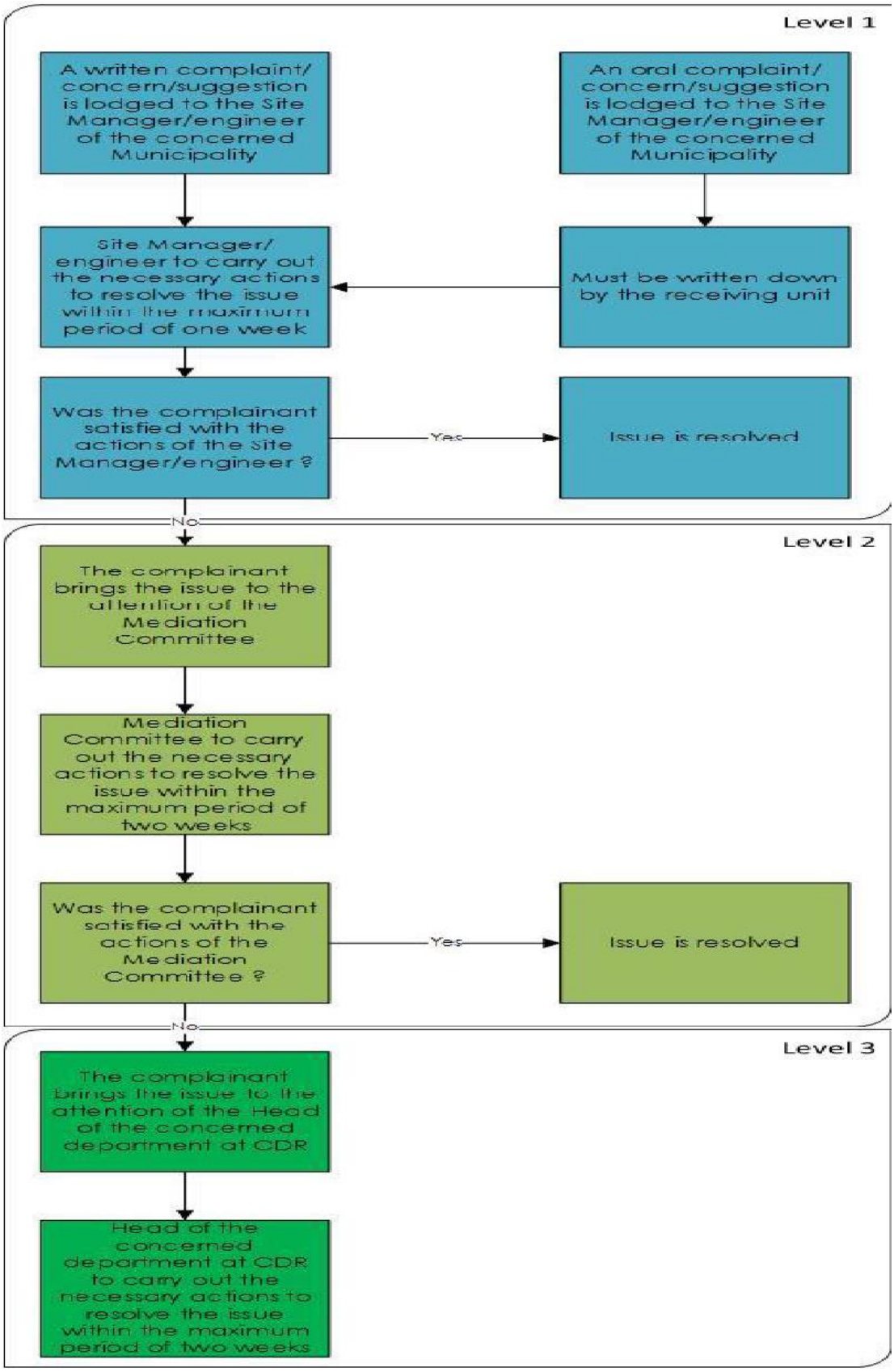
i) details and nature of the complaint
ii) the complainant's name and their contact details
iii) date
iv) Corrective actions taken in response to the complaint.

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.
A detailed flowchart describing the process of grievance starting form reception of grievance to implementation of corrective measures is shown in Figure 8-2.

4.2.2 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 week. It also follows the Complaints Register form (refer to Annex F).

Figure 4-2 Typical grievance redresses mechanism for the REP



Source: CDR, 2018

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ANNEX A - PROJECT DESCRIPTION

1. Material and Equipment

The following are the types of construction equipment which may be used. Other equipment may be added as needed by the site activities.

Table 1-2 Materials and equipment to be used during maintenance

Material	***Equipment***
Aggregates for concrete, base and asphalt mix	Compressors and excavators
Ordinary Portland cement	Tractor
Sulphate-resisting cement	Motor blade grader
60-70 pen and liquid asphalt	Generators
Steel reinforcement	Crane mobiles
Timber	Dumper
Manhole frames	Lorry
RC pipes	Water sprayer and asphalt sprayer
Agricultural soil and grass seed	Concrete mixer and steel roller
	Portable pump and soil compactor

The Contractor will not install on-site any plants for asphalt and concrete batch and will be getting his required quantities from already existing licensed plants located near the maintenance activity.

2. Site Staffing

At this stage, the final number of workers needed for the REP in Caza of Bcharre is based on estimation since the total volume of each activity as per the bill of quantities of the tender documents is not prepared yet by the awarded Contractor. Therefore, it is estimated that the maintenance works would require the workforce of 10 to 20 laborers.

3. Site Facilities

The Project site will not include on-site facilities such as site offices for Engineers and for the Contractor, laborers camps, lodging on site, containers, power generators and repair garages.

The work implementation will also require unskilled workers (laborers) needed to perform earthworks on-site. The Contractor will be encouraged to hire laborers from the local community living in the Project area. During working hours, laborers will be entitled with a one-hour break on-site. Usually, every laborer brings from home his own food and drinking water. The on-site rest point will be decided by the Contractor at the time of works.

The Contractor will have to service the on-site staff with portable cabin toilet. The porta cabin will be mobile, and its placement depends on the length of the work zone. Accordingly, the Contractor will have to move it based on the progress of maintenance works. The Contractor should link the porta cabin toilet to the existing wastewater network. In case the network is not available within the work zone, the Contractor will need to link it to a polyethylene storage tank and the Supervising Consultant shall inspect it on a regular basis and ensure emptying the tank when filled into the nearest wastewater network.

For vehicles and equipment, the Contractor will have to rent a land within the Project area. This land should be fenced and used for parking purpose only. The Contractor shall not perform any repair on site and is obliged to execute vehicles and equipment maintenance in a repair shop preferably located within the Project area.

4. Equipment used and their technical environmental specifications

XA(H,V,T)S 106-186 Deutz
Oil-injected rotary screw compressors

The XA(H,V,T)S 106-186 range of portable air compressors from Atlas Copco

All compressors are manufactured in accordance with Atlas Copco's Quality and Environment Management System. This system complies fully with ISO 9001 and ISO 14001. All Atlas Copco compressors are tested to perform under the most demanding conditions.

Features	Benefits
Full compliance with 2000/14/EC, the latest European Outdoor Noise Directive	Units can be operated in the vicinity of hospitals, schools, residential areas and even at night and comply with international legislation
Compliant with exhaust emission standards 97/68/EC step II (Europe) & EPA Tier II (U.S.)	Meets the strictest environmental requirements

Technical data

Compressor data

Type	Actual free air delivery (1)	Normal effective working pressure	Compressor oil system capacity	Sound power level (2)	Sound pressure level (3)	Maximum ambient temperature	Air outlet valves
	l/s	bar(e)	l	dB(A)		°C	
XAS 126 altitude	**128**	**7**	**14.5**	**101**	**73**	**50**	**1x11/2" and 3x3/4"**
XA(S) 136	135	7	14.5	101	73	50	1x11/2" and 3x3/4"
XA(S) 136 DdG	103	7	14.5	101	73	50	1x11/2" and 3x3/4"

Type	Actual free air delivery (1)	Normal effective working pressure	Compressor oil system capacity	Sound power level (2)	Sound pressure level (3)	Maximum ambient temperature	Air outlet valves
	l/s	bar(e)	l	dB(A)		°C	
XA(S) 186	185	7	24	101	73	50	1x11/2" and 3x3/4"
XATS 116	113	10.3	14.5	101	73	50	1x11/2" and 3x3/4"
XATS 156	166	10.3	24	100	72	50	1x11/2"and 3x3/4"
XAHS 106	101	12	14.5	101	73	50	1x11/2" and 3x3/4"
XAHS 146	141	12	24	100	72	50	1x11/2" and 3x3/4"
XAHS 186	175	12	24	101	73	45	1x11/2" and 3x3/4"
XAVS 136	133	14	24	100	72	50	1x11/2" and 3x3/4"

(1) According to ISO 1217 edition 3 1996 annex D
(2) According to 2000/14 EC, guaranteed sound power level
(3) According to ISO 2151 from 7 m

Bobcat S450

Environmental Specifications

Operator LpA(98/37 & 474-1) 87 dB(A)
Noise level LWA(EU Directive 2000/14/EC) 101 dB(A)
Whole body vibration (ISO 2631–1) High speed 1.29 ms-2
Whole body vibration uncertainty 0.52 ms-2
Hand-arm vibration (ISO 5349–1) High speed 1.73 ms-2

ANNEX B: BASELINE ENVIRONMENTAL AND SOCIAL DATA

1. Roads Photos

Figure 1-1 Steep slopes along Bcharre Caza Roads

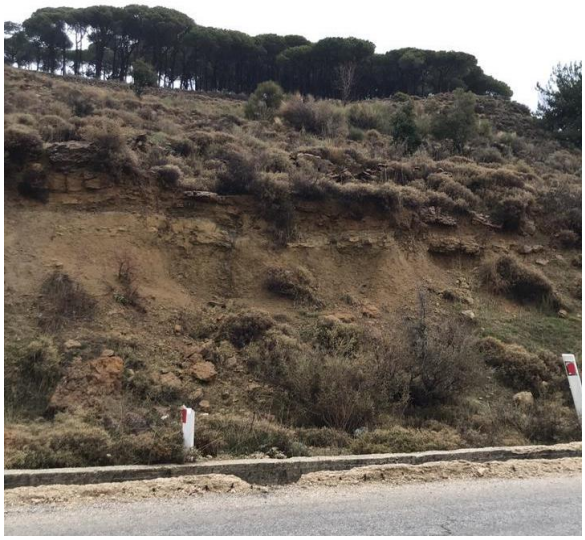


Figure 1-2 Faults and Erosion Risks

Figure 1-3. Typical vegetation along the first part of Road 1

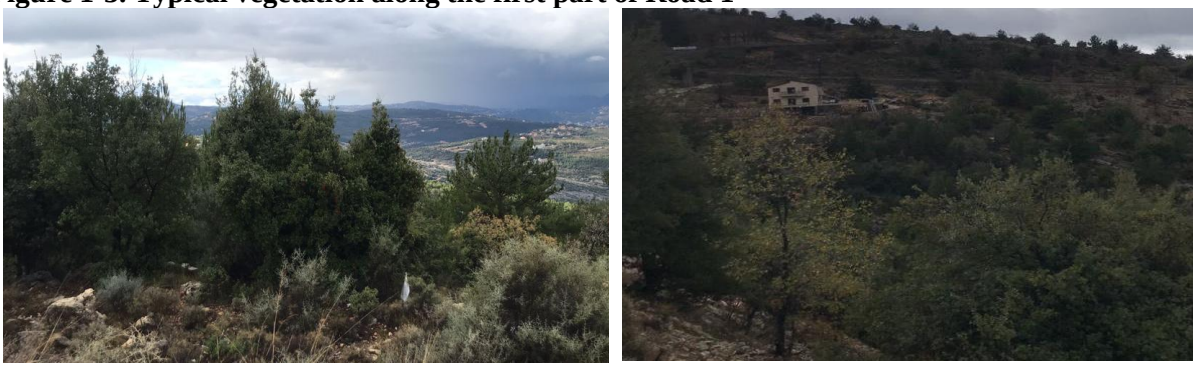


Figure 1-4. Typical vegetation along the first part of Road 2

Figure 1-5 Schools near the primary road 03

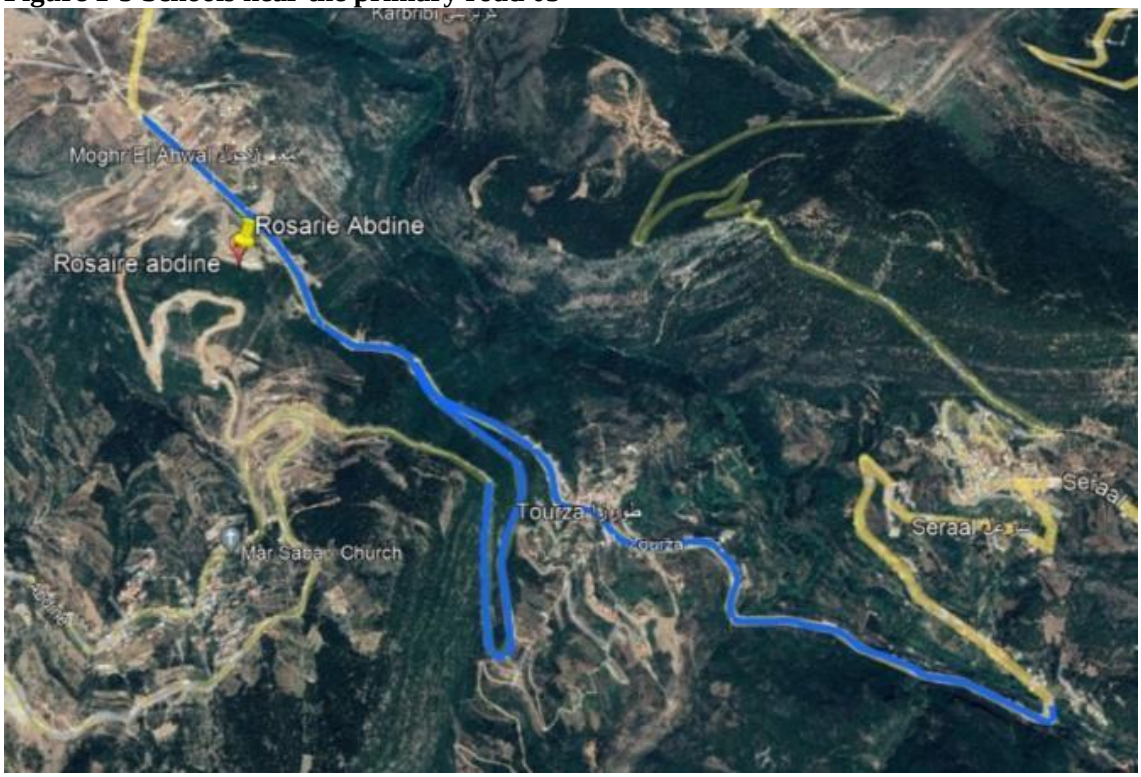


Figure 1-6 Schools near the primary road 02

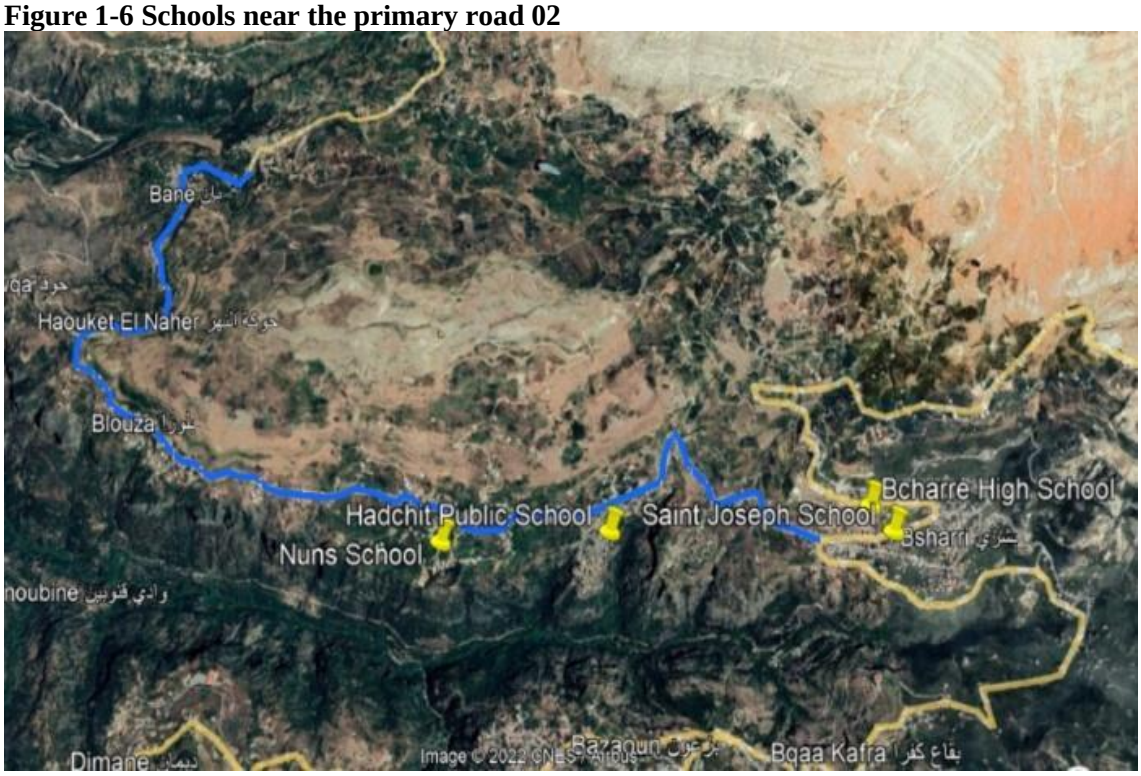
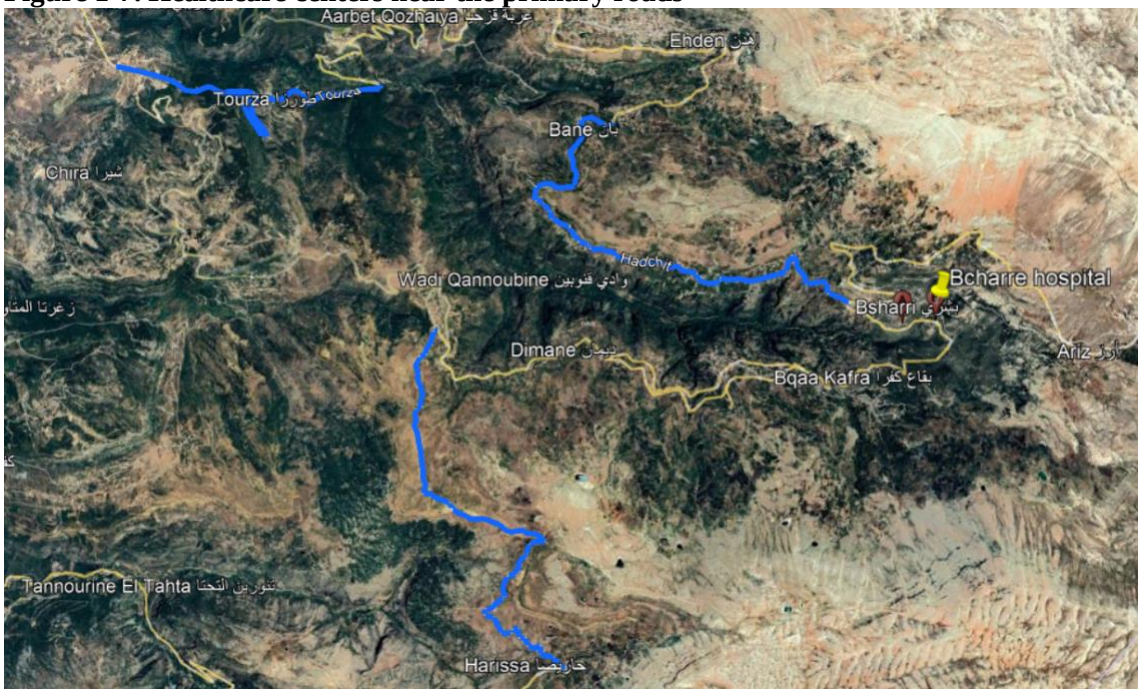


Figure 1-7. Healthcare centers near the primary roads



2. Roads Maps

Figure 2-1 Topography Map of the Bcharre District

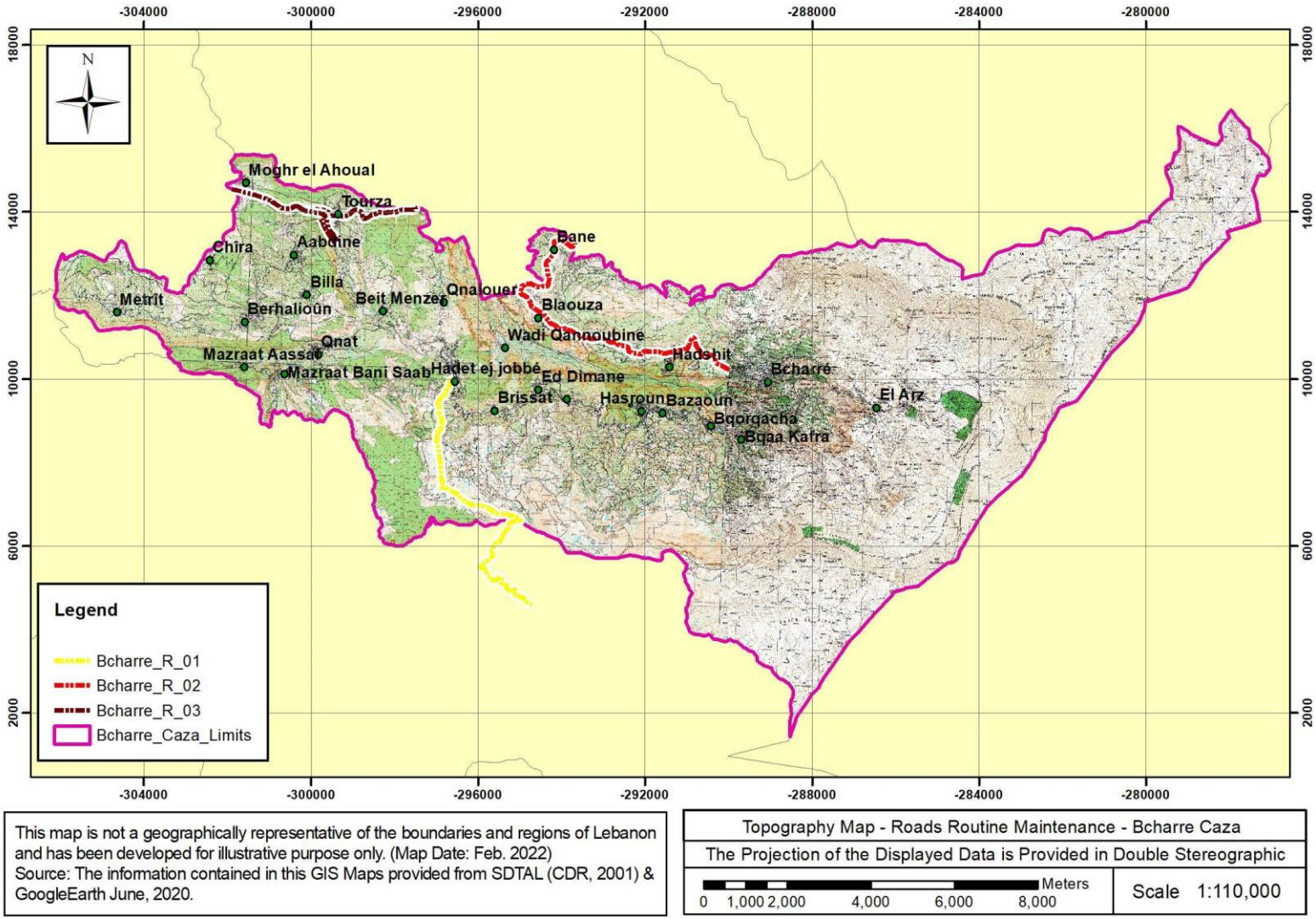
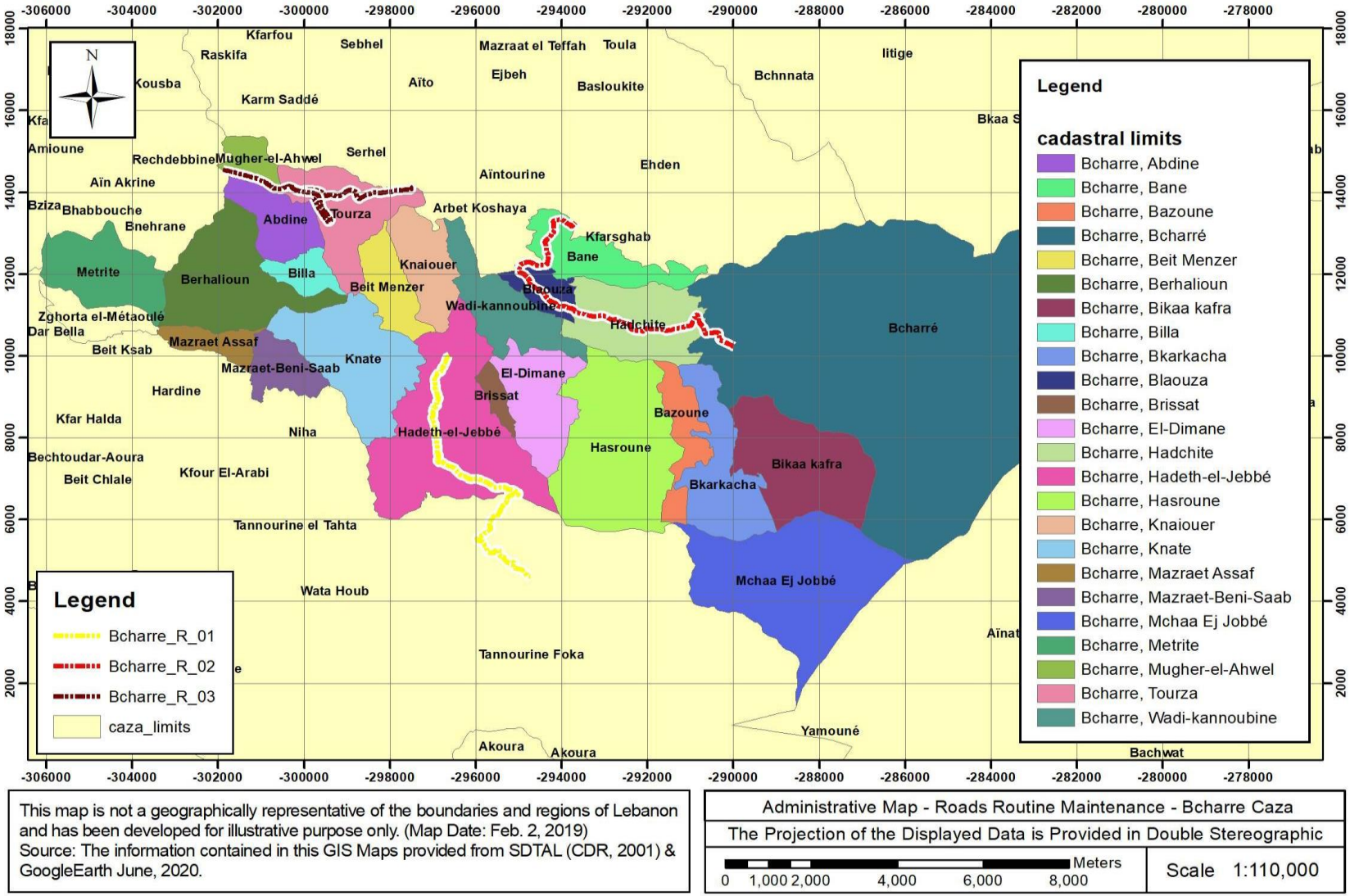


Figure 2-2 Administrative Map of the Bcharre District



This map is not a geographically representative of the boundaries and regions of Lebanon and has been developed for illustrative purpose only. (Map Date: Feb. 2, 2019)
Source: The information contained in this GIS Maps provided from SDTAL (CDR, 2001) & GoogleEarth June, 2020.

Administrative Map - Roads Routine Maintenance - Bcharre Caza
The Projection of the Displayed Data is Provided in Double Stereographic
Meters
0 1,000 2,000 4,000 6,000 8,000
Scale 1:110,000

Figure 2-3. Geological map of the Bcharre district

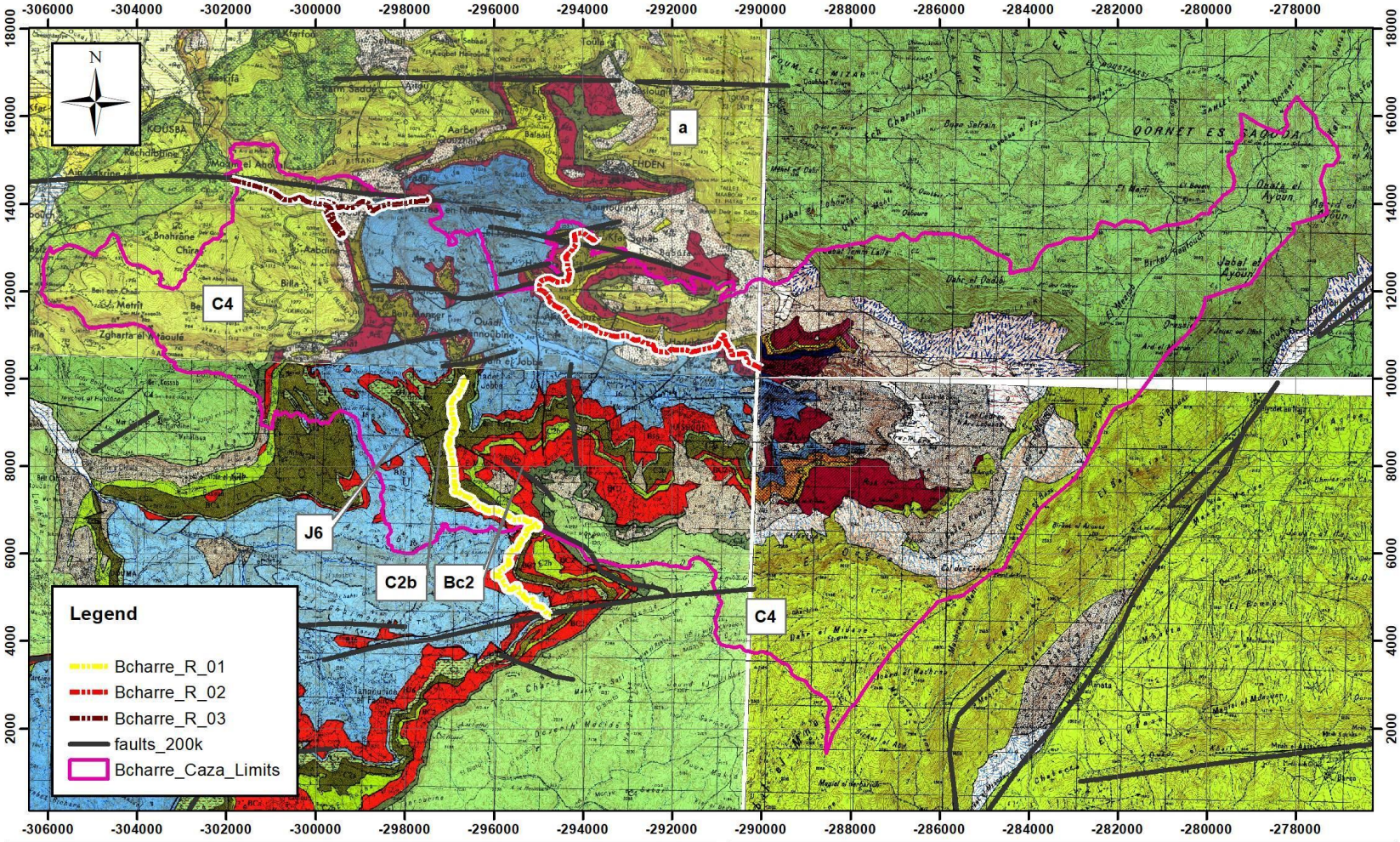


Figure 2-4. Hydrology and Hydrogeology of Bcharre district

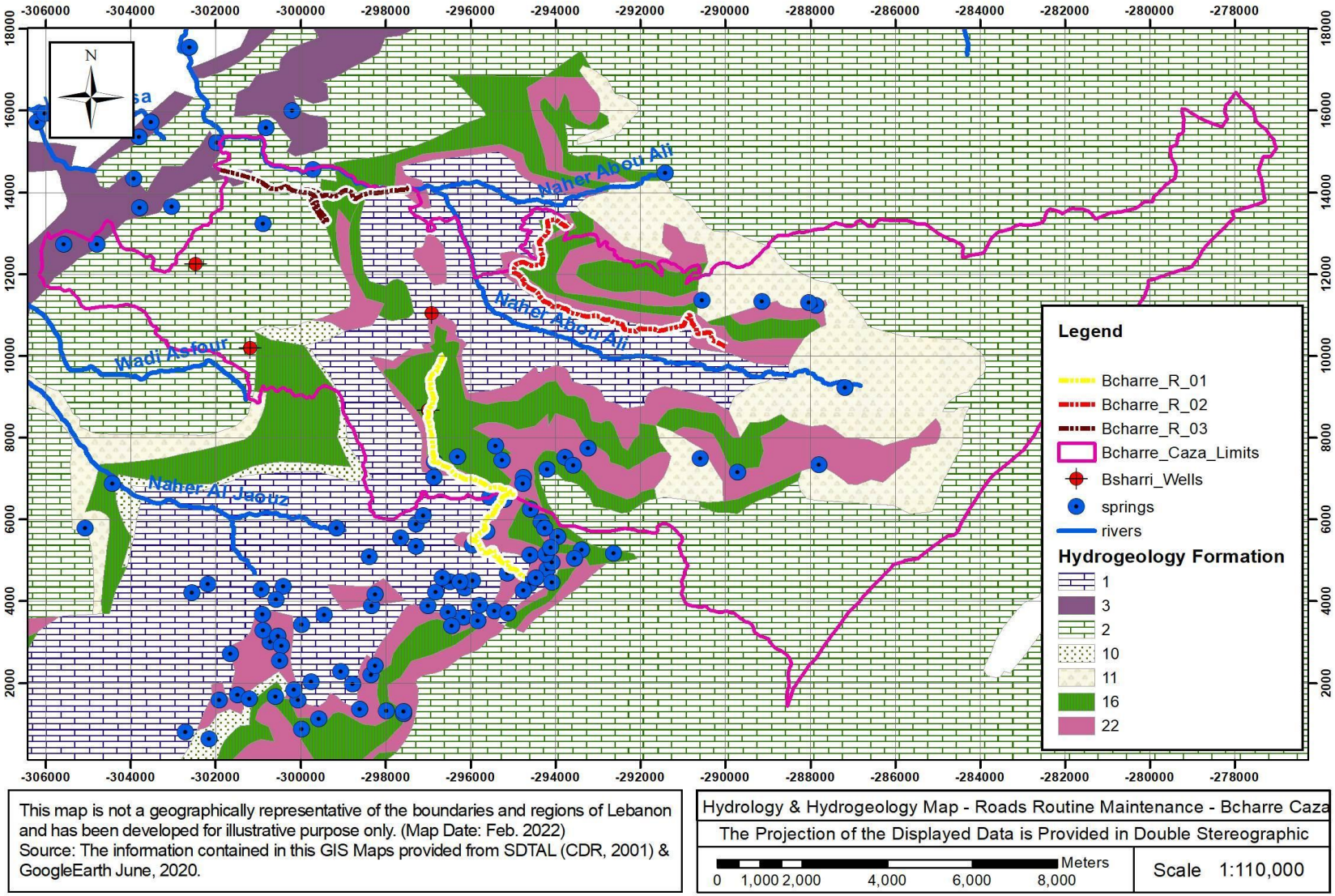


Figure 2-5. Land use / Land Cover of Bcharre district

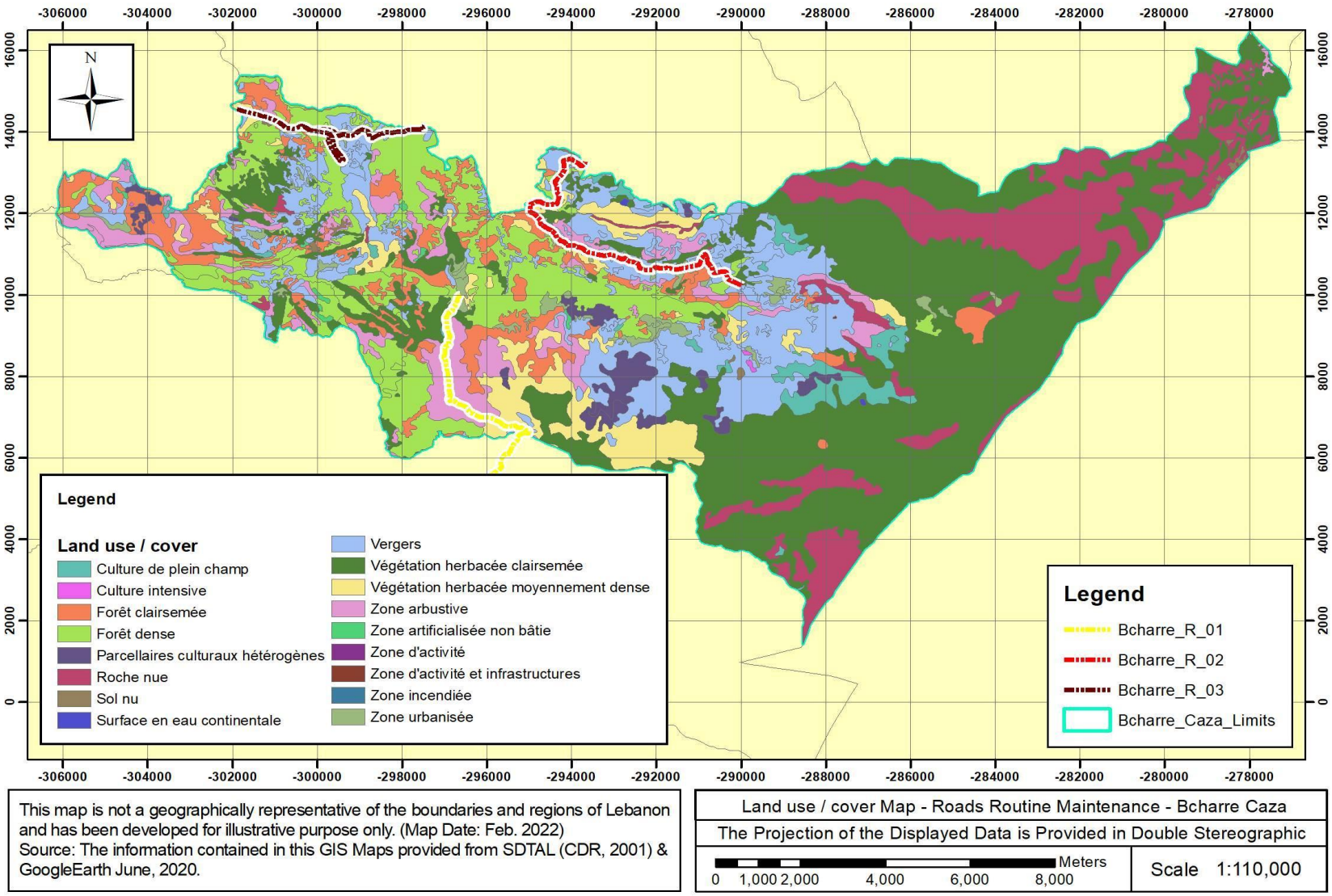
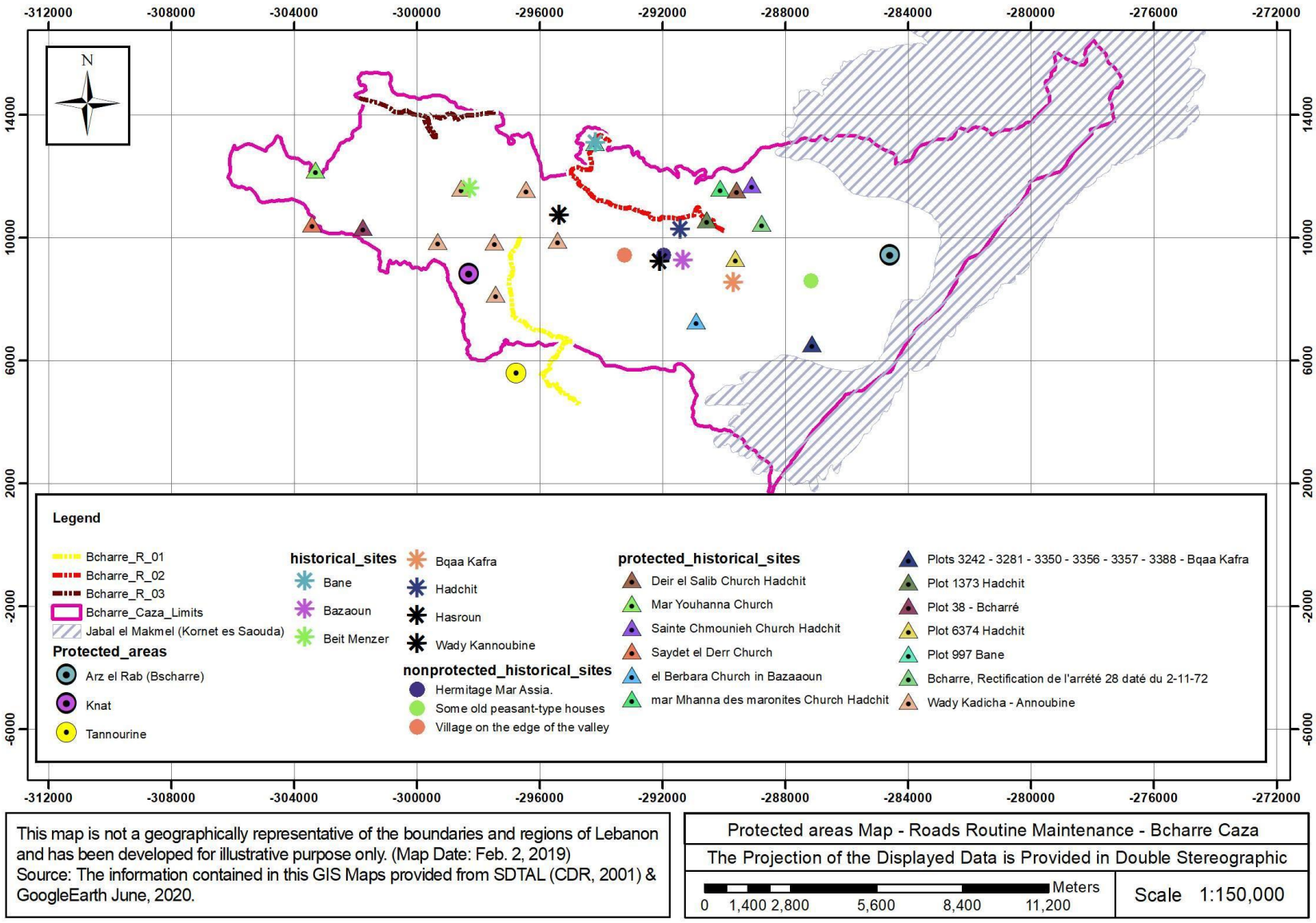


Figure 2-6 Protected Areas in Bcharre District



3. Geology Description

Table 3-1 Main lithology and formations crossed by proposed roads

Road	Lithology	Formation
Bcharre Caza Roads	Limestone Jurassic (Kesrouane) J4 Sandy limestone, Limestone, Marl	Middle Cretaceous Abeih, Mdairej, Hemmana (C2a,C2b,C3)
	Limestone Basalt, Limestone, Sandy Limestone	Cenomanian Sannine (C4) Upper Jurassic Bhannes, Bikfaya,Salima (J5,J6,J7)
	Sandstone Basalts Limestone Limestone	Chouf sanstone (C1) Pliocene Basalts (P) Juirassic (Kesrouane) (J4) Cenomanian Sannine (C4)

4. Hydrology Description

Table 4-1 Description of the hydrogeological classes

Geology Class	Groundwater Sheets	Permeability	LITHOLOGIE FACIES	AGE	FLOWS OF the SOURCES I/sec.	PROBABLE INSTANTANE-OUS FLOWS OF THE WORKS I/sec.	Transmissivity m^2/sec
1	**Karstic Formations Wide and rich watertable**	High	Massive limestones and dolomitic limestones with intercal. marls Thickness: >1000 m.	JURASSIQUE Bathonien-Portlandien	<100 100-1000 >1000	>100	$10^{-2} \leq T \leq 1$ Generally high
2		Water Table extended	Limestone regularly bedding Thickness: 800 à 1000 m	Limestone regularly bedding Thickness: 800 à 1000 m.	CRETACE Cénomanien-Turonien	>100	$10^{-2} \leq T \leq 1$ Generally high
10	**In Porous Formations**		Sandstone Thickness : 150 à 250 m.	CRETACE Grès de base	<10	<10	$10^{-5} \leq T \leq 10^{-4}$ Poor with weak
11			Detachments gravel slopes and mud flows. Thickness: variable	QUATERNAIRE	–	<10	Poor with weak
16	**AREAS GENERALLY WITHOUT WATER TABLE OR A VERY LOCAL**		Alternations of clay-sandy, limestone beds and marl Thickness: 300 to 400 m.	CRETACE Aptien_Albien	<5 (Sources intermittentes)	<5	Weak with very weak
17			Marl and marl-limestone thickness: 100 to 200 m.	CRETACE Sénonien et base de l'Eocène	-	Very weak	Very weak

	WATER TABLE	Basaltes Epaisseur: variable		CRETACE INF. MIOCENE PLIOCENE QUATERNAIRE	–	Very weak	Very weak

Table 4-2. Water quality in the Upper Abou Ali/ Qadisha Riv

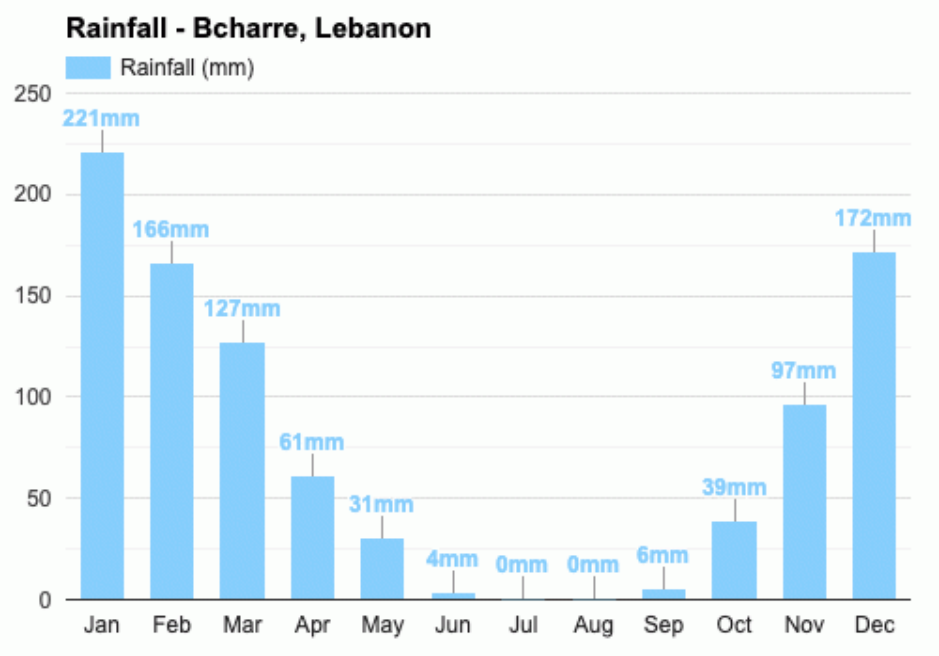
Parameter	*Concentration (mg/L)*	
	Dry season	*Wet season*
DO	6.1 - 8.1	8.0 – 8.6
BOD5	1.45 - 14.55	2.35 - 7.20
COD	112 - 163	13 - 19
Cl^-	18 - 35	12 – 27
NO_3^-N	2.4 – 3.4	1.8 – 3.2
NH3–N	0 – 0.14	0.15 – 0.54
$O–PO_4^{3-}$	0.03 – 0.17	0.10 – 0.25
SO_4^{2-}	6 - 19	2 - 18

Source: Massoud et al., 2006

[12] The river is known as Qadisha River in Bcharre and ends as Abou Ali River in Bcharre.

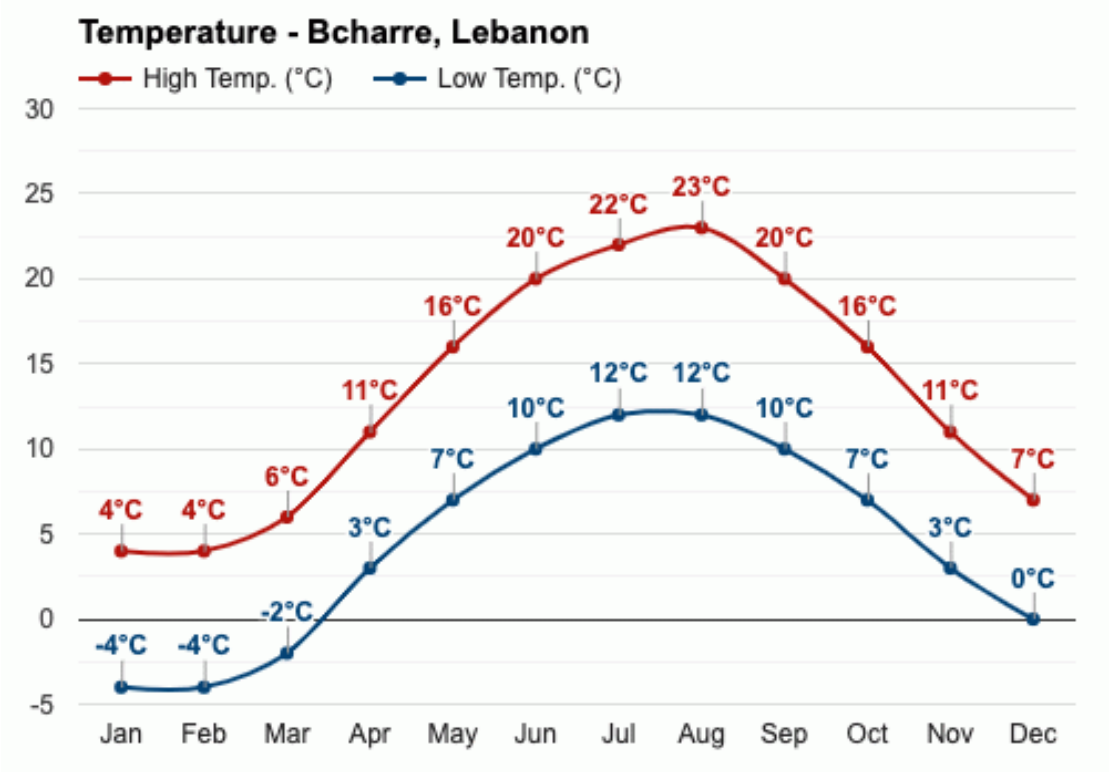
5. Climate and meteorology

Figure 5-1. Average monthly rainfall values for Bcharre district



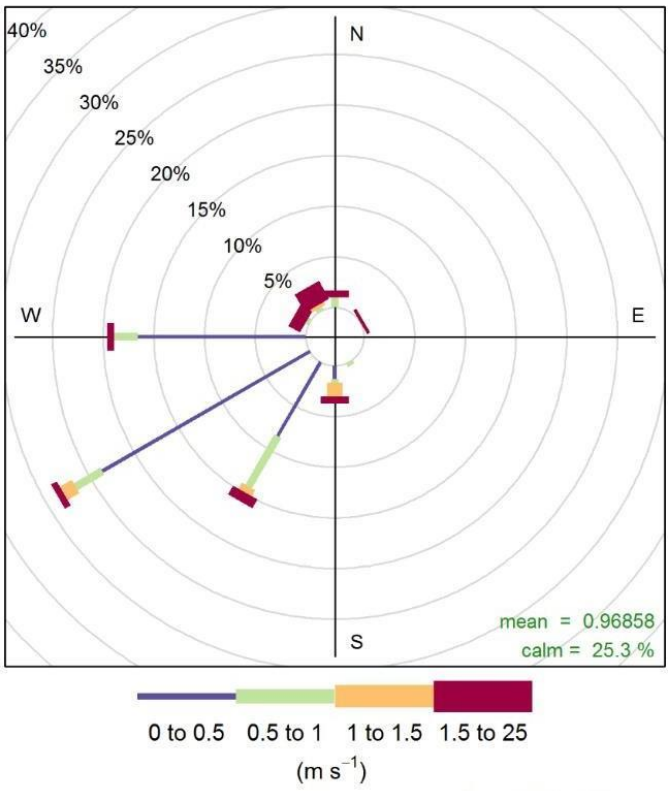
Source: https://www.weather-atlas.com/en/lebanon/bcharre-climate

Figure 5-2. Average monthly temperature values for Bcharre district



*Source: https://*www.weather-atlas.com/en/lebanon/bcharre-climate

Figure 5-3. Wind speed and wind direction from the Bcharre weather station for the year 2018



6. Ambient air

Figure 6-1. Air quality cells as per the JICA (2018)

Pollutant	*Cell 4*	*Cell 5*	*standards (MOE Decision 52/1)*
$PM_{2.5}$	16.6	14.8	80 µg/m^3
PM_{10}	18.5	17.1	120 µg/m^3
CO	232.7	212.5	10,000 µg/m^3
SO_2	13.5	10.6	80 µg/m^3
NO_2	17.6	13.2	100 µg/m^3
O_3	78.9	81.6	100 µg/m^3

Table 6-1 Average annual ambient concentrations of air pollutants in the Bcharre district

Annual average concentration (µg/m^3) *National ambient air quality*

Source: MoE, 2018

Impact Assessment Methodology and Methodology for estimating impact on air quality

Impact assessment Methodology

The process of impact assessment is undertaken taking into consideration direct, indirect, planned or unplanned (accidental) impacts during the Project's construction (maintenance) and operation phases. Identified potential impacts are assessed for overall significance based on consequence and likelihood ranking where the impact significance is expressed as the product of the consequence and likelihood of occurrence of the activity as outlined below.

Significance = Consequence x Likelihood

Where "Consequence" is the resultant effect (positive or negative) of an activity's interaction with the legal, natural and/or socio-economic environments. "Likelihood" is the possibility that an impact will occur.

The assignment of the level of consequence and potential likelihood depends on the professional experience and judgment of the study team. This judgement followed the consequence categories defined in Table 5-1. The potential overall consequence is then combined with the "Likelihood" to give the impact significance as presented in Table 5-2, which illustrates the likelihood scores and the resulting significance based on consequence-likelihood interaction.

Consequence scores

Consequence Score	*From Planned Activities*	*From Unplanned/ Accidental Activities*
5 (Severe)	Severe environmental damage or severe nuisance extending over a large area and continuous emission or permanent change over more than 5 years. Likely major breach in compliance resulting in prosecution. Stakeholders concern is triggered on an international level.	Certain (event likely to occur more than once on the facility)
4 (High)	Continuous emission or permanent change over less than 5 years leading to a major impact. Possible major regulatory noncompliance. Stakeholders concern is triggered on a national level.	Possible (could occur within the lifetime of the development)
3 (Medium)	Regular over short-term (less than 3 years) or intermittent over long-term (more than 3 years) leading to repeated breaches of statuary limit. Spontaneous recovery of limited damage within one year. Possible regulatory noncompliance. Stakeholders concern is triggered on a regional level.	Unlikely (event could occur within the life of 10 similar facilities, has occurred at similar facilities)
2 (Low)	Minor magnitude effect on the environment but no permanent effect. Regulatory terms or corporate policy set defined conditions. Stakeholders concern is triggered on a local level.	Remote (similar event has occurred somewhere with similar projects but not likely to occur with current practices and procedures)
1 (Negligible)	Local environmental damage within the fence and within systems with negligible severity. No specific statutory control. Stakeholders concern is triggered on an individual level.	Extremely remote (has never occurred within similar projects but theoretically possibly)

Consequence Score	*From Planned Activities*	*From Unplanned/ Accidental Activities*
0 (None)	No impact.	-
+ *(Positive)*	Beneficial impact that enhances the environment. No public interest or improves aspect of community importance.	-

Significance categories based on consequence-likelihood interaction

Significance = Consequence x Likelihood							
	Likelihood						
	5	*4*	*3*	*2*	*1*	*0*	
Consequence	*Certain*	*Possible*	*Likely*	*Unlikely*	*Extremely Remote*	*Will Not Occur*	*Significance*
5	25	20	15	10	5	0	Severe
4	20	16	12	8	4	0	Major
3	15	12	9	6	3	0	Moderate
2	10	8	6	4	2	0	Minor
1	5	4	3	2	1	0	Negligible
0	0	0	0	0	0	0	No Impact
+							Positive Impact

Methodology for estimating impact on air quality

Maintenance phase

Heavy construction is a source of dust emissions that may have substantial temporary impact on local air quality. Road construction is an example of a construction activity with high emissions potential. Emissions during the construction of a road in general, and the REP in particular, are a function of the excavation scheme, and the machinery used on-site. Emissions will consist primarily of particulate dust matter released as a result of earth removal activities, and to a lesser extent of emissions from the on-site usage of heavy construction equipment. Dust emissions often vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing meteorological conditions. A large portion of the emissions results from equipment traffic over temporary roads at the construction site. For this phase, it is expected that negative impacts on air quality will occur in and around the immediate vicinity of the site under construction. In order to quantify this impact, the total construction emissions and the corresponding ambient particulate matter concentration were estimated as described below.

Estimation of the total construction emissions using the area wide method.

In this method, the quantity of particulate matter emissions from maintenance operations is considered proportional to the area being worked and to the level of construction activity. Emissions from heavy

construction operations are positively correlated with the silt content of the soil (particles with a diameter <75 micrometers [µm]), as well as with the speed and weight of the average vehicle, and negatively correlated with the soil moisture content. An approximate aerial emission factor (EF) for the construction activities that is used in the estimation of total emissions (USEPA, 1995) is:

EF = 0.3 Kg/m^2/month of activity[1]

Assuming the road maintenance will take place in various spots and that a 10 m road section will be maintained per spot, the temporal emission factor for the total construction area of 10-20 m^2 and a duration of 4 days of activity, considering 6 working days/month and 8 hours/day of work is:

S = 0.3 × (10-20) / (0.13 x 6 × 8 × 3600)
S = 0.000133- 0.000267 Kg/s = 133,000-267,000 µg/s

Note that a better method is to estimate emissions for a particular site, the maintenance process be broken down into component operations, each involving traffic and material movement. However, due to the random nature of activities, and lack of specific design data, the extent of PM impact may differ from the quantified emission using this method.

7. Land use / Land cover

Table 7-1 summarizes the main land use land cover within Bcharre Caza

8. Biological Environment

Figure 8-1 Mammal species potentially found in Bcharre Caza and their threat status

Species	Common name	Places found	Status
Apodemus mystacinus mystacinus	Field mouse	Cedars	No apparent danger
Apodemus sylvaticus	Common field mouse	Bcharre	No apparent danger
Cricetulus migratorius cinerascens	Grey hamster	Bcharre	No apparent danger
Crocidura suaveolens	Lesser white-toothed shrew	Bcharre, Cedars	Rare
Eliomys melanurus	Black-tailed dormouse	Bcharre	No apparent danger
Hyaena hyaena syriaca	Striped hyaena	Zghorta	Vulnerable
Martes foina syriaca	Stone Martin	Hadath el Joubbe	Vulnerable
Microtus nivalis hermonis	Snow vole	Bcharre	No apparent danger
Microtus guentheri guentheri	Levant vole	Bcharre	Growing
Sciurus anomalus syriacus	Squirrel	Bcharre, Ehden	Very close to extinction
Sus scrofa lybicus	Wild boar	Hadath El Jobbe	Growing
Canis lupus pallipes	Wolf		Very close to extinction
Canis aureus syriacus	Jackal	Besharreh	Growing
Vulpes vulpes palaestina	Red fox	Besharreh	No apparent danger

Source: PADECO ltd., 2004a

[1] The value is most applicable to construction operations with (1) medium activity level, (2) moderate silt contents, and (3) semiarid climate.

9. Socioeconomic Environment

Table 9-1. Population size in the Bcharre Caza in 2016

1. Village	*Population*		*Number of households*
	Winter	*Summer*	
Abdine	720	1029	206
Bane	284	709	142
Barhalioune	845	1207	241
Bazoune	348	1159	232
Becharre/ Cedars	10814	15448	3090
Beit Mounzir	**149**	**372**	**74**
Bella	56	282	56
Blaouza	377	1258	252
Bqakafra	739	1847	369
Bqorqacha	386	1287	257
Brissate	59	295	59
Dimane	198	990	198
Hadath El Jebbe	726	2421	484
Hadchite	3269	4670	934
Hassroune	1120	3732	746
Mazraat Assaf	**22**	**102**	**22**
Mazraar Bani Saab	**71**	**356**	**71**
Moghr el Ahwal	294	420	84
Qnat	**260**	**866**	**173**
Qnaywer	54	269	54
Tourza	316	1054	211
Wadi Qannoubine	**28**	**277**	**55**
Syrian refugees	2400	2400	
Total	*21135*	*40050*	*8010*

(Federation of Municipalities in Bcharre Caza, 2019)

ANNEX C ESMP CHECKLISTS

Table C1 ESMP Risk Classification Criteria Checklist

Criteria	YES / NO	Description
Subproject is classified as Category A according to World Bank classification.	NO	The subproject is classified as Category B according to the Word Bank classification.
Subproject activities have significant adverse environmental or social impacts that are sensitive, diverse, or unprecedented.	NO	Not likely as the project is targeting slight construction activities.
Activities affect an area broader than the sites or facilities subject to physical works	NO	The project activities include only maintenance works therefore; this criterion may not be applicable.
Subproject will result in conversion/alteration of natural habitats	NO	As the selected alignments are already altered with existing roads and only requires maintenance, there should not be any new type alterations.
Generation of significant quantities of hazardous waste	NO	Depending on the type of activities and machinery used during maintenance, the hazardous wastes will be further evaluated during the field activities.
Will the sub-project trigger a new World Bank Policy other than OP4.01 and OP4.12?	NO	This policy is not part of the scope of work due to the estimated level of work.
Will the sub-project increase the footprint or includes new construction of roads?	NO	The project activities include only maintenance, are temporary and localized.
Subproject Project is Eligible to be financed under REP	**YES**	-

Checklist of Possible Environmental and Social Impacts of Projects

Table C2 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?		x	The project activities include only maintenance, are temporary and localized.
2.	Will the subproject involve significant land disturbance or site clearance?		x	

S No	ISSUES	YES	NO	Comments
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?		x	
B. Utilities and Facilities				
4.	Will the subproject require the setting up of ancillary production facilities?		x	Since the activities are only road maintenance, this issue is not addressed.
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)?		x	No accommodation will be available due to the Covid-19 restrictions.
C. Water and Soil Contamination				
6.	Will the subproject require large amounts of raw materials or construction materials?		x	The project activities should not require large quantities of raw or construction materials since maintenance activities that are limited will be conducted.
7.	Will the subproject generate large amounts of residual wastes, construction material waste or cause soil erosion?		x	But will depend on the type of works.
8.	Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?		x	This issue depends on the machinery or equipment used.
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?		x	Any contamination that may occur is not advisable and should be controlled in case a potential risk arises.
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?		x	Any risk of pollution that may occur is not advisable and should be controlled in case a potential risk arises.
11.	Will the subproject involve the use of chemicals or solvents?		x	The type of chemicals/solvents that may be used depend on the maintenance activity.
12.	Will the subproject lead to the destruction of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards?		x	The type of work will not lead these kinds of issues based on site fields.
13.	Will the subproject lead to the creation of stagnant water bodies in borrow pits, quarries, etc.,		x	The project activities include only maintenance, are temporary, therefore it

S No	ISSUES	YES	NO	Comments
	encouraging for mosquito breeding and other disease vectors?			is expected to cause such issues.
D. Noise and Air Pollution Hazardous Substances				
14.	Will the subproject increase the levels of harmful air emissions?	x		Air emissions are possible, but should be controlled.
15.	Will the subproject increase ambient noise levels?	x		An increase in noise levels is expected, but their effect should be minimized through the proper use of PPEs and silencers in the machines. However, their effect is not expected of great significance since the work activities are temporary.
16.	Will the subproject involve the storage, handling or transport of hazardous substances?		x	Yet this depends on the type of activities and machinery used during maintenance, the hazardous wastes will be further evaluated.
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)?		x	Based on the site visit, there will be no modifications or disturbances.
19.	Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?		x	Since the activities are only road maintenance, this issue will not be addressed.
20.	Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?		x	Since the activities are only road maintenance, this issue will not be addressed.
F. Destruction/Disruption of Land and Vegetation				
21.	Will the subproject lead to unplanned use of the infrastructure being developed?		x	Since the activities are only road maintenance, this issue will not be addressed.
22.	Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?		x	Since the activities are only road maintenance, this issue will not be addressed.
23.	Will the subproject lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?		x	Since the activities are only road maintenance,

S No	ISSUES	YES	NO	Comments
				this issue will not be addressed.
24.	Will the subproject lead to landslides, slumps, slips and other mass movements in road cuts?		x	Since the activities are only road maintenance, this issue will not be addressed.
25.	Will the subproject lead to erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains?		x	Since the activities are only road maintenance, this issue will not be addressed.
26.	Will the subproject lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?	x		Depending on the type of vehicles used during maintenance.
G. Cultural Property				
27.	Will the subproject have an impact on archaeological or historical sites, including historic urban areas?		x	Since the activities are only road maintenance, this issue will not be addressed.
28.	Will the subproject have an impact on religious monuments, structures and/or cemeteries?		x	Since the activities are only road maintenance, this issue will not be addressed.
29.	Have Chance Finds procedures been prepared for use in the subproject?		x	Based on the site visit, there will be no actual encounter of archeology or heritage. However, in case, during maintenance, antiquities were identified in the project site chance find procedures should be followed
H. Expropriation and Social Disturbance				
30.	Will the subproject involve land expropriation or demolition of existing structures?		x	No land expropriation and demolition is required.
31.	Will the subproject lead to induced settlements by workers and others causing social and economic disruption?		x	The level of proposed activities should not include such impact.
32.	Will the subproject lead to environmental and social disturbance by construction camps?		x	No construction camps are going to be constructed.
33.	Will the sub-project lead to physical displacement (title-holders, squatters, and vulnerable groups)?		x	Since the activities are only road maintenance, this issue will not be addressed.
34.	Will there be economic displacement?		x	Since the activities are only road maintenance,

S No	ISSUES	YES	NO	Comments
				this issue will not be addressed.
35.	Will there be loss of assets/infrastructure?			This issue will be difficult to assess as it depends on the required depth of excavations and the undeclared local infrastructure
36.	Will the sub-project impact livelihood of non-titled persons and vulnerable groups?		x	Since the activities are only road maintenance, this issue should not be addressed.

Table C3 Site Characteristics

S. No	ISSUES	YES	NO	Comments
1.	Is the subproject located in an area with designated natural reserves?	x		Bcharre has the Forest of the Cedars of God and Qadisha Valley. However, the maintenance of roads will not affect them.
2.	Is the subproject located in an area with unique natural features?	x		Bcharre has the Forest of the Cedars of God and Qadisha Valley along with a variety of trees. However, the maintenance of roads will not affect them.
3.	Is the subproject located in an area with endangered or conservation-worthy ecosystems, fauna or flora?	x		Bcharre has the Forest of the Cedars of God and Qadisha Valley along with a variety of trees. The area is rich in fauna and flora. However, the maintenance of roads will not affect them.
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?		x	-

S. No	ISSUES	YES	NO	Comments
5.	Is the subproject located in an area which would create a barrier for the movement of conservation-worthy wildlife or livestock?		x	The subproject will not affect wildlife or livestock, keeping in mind that it is also temporary.
6.	Is the subproject located close to groundwater sources, surface water bodies, water courses or wetlands?		x	-
7.	Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?	x		The subproject will not affect the designated cultural properties, keeping in mind that it is also temporary and only maintenance will be performed.
8.	Is the subproject in an area with religious monuments, structures and/or cemeteries?	x		The subproject will not affect the religious monuments, keeping in mind that it is also temporary and only maintenance will be performed.
9.	Is the subproject in a polluted or contaminated area?		x	-
10.	Is the subproject located in an area of high visual and landscape quality?	x		The maintenance of roads will not affect the visual and landscape quality.
11.	Is the subproject located in an area susceptible to landslides or erosion?		x	-
12.	Is the subproject located in an area of seismic faults?		x	-
13.	Is the subproject located in a densely populated area?		x	-
14.	Is the subproject located on prime agricultural land?	x		It consists mainly on fruits. However, agriculture will not be influenced.
15.	Is the subproject located in an area of tourist importance?	x		Bcharre is known for its touristic activities. The maintenance activities are minimal and temporary so no issues will be arised.
16.	Is the subproject located near a waste dump?		x	-

S. No	ISSUES	YES	NO	Comments
17.	Does the subproject have access to potable water?	x		-
18.	Is the subproject located far (1-2 kms) from accessible roads?		x	The subproject involves the maintenance of the roads.
19.	Is the subproject located in an area with a wastewater network?		x	-
20.	Is the subproject located in the urban plan of the city?	x		-
21.	Is the subproject located outside the land use plan?		x	-

CONCLUSION

	High	Substantial	Moderate	Low
RISK CLASSIFICATION OF THE SUBPROJECT			x	

*****

ANNEX D. CODE OF CONDUCT

Contractor Code of Conduct Form

Code of Conduct - مدونة سلوك

مشروع الطرقات والعمالة – Roads & Employment Project
الممول من قبل البنك الدولي (القرض رقم ٨٧٠٥ – لبنان)، بإدارة وتنفيذ مجلس الانماء والإعمار لصالح وزارة الأشغال العامة والنقل

تعتبر مدونة السلوك هذه وثيقة ضرورية لحماية جميع العاملين في مشروع الطرقات والعمالة من جميع مظاهر العنف القائم على أسس اجتماعية، التنمر، سوء المعاملة، التحرش والاعتداء والاستغلال الجنسي وأي سلوك اجتماعي أخر يخلّ بحقوق الانسان، المجتمع المحلي والآداب العامة، بما في ذلك المعايير التالية:

١- التزام الاحترام والآداب العامة	• الالتزام بمعاملة النساء والرجال والشباب باحترام بغض النظر عن انتمائهم الديني، العرقي، الطائفي، اللغوي، التوجه السياسي، الاعاقة، الجنسية، الجندرة، الخ. • احترام موقع العمل وادوات العمل المشتركة: نظافة المكان، عدم التعدي على الممتلكات العامة المجاورة للأعمال، الخ.
٢- عدم استعمال العنف بشتى اشكاله	• العنف القائم على النوع الاجتماعي: أيّ فعل مؤذٍ يُرتكب ضدّ إرادة الشخص. وهو مبنيٌّ على الفروق بين الذكور والإناث التي يُعزى وجودها لأسباب اجتماعية. • العنف الجنسي: الاغتصاب، الاعتداء الجنسي، التحرش الجنس، الخ. • العنف الجسدي: الضرب، الصفع، الضرب المتكرر أو باستعمال أداة، الخ. • العنف العاطفي: الاستغلال النفسي، والابتزاز، الخ. • العنف الاقتصادي: الحرمان من الموارد، الحصول على أدوات العمل ، عدم الالتزام بالأجر المتفق عليه، الخ.
٣- التحرش والاعتداء والاستغلال الجنسي	الالتزام بالتصدي لأي شكل من أشكال التحرش أو التمييز أو التخويف أو الاستغلال أو الاعتداء الجنسي بما في ذلك التعليقات المهينة المتعلقة بالميل الجنسي، القدح بألقاب أو عبارات ذات دلالات جنسية، التحديق بطريقة ذات إيحاء جنسي، اللمس غير مرغوب فيه، القيام بحركات جنسية غير لائقة، تبادل الحكايات أو النكات الجنسية، توجيه رسائل ذات إيحاء جنسي بأي شكل من الأشكال، محاولة الاعتداء الجنسي أو ارتكابه، بما في ذلك الاغتصاب.

أنا الموقع أدناه، أقر بأني قرأت وتُلِيَ عَلَيَّ وفهمت وتلقيت الشرح والتدريب والمعلومات الكافية عن مدونة السلوك التابعة لمشروع الطرقات والعمالة. وأوافق على الامتثال للمعايير الواردة فيها وأعرف أن أي إجراء يتعارض مع مدونة السلوك هذه قد يؤدي إلى اتخاذ إجراء تأديبي وقد يؤثر على استمرارية عملي ضمن مشروع الطرقات والعمالة.

أسم وامضاء العامل	أسم وامضاء مسؤول الموقع (من قبل المتعهد)	أسم وامضاء المشرف على الاعمال (من قبل الاستشاري)
التاريخ:	التاريخ:	التاريخ:

☐ العامل يجيد القراءة، وقد دوّن اسمه وإمضاءه

☐ العامل لا يجيد القراءة، وقد تُلِيَت عليه مدونة السلوك وتمّ الامضاء نيابةً عنه من قبل الأخصائي الاجتماعي

ANNEX E: 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.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 F. PUBLIC PARTICIPATION

List of attendees

GEOflint

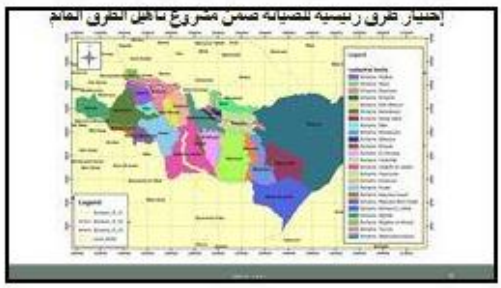
عنوان البريد	رقم الهاتف	المهنة	الاسم
حصروت	03 045 863	رئيس بلدية بقرقاشا	جورج يوسف الرحي
s'gmasih@hotmail.com حدث الجبة	03 217826	نائب رئيس بلدية حدث الجبة	سيمون عبد المسيح
nabilbounair@gmail.com عبدين	03/636233	رئيس بلدية عبدين	نبيل بو نصر
mazaa@mazan.ne	03/558800	رئيس الاتحاد	ايلي مخلوف
GERARDSEMAANY@Hotmail	03/326488	رئيس بلدية حصرون	جيرار السمعاني
zouzoulcd01@Hotmail.com	03/326633	نائب رئيس بلدية بشري	بولس الفخري
Carlosjishwar@gmail.com	03/623418	نائب رئيس بلدية حدشيت	كارلوس طوق
anomo_79@hotmail.com	03/512278	أمين سر ومحرر الاتحاد	أنطونيو سطيفيا

List of NGO attendees

Name	*First join*	*Last Leave*	*In-meeting*	*Role*
khalil zein	2/23/22, 11:01:56 AM	2/23/22, 11:41:05 AM	39m 8s	Role
Ghia Haddad (El)	2/23/22, 11:02:06 AM	2/23/22, 11:40:59 AM	38m 53s	Organizer
Palig Demirdjian (mouawad Foudation) (Guest)	2/23/22, 11:02:10 AM	2/23/22, 11:40:48 AM	38m 37s	Presenter
Rym Dada (Rotary) (Guest)	2/23/22, 11:02:11 AM	2/23/22, 11:38:10 AM	35m 59s	Presenter
Ziad Farah	2/23/22, 11:02:15 AM	2/23/22, 11:41:22 AM	39m 7s	Presenter
Marie-Jeanne (Kousba Al Ghad and Municipality of Kousba)	2/23/22, 11:02:16 AM	2/23/22, 11:40:50 AM	38m 33s	Presenter
TCH	2/23/22, 11:05:41 AM	2/23/22, 11:40:57 AM	35m 16s	Presenter
Rym Dada (Rotary) (Guest)	2/23/22, 11:37:40 AM	2/23/22, 11:40:48 AM	3m 7s	Presenter

PowerPoint Presentation

6/20/2022



1

6/20/2022


أهداف مشروع الطرق والعمالة


المكوّن الأول
المكوّن الثاني
المكوّن الثالث


أهداف الخطة الإدارة البيئية والإجتماعية


أهداف خطة الإدارة البيئية والإجتماعية


فهرس خطة الإدارة البيئية والإجتماعية
مقدمة
وصف مكونات المشروع
وصف البيئة المحيطة
خطة الإدارة البيئية


أطر السياسات والأطر القانونية والإدارية
قرار 52/1 (1996)
قرار 8/1 (2001)

2

6/20/2022


وصف البيئة المحيطة
وضع الضجيج


الأشغال المقترحة
مدة المشروع هي سنتين


التدابير التخفيفية
نوعية الهواء
نوعية المياه
المخلفات الصلبة


الآثار البيئية المحتملة


خطة الإدارة البيئية والإجتماعية
خطة الادارة البيئية تتضمن:
مراقبة نوعية المياه
مراقبة نوعية التربة
مراقبة نوعية الهواء
مراقبة الصحة والسلامة العامة


التدابير التخفيفية
حركة المرور
الصحة والسلامة المهنية
الضوضاء

3

6/20/2022

4

ANNEX G - COMPLAINTS REGISTER FORM

Name, phone and address of Complainant	Date of the complaint	Complaint issue and action taken	Corrective Action	Name of employer/ representative notified of complaint	Type of Complaint	Date of close out