

LEBANESE REPUBLIC COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION (CDR)

ROADS & EMPLOYMENT PROJECT LOAN NO. 8705-LB



ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN REPORT FOR

ROADS ROUTINE MAINTENANCE (HERMEL CAZA)

March 2024





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. 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 Hermel district.

PROJECT DESCRIPTION

The REP consists of the maintenance activities to be performed during the project, that 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. Routine Maintenance activities will be executed for a period of six months, for Hermel Caza, for Primary roads as priority and for Secondary roads where funds are available. This report will further study the Hermel Caza.

The land acquisition did not occur during the design of any road under study. In the Hermel district, two primary roads are proposed, whose details are elaborated within the ESMP. There will be no land acquisition in any stage of the project. Project works will only be in public domain.

During the execution of maintenance activities, roads will not be closed or shutdown. However, if there is any need for temporary diversion, traffic management will be prepared and the Contractor will secure the access and traffic movement via other alternative routes (if needed) and means in coordination with the related Municipality, to ensure that access to the communities during the maintenance works will not be closed. The duration of the project is 6 months. This duration will be for the maintenance of all the roads. 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 on a daily basis. 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 (OHS).

The topography shows the proposed road in the Hermel Caza:

Hermel Primary Road-01 (17.6 km): from Ras Al Assi (next to Qasr El Maalaka restaurant) to Charbine (Qoubaiyat-Qasr Road). The elevations range from 732 m to 995 m, respectively.

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 all Hermel roads are considered highly sensitive in terms of surface and groundwater vulnerability. In terms of the subsurface, the roads are situated on karsitifed formations that allow the infiltration of any liquid spilled on the surface due to their high permeability characteristics. This can lead to increased likelihood of groundwater contamination. In terms of surface water quality, the roads are in close proximity to Al Assi Perennial River.

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 Baalbek-Hermel, 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 127 mm. The average annual precipitation is 594 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 3° C) and the highest in August (average at 32.8° C). Thus, the impact of the climate on the roads and the traffic flow will be moderate to negligible, with no flash foods nor damage to roads infrastructure.

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.

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 socio-economical activities. The assessment showed that the studied roads are mainly bordered by commercial units (restaurants, gas stations, clothing stores, pharmacies etc.), scattered residencies, places of worship (mosques and churches), woodlot (riparian formations along the Assi river), schools, agricultural lands, and unproductive areas (vacant lands). In this context, the area does not provide an important habitat for a large variety of flora and fauna, because it is highly degraded due to human activities surrounding the roads.

Finally, a socio-economic assessment (desk study) was conducted in the project area to map the demographic, social, and economic baseline conditions at the level of Hermel Caza. A set of social indicators were investigated including Hermel's demographic profile (age and gender distribution), employment and livelihood, the availability of public and private education and health institutions, the global level of education (educational attainment) and standards of public health, access to public utility and community services, land use patterns, archeology and cultural heritage, and impacts of the Syrian crisis.

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 Hermel Caza is determined. According to the latest national report (MoPH, 2016), Hermel caza has a total population of 61,955 (excluding Syrians displaced), accounting for 1.42 % of the total national population. Approximately 7,075 Syrian refugees are registered in Hermel (UNHCR, 2023). Syrian refugees are generally spread out through different areas of the community. In the Baalbek-El Hermel district, the total Lebanese population in need is 126,248, for displaced Syrians it is 200,124, and for Palestinian Refugees it is 4,264 (OCHA, 2023). Most of the refugee camps are located between 80 m and 150 m away from the concerned roads that will undergo maintenance activities; thus, the project activities will will have negligible significant impacts on the Syrian refugees camps, as the works are localized, limited in scale, short in time and will not entail any possible full road closure. Necessary measures for their safety and particularly children should be put in place, maintained and monitored throughout project works.

POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

The maintenance phase 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 socioeconomics. 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.

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	Major 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 Positi	ve Positive		
Archaeology / Cultural Heritage	Neutral	Neutral		
Expropriation/involuntary	Neutral	Neutral		
resettlement				

Table I. Summary of potential impacts of proposed roads in Hermel district

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 (refer to section 6.1).

Monitoring Plan

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) which will be continuously conducted. 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 any complaints, the consultant and the contractor should conduct periodic monitoring with measurements of environmental indicators depending on the nature of the complaint. Monitoring indicators / activities during the maintenance phase is defined in this report as a guidance for the contractor to submit his Construction Environmental and Social Management Plan – CESMP before work commencement.

During the maintenance phase, the Supervising Consultant shall submit a monthly report about the works to CDR. 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 stakeholders are the concerned municipalities. As well, local concerned NGOs are to be informed with the project and a virtual meeting is to be planned to get their feedback. The stakeholders were made aware of consultation hearing through a public participation invitation sent to the union of municipalities of Hermel (Invitation is presented in Annex 5, in the Invitation letters section).

During the public participation (along with the online session), project details and design, impacts and mitigation measures were presented in a 35-minute presentation (see more details in Annex 5), which was followed by an open discussion with the attendees (a total of 7 persons), on Thursday August 24, 2023. An online meeting (a second meeting) was held on Tuesday August 29,2023 in the municipality building of El-Hermel caza, for local and public concerned NGOs who couldn't attend the public meeting, and 6 people were attending (three of whom were women). The attendees were mainly the heads of the concerned municipalities. The main

issues raised were about the selection of roads within the REP scope, the coordination with local authorities especially with respect to public works, and technical concerns.

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.

REP GRM levels are as follows:

- <u>Level 1:</u> If any person has any complaint or concern regarding the project implementation, he/she can lodge an oral or written grievance to the site Manager. In case an oral complaint is made, it should be written by the Contractor Social expert. The issue must be resolved within a maximum duration of one week (immediate investigation shall be carried out and corrective actions shall be taken in case of issues assessed as critical).
- <u>Level 2</u>: if the person is not satisfied with the action of the Contractor, he/she can send the complaint to the PIU social specialist through Phone: 01980096 ext.: 317, Email: <u>GRM.REP@cdr.gov.lb</u>) or official letter registered at the CDR. The issue shall be resolved within a maximum of two weeks. The contact details are made available to the public by being presented on the project and mobile sign boards.
- <u>Level 3:</u> if the person is not satisfied with the decision of the social specialist of PIU, he or she can bring the complaint to the attention of the PIU Director's Office. Once the PIU Director receives the complaint, it needs to be resolved within a maximum of two weeks. Citizens can also register an official letter at the CDR (Address: Tallet al Serail Riad el Solh, Beirut Lebanon).

TABLE OF CONTENTS

Page

EX	ECU	TIVE SUMMARY	I
ТА	BLE	OF CONTENTS	I
LIS	ST OI	F FIGURES	III
LIS	ST OI	F TABLES	III
LIS	ST OI	F ABBREVIATIONS	V
LIS	ST OI	F NOMENCLATURES	VI
1	INT	RODUCTION	1
	1.1	Project background	1
	1.2	Project Rationale	2
	1.3	Report Objectives	
	1.4	Methodology	4
2	LEC	GAL, INSTITUTIONAL, STANDARDS AND POLICIES FRAMEWO	RKS5
	2.1	Legal Framework	5
	2.2	Environmental Standards	
	2.4	World Bank Policies	
		2.4.1 Safeguard Policies	10
		2.4.2 Access to Information (AI) policy	10
		2.4.3 EHS guidelines	10
		2.4.4 Consultation and Disclosure Policy	10
3	PRO	DJECT DESCRIPTION	11
	3.1	Location	11
	3.2	Project activities	
	3.3	Maintenance activities	
		3.3.1. Site Clearance	15
		3.3.2. Repair and Maintenance of Roadway Pavement	16
		3.3.3. Repair and maintenance of localized pavement depressions	16
		3.3.4. Effective Crack Sealing for Asphalt Pavements	17
		3.3.5. Repair and Maintenance of Drainage Structures	17
		3.3.6. Repair and Maintenance of Curbs	17
		3.3.7. Repair and Maintenance of Storm Water Drainage Network	18
		3.3.8. Maintenance of Road Marking and Signage	18
		3.3.9. Electrical Works	18
		3.3.10. Maintenance Equipment and Materials	19
4.	ENV	VIRONMENTAL AND SOCIAL CONDITIONS	21
	4.1.1	Physical environment	
		4.1.1. Topography	21
		4.1.2. Geology	21
		4.1.3. Hydrology	21

		4.1.4. Climate and meteorology	23
		4.1.5. Ambient air quality and noise levels	
	4.2.	Biological Environment	
		4.2.1. Field Survey	
		4.2.2. Evaluation Criteria	
		4.2.3. Results	
		4.2.4. Ecologically Sensitive Areas	
	4.3.	Socioeconomic Environment	
		4.3.1. Demographic Profile	
		4.3.2. Social Activities	27
		4.3.3. Economic Activities	27
		4.3.4. Educational Services	
		4.3.5. Infrastructure	
		4.3.6. Traffic Assessment	
		4.3.7. Healthcare Services	
		4.3.8. Road Sensitive receptors	
		4.3.9. Land use/land cover patterns	
		4.3.10. Archeology and cultural heritage	
5.	рот	TENTIAL ENVIRONMENTAL & SOCIAL IMPACTS	
	101		
-	B STORE	TO ATTOM OF FULLID ON AFTAT AND COCIAL DADA CTC	~ -
6.	MIT	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS	35
6. 7.	MIT ENV	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING	35
6. 7.	MIT ENV PLA	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING	35 ; 40
6. 7.	MIT ENV PLA	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training	35
6. 7.	MIT ENV PLA	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training 7.1.2. Reporting	35 40 43 43
6. 7.	MIT ENV PLA	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training 7.1.2. Reporting 7.1.3. Documentation and Reporting	35 40 43 43 43
6. 7.	MIT ENV PLA	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training 7.1.2. Reporting 7.1.3. Documentation and Reporting 7.1.4. Guidelines for Health and Safety Plan during maintenance	35 40 43 43 43 44
6. 7. 8.	MIT ENV PLA	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training. 7.1.2. Reporting. 7.1.3. Documentation and Reporting. 7.1.4. Guidelines for Health and Safety Plan during maintenance NSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHA	35 40 43 43 43 44 NISM
6. 7. 8.	MIT ENV PLA	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training. 7.1.2. Reporting. 7.1.3. Documentation and Reporting. 7.1.4. Guidelines for Health and Safety Plan during maintenance NSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHA	35 40 43 43 43 43 NISM
6. 7. 8.	MIT ENV PLA	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training. 7.1.2. Reporting. 7.1.3. Documentation and Reporting. 7.1.4. Guidelines for Health and Safety Plan during maintenance NSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHA 45 Public Consultation	35 40 43 43 43 44 NISM 45 45
6. 7. 8.	MIT ENV PLA CON 8.1. 8.2.	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training. 7.1.2. Reporting. 7.1.3. Documentation and Reporting. 7.1.4. Guidelines for Health and Safety Plan during maintenance NSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHA 45 Public Consultation <i>Q</i> 1. CDM for Communities	35 40 43 43 43 43 44 NISM 45 45 48
 6. 7. 8. 	MIT ENV PLA CON 8.1. 8.2.	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training. 7.1.2. Reporting. 7.1.3. Documentation and Reporting. 7.1.4. Guidelines for Health and Safety Plan during maintenance NSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHA 45 Public Consultation Grievance Redress Mechanism 8.2.1. GRM for Communities 8.2.2. CBM for Workers	35 40 43 43 43 44 NISM 45 48 49 49
6. 7. 8.	MIT ENV PLA COP 8.1. 8.2.	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training. 7.1.2. Reporting. 7.1.3. Documentation and Reporting. 7.1.4. Guidelines for Health and Safety Plan during maintenance NSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHA 45 Public Consultation Grievance Redress Mechanism 8.2.1. GRM for Communities 8.2.2. GRM for Workers.	35 40 43 43 43 43 44 NISM 45 45 45 45 45 49 50
6. 7. 8. REI	MIT ENV PLA CON 8.1. 8.2.	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training. 7.1.2. Reporting. 7.1.3. Documentation and Reporting. 7.1.4. Guidelines for Health and Safety Plan during maintenance NSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHA 45 Public Consultation Grievance Redress Mechanism 8.2.1. GRM for Communities 8.2.2. GRM for Workers. ENCES	35 40 43 43 43 43 44 NISM 45 50
6. 7. 8. REI ANI	MIT ENV PLA COI 8.1. 8.2. FERI NEX	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training	35 40 43 43 43 44 NISM 45 50
6. 7. 8. REI ANI	MIT ENV PLA COP 8.1. 8.2. FERI NEX Anne	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING /N 7.1.1. Training	35 40 43 43 43 44 NISM 45 45 45 45 50 52
6. 7. 8. REI ANI	MIT ENV PLA CON 8.1. 8.2. FERI NEX Anne Anne	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N	35 40 43 43 43 44 NISM 45 45 45 45 45 45 45 50 52 54 54
6. 7. 8. REI ANI	MIT ENV PLA CON 8.1. 8.2. SERI NEX Anne Anne	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N	35 40 43 43 43 43 44 NISM 45 45 48 49 50 52 52 54
6. 7. 8. REI ANI	MIT ENV PLA COP 8.1. 8.2. FERI NEX Anne Anne Anne	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N	35 40 43 43 43 43 43 44 NISM 45 45 45 45 45 50 52 52 54 54
6. 7. 8. REI ANI	MIT ENV PLA CON 8.1. 8.2. FERI NEX Anne Anne Anne Anne Anne	IGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS /IRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING N 7.1.1. Training. 7.1.2. Reporting. 7.1.3. Documentation and Reporting. 7.1.4. Guidelines for Health and Safety Plan during maintenance NSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHA 45 Public Consultation Grievance Redress Mechanism 8.2.1. GRM for Communities 8.2.2. GRM for Workers. ENCES 54 ex 1: Figures and Tables Related to Chapter 4. ex 2: Assessment Methodology. ex 3: Road signs, markings, lights, and barricades to be used during rehabilitation wo ex 4: Code of Conduct. ex 4: Code of Conduct. ex 5: Public Consultation Notes, Presentation, Invitation Letters, and Attendance She ex 6: Complaint Register Form	35 40 43 43 43 43 44 NISM 45 48 49 50 52 52 54

LIST OF FIGURES

Figure Page

Figure 3-1 condition of the road in Hermel, Wadi El Terkman	12
Figure 3-2 Condition of the Road (Ras Baalbek Al Ain)	12
Figure 3-3 Cracks in the road	14
Figure 3-4 side of the road needs maintenance	14
Figure 3-5 Holes in the road	15
Figure 3-6 Asphalting shallow potholes	16
Figure 3-7 Various types of pavements depressions	17
Figure 3-8 Sealing of cracks	17
Figure 3-9 Road Marking	18
Figure 8-1 Public participation session with Hermel Caza heads of municipalities	46
Figure 8-2. Typical grievance redresses mechanism for the REP	51

LIST OF TABLES

Table Page

.5
.6
.8
.8
.9
.9
.9
11
19
20
d.
d.
24
26
27

Table 5-1. Environmental and Social Negative Impact for the Hermel district roads during the maintenance phase 31
Table 5-2 Environmental and Social Positive Impact for the Hermel district roads during the operation phase
Table 5-3 Summary of potential impacts of proposed roads in Hermel district
Table 6-1 Environmental and Social Mitigation Measures for the Hermel district roads during the maintenance phase
Table 7-1. Environmental and Social Monitoring Plan for the Hermel district roads during the maintenance phase 40
Table 8-1 list of attendees 46

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
РНС	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 was approved by the WB Board of Executive Directors in February 2017 and ratified by the Lebanese Parliament in October 2018. 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.

The REP originally had three components. Following its restructuring in March 2021, a fourth component was added to address the impact of the COVID-19 on the agriculture sector. REP components are as follows:

- Roads Rehabilitation and Maintenance (US\$178 million): to finance works and related consultancy services for the rehabilitation and maintenance of about 500 km of primary, secondary, and tertiary roads, including road safety and spot improvements and repair of damaged expansions joints on highways/primary roads;
- (ii) Improvement of the MoPWT' Road Emergency Response Capacity (US\$4.5 million), especially during climate extremes;
- (iii) Capacity Building and Implementation Support (US\$7.5 million): to build the capacity of Lebanese agencies in planning and managing the road sector; and
- (iv) Support to farmers engaged in crop and livestock production (US\$10 million): to support continued agricultural production and vaccination of animals.

Accordingly, the REP ESMF was updated using an Addendum that can be found here <u>https://www.cdr.gov.lb/getmedia/4254c2bd-3c63-4dfc-aeb7-dfb78eaada4f/REP-Component-4-ESMF_Vol-1_for-Disclosure_20210608.pdf.aspx</u>.

This ESMP only deals with the first component of REP that aims at (a) rehabilitating, upgrading, and maintaining selected primary (including International Roads/Highways), secondary and tertiary roads, (b) providing technical assistance for the design, procurement, and supervision of said sub-projects, and (c) preparing safeguards instruments for the Project. More specifically, this ESMP that was prepared by Team International, which was assigned by CDR contract number 20379 aims to effectively address the environmental and social challenges linked to the envisaged routine maintenance activities that are confined within the alignments of existing roads with no road widening, in Hermel Caza, primarily targeting the maintenance of primary roads as priority and for secondary roads where funds are available.

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 Hermel district (Caza) of the Baalbek-Hermel governorate (Mohafazah).

It is important to note that REP Environmental and Social Management Framework (ESMF) (https://www.cdr.gov.lb/CDR/media/CDR/StudiesandReports/Roads%20and%20Employmen t/ESMF.pdf) which was cleared by the WB and disclosed in April 2018 identified the potential environmental and social aspects associated with the project as well as the recommended respective management and monitoring measures.

Furthermore, the project's Resettlement (RPF) cleared by the WB and disclosed in April 2018 (https://www.cdr.gov.lb/CDR/media/CDR/StudiesandReports/Roads%20and%20Employmen t/RPF.pdf) outlined the principles for resettlement impact mitigation as well as the organizational arrangements needed during project preparation and implementation; it also included the compensation measures that need to be implemented for any Project Affected Persons (PAPs) for any possible loss of land, properties or livelihoods.

Moreover, 25 site-specific ESMPs were prepared between 2019 and 2020, consulted upon, cleared by the WB and disclosed on the CDR and the WB websites. This includes the Hermel-specific ESMP prepared by Team International covering roads that were selected by the Lebanese Government for full rehabilitation works (ESMP for Hermel Caza is available on CDR Website via the following link:

https://www.cdr.gov.lb/CDR/media/CDR/StudiesandReports/Roads%20and%20Employment /Caza/hermel_Final-ESMP.pdf

To manage the environmental and social risks associated with the addition of routine maintenance activities in Hermel Caza, primarily targeting the maintenance of primary roads as priority and for secondary roads, relevant mitigation measures as well as necessary institutional arrangements was covered through this specific ESMP Report.

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

1.2 Project Rationale

According to Schwab, 2017, in terms of road connectivity, Lebanon ranked 95 and achieved a poor connectivity score index of 48.7 out of 100. As for the road conditions, approximately

95% of the roads are paved but lack proper maintenance. In this context, to deal with increasing safety challenges, the Lebanese Government is implementing REP that among its stated objectives mentioned above, aims to enhance transport connectivity and safety along specific roads.

However, infrastructure projects can exert a substantial strain on the environment and natural resources. Only with sustainable practices and proper waste management plans enforced, the burden on the environment can be reduced. Sustainable projects can generally be achieved by considering the environmental impact of the construction process (Hoeckman et al., 2012).

Similarly, the socio-economic effects of infrastructure projects can be reduced through transparency and fair compensation processes (Morris, 2007). In this context, this ESMP for routine maintenance works in Hermel Caza was prepared by Team International for development decision to go hand in hand with environmental and social protection. Routine maintenance activities did not require changing the environmental and social safeguard category of REP. Therefore, this ESMP is under the requirements of WB OP4.01, that classifies the project as Category B.

1.3 Report Objectives

The main aim of this ESMP for Hermel Caza, is to stipulate the control measures required to manage and monitor the project environmental, social, and H&S risks in accordance with environmental laws and regulations in Lebanon and the WB guidelines.

This ESMP will serve as a practical tool for the project Contractor who is supposed to implement the devised management strategy to (1) reduce the footprint of REP's operations in Hermel Caza and (2) ensure safe operation of activities and prevent injuries to workers or the public. To reach the above-mentioned objective, the ESMP will:

- 1. Describe all activities of the project
- 2. Establish environmental and socio-economic baseline within the study area
- 3. Identify relevant environmental and social National Legal and Institutional Standards & WB Policies and regulations
- 4. Conduct an inclusive public consultation session that takes into consideration the views of Project Affected Persons (PAPs) to feed the project design and management plan;
- 5. Identify potential social, environmental, and H&S impacts associated with the implementation of the proposed project;
- 6. Propose feasible and applicable mitigation measures for the identified impacts;
- 7. Develop a plan to monitor the identified impacts and their associated mitigation measures;
- 8. Guide on creating short term jobs for communities within a gender workforce equality environment;
- 9. Identify the responsible authorities and assign roles for different organizations in the efficient implementation of this ESMP;

10. Implement a robust GRM that is multi-channeled and fully functional and that is clearly communicated to all PAPs.

1.4 Methodology

In order to achieve the ESMP objectives outlined above, the consultant has reviewed relevant project designs and studies particularly the ESMF prepared for the project. In addition, the consultant 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 mechanism (GRM) that was developed and is operational (see Chapter 8).

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 August 8, 2002. Table 2-2 presents a list of selected legislation relevant to the Project.

2.2 Institutional Framework

A summary of the role of all concerned public agencies is presented in Table 2-1 below. At this stage, it is expected that the proposed project will involve primarily the CDR. Since some proposed roads 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 whenever required.

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 2-1 Summary	v of functional i	resnonsihilities	of trans	nort/traffic	involved	ministries/ac	Jencies
Table 2-1 Summar	y of functional i	esponsibilities	or trans	por t/trainc	Involveu	ministries/ag	generes

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

Legislation	Legislation Date of 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 16/1	10/02/2022	An updated limit values of the air emissions decision 8/1 dated 30/01/2001 for air emissions.	Air emissions generated by the project from waste management, recycling and treatment in the facility, must be monitored to meet the specific limit of values, in respect with this decision, as per annex 3.			
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			
MOE Decision 52/1	12/9/1996	Setting of the National Standards for Environmental Quality by the MOE	Ensures project activities comply with national environmental standards			
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 legisl	ation		
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	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		
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	01/03/1943	Penal code	Abide by Article 522		
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.		
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 law protects people subjected to sexual harassment and punish the perpetrators.		
	Traffic-related legislation				
Law 243	25/10/2012	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 Environmental Standards

The National emission levels for wastewater effluent, ambient noise and ambient air quality are provided in this section.

Wastewater Discharge Targets

The allowable contaminants concentration for wastewater when discharged into the sewage network, sea or surface water are indicated in the MoE decision 8/1 dated 30/1/2001. The table below shows a list of allowable contaminants concentrations.

Table 2-3 The allowable contaminants concentration for wastewater when discharged into different bodies				
	Contaminants	Surface Water	Sewage Network	Sea Water
рЦ		6 0	6 0	6 0

		Network	
рН	6-9	6 – 9	6-9
BOD mg/l	25	125	25
COD mg/l	125	500	125
temperature Co	30	35	35
Total nitrogen mg/l	30	60	30
Total phosphorus mg/l	10	10	10
Oil and grease mg/l	30	50	30
Mercury mg/l	0.05	0.05	0.05
Total suspended solids mg/l	60	600	60
Total coliform bacteria (Most Probable Number/100 ml)	2,000	-	2,000

Air Emissions Targets

The maximum allowable limits for outdoor air pollutants are specified in Annex 14 of the MoE Decision No. 16/1 dated 2022. The table below shows the list of allowable criteria pollutants concentrations.

Pollutants	Maximum Limit (µg/m ³)	Exposure duration	
	350	1 hr	
Sulphur dioxide (SO ₂)	120	24 hrs	
	80	1 yr	
	200	1 hr	
Nitrogen dioxide (NO ₂)	150	24 hrs	
	100	1 yr	
	150	1 hr	
$Ozone (O_3)$	100	8 hrs	
Cartan manarida (CO)	30,000	1 hr	
Carbon monoxide (CO)	10,000	8 hrs	
Total Suspended Particles (TSP)	120	24 hrs	
PM ₁₀	80	24 hrs	

Pollutants	Maximum Limit (µg/m ³)	Exposure duration
Lead (Pb)	1	1 yr
Benzene	5 ppb	1 yr

Noise Emissions Targets

The expected noise pollution levels should not exceed the values listed in the MoE Decision 52/1 dated 1996. The limited; values are presented in the table below.

Table 2-5 Sound pressure limits according to MoE Decision 52/1, 1996

Phase	Sound Pressure Level dB(A)
Working Location (less than 8 working hrs.)	90
Working Location (requires good speech hearing)	80

Therefore, the maximum national standard of 90 (dB) for occupational noise exposure limits should not exceed an average duration of 8 hours working days. If the limits are higher than the acceptable limits, then the exposure duration should be reduced as mentioned in the table below.

Table 2-6 Noise exposure limits

Sound Pressure Level dB(A)	Exposure Duration (hrs.)		
95	4		
100	2		
105	1		
110	0.5		
115	0.25		

Moreover, the following table indicates the Lebanese noise guidelines in different zones and at different periods of the day.

Table 2-7 Lebanese noise guidelines for different zones (MoE 52/1, 1996)

Area classification	Maximum accepted noise level dB(A)			
	Day ¹	Evening ²	Night ³	
Commercial and administrative area in town centers	55 - 65	50-60	45 – 55	
Residential area with few construction sites, activities or on a highway	50-60	45 - 55	40 - 50	
Urban residential area	45 – 55	40 - 50	35-45	
Residential suburb	40 - 50	35-45	30-40	
Rural residential, hospital, public garden	35-45	30-40	25-35	
(1) 7 a.m. to 6 p.m. (2) 6 p.m. to 10 p.m.	⁽³⁾ 10 p.m. to 7	a.m.		

2.4 World Bank Policies

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

2.4.1 Safeguard Policies

OP 4.01 Environmental Assessment.

The ESMP for the selected roads in Hermel 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 OP 4.01, 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 Hermel and in accordance with site specific design plans, involuntary resettlement or land acquisition will not take place. Since 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).

2.4.2 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.

2.4.3 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.

2.4.4 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 Hermel Caza for maintenance activities.. 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 1 comprises maps of the roads' location and the surrounding villages and/or towns. 3.1 Location

A general layout of the selected road (17.6 Km) for maintenance in the Hermel Caza is presented in Figure 3-1. The location and coordinates of the proposed roads in addition to key characteristic features or potential sensitive receptors are presented in Table 3-1.

Road	Coordinates				Lenoth	Width	Elevation	Key features
code	Villages: From to	Start	End	Classification	(Km)	range (m)	range (m)	
Hermel Primary Road-01	Ras Al Assi	34°21'41.12"N	34°28'43.29"N	Primary	17,6	5-7	732-	Vacant lands, few agricultural lands, restaurants
	to Charbine (Qoubaiyat- Qasr Road)	36°24'9.26"E	36°21'31.63"E				995	Restaurants, scattered residencies, few commercial units and few schools.

The alignment of the road is stated below (see Figure B in Annex 1 – administrative map):

• Hermel Primary Road-01: from Ras Al Assi near Qasr El Maalaka restaurant, and stretches for 17.6 km passing through Zeghrine, reaching Charbine (Qoubaiyat-Qasr Road).



Figure 3-1 condition of the road in Hermel, Wadi El Terkman



Figure 3-2 Condition of the Road (Ras Baalbek Al Ain)

3.2 Project activities

The main civil works, which are expected to take place in general under the REP including the Hermel 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 repair
- Storm water drainage network 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. The original design didn't plan for detours, but the contractor will handle them as needed and after Consultant approval 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 6 months.



Figure 3-3 Cracks in the road



Figure 3-4 side of the road needs maintenance



Figure 3-5 Holes in the road

3.3 Maintenance activities

The proposed maintenance activities are considered light construction works that will mostly require between 20 and 30 labors, 2 Formen, 2 Engineers and 2 skilled drivers on daily basis, and minimum number of machineries to execute limited repairs in localized spots and short period. Accordingly, it was referred to as maintenance activities throughout the report to differentiate the limited work intensity from the major construction works that were executed during the rehabilitation phase.

3.3.1. Site Clearance

Site clearance will involve clearance of the land at the median area and in some cases of the land adjacent to it. Removal of vegetation cover might lead to soil erosion if not done well and in advance of further works and during the rainy season. Removing vegetation exposes soil to rainfall and wind, reducing its stability and increasing the likelihood of erosion. It should be done well in advance of further works to allow time for implementing erosion control measures and minimizing the risk of soil erosion. The dust generation from the clearing activities could potentially pose the risk to the agricultural activities in the area.

There is quite an amount of the accumulated debris and waste from the road users, especially in the drainage areas. The waste should be collected and properly disposed.

Additionally, some areas might require washing with detergents for the accumulation of the spilled oil and fuel from the traffic on the road.

3.3.2. Repair and Maintenance of Roadway Pavement

This activity involves repairing and maintaining roadway pavement by deep and shallow pothole patching. It is a common practice used to extend the life of a road and enhance the safety of drivers and pedestrians. Deep potholes require removal of damaged asphalt, repairing the underlying base, and repaving. Shallow potholes are fixed by removing the loose debris and filling the hole with new asphalt.



Figure 3-6 Asphalting shallow potholes

3.3.3. Repair and maintenance of localized pavement depressions

Localized pavement depressions are repaired and maintained by milling and overlaying. Milling involves removing the damaged asphalt layer and preparing the surface for the overlay. The overlay is applied to the prepared surface to create a smooth driving surface. This process is used to fix uneven surfaces and localized pavement depressions that can cause accidents and damage to vehicles.



(a) Fatigue Cracks

(b) Blowouts

(c) Reflection Cracks



(d) Sinkhole (e

(e) Raveling



Figure 3-7 Various types of pavements depressions

3.3.4. Effective Crack Sealing for Asphalt Pavements

Sealing cracks is an essential activity for repairing and maintaining roadways. It is a costeffective way to extend the life of pavement and prevent further damage. Cracks, wherever found along the segments, will be cleaned and filled with a hot pour material that adheres to the pavement and seals out water and debris. This process prevents water from penetrating the pavement and causing further damage during freeze-thaw cycles.



Figure 3-8 Sealing of cracks

3.3.5. Repair and Maintenance of Drainage Structures

Reinforced concrete drainage structures are repaired and maintained by removing damaged sections and replacing them with new ones. The repairs involve excavation, cleaning, and installation of new precast concrete sections. The maintenance includes regular cleaning and inspection to ensure the drainage system is functioning correctly and prevent blockages.

3.3.6. Repair and Maintenance of Curbs

Curbs are essential elements of roadways, and their maintenance and repair are necessary to ensure pedestrian and driver safety. Repairs include replacement of damaged sections and leveling of uneven curbs. Maintenance includes cleaning, painting, and inspection to ensure the curbs are in good condition and free of hazards.

3.3.7. Repair and Maintenance of Storm Water Drainage Network

Stormwater drainage networks are essential for preventing flooding and water damage to roadways. Repairs include excavation, cleaning, and replacement of damaged sections. Maintenance includes regular cleaning and inspection to ensure the drainage network is functioning correctly and prevent blockages.

3.3.8. Maintenance of Road Marking and Signage

Road marking and signage are critical elements in guiding drivers and pedestrians on the road. The management of road marking and signage involves four key activities: renewal, repair, implementation, and maintenance. These activities will be carried out based on the needs of the road. Renewal involves repainting and replacing damaged signs, while repair involves fixing damaged sections. Implementation involves the installation of new signs and markings to provide clear guidance. Maintenance activities include regular cleaning and inspection to ensure that road markings and signs remain visible and legible at all times. By managing road markings and signage effectively, we can maintain the safety and convenience of all road users.



Figure 3-9 Road Marking

3.3.9. Electrical Works

Electrical works pose a high risk of electrocution and require the qualified personnel for execution of works.

Installation will require the excavation with the adequate disposal of the excavated material. Also, the packaging materials, extra length of the cables should be properly disposed of.

3.3.10. Maintenance Equipment and Materials

The materials to be used are as following:

- Ordinary Portland cement
- Sulfate resisting cement
- Crushed aggregate 5-10mm(dry)
- Crushed sand 0-5mm (dry)
- Reinforcement bars (high yield, deformed)
- Polymer modified bitumen
- Prime coat
- Tack coat

The equipment to be used during the maintenance phase is presented in the Table below:

Table 3-2 Maintenance Equipment

Site Plant and Equipment List
Asphalt Plant
Concrete Batching Plant
Plant mix Plant for Cold Mixes
Bulldozer
Excavator
Loader
Back-Hoe Loader
Grader
Vibrating Earthwork Roller
Double Drum Asphalt Roller
Mobile Emulsion Distributor
Asphalt Paver
Asphalt Broom
Rubber Tire Asphalt Roller
Mobile Light Unit
Fuel Truck
Water Truck
Dump Truck
Asphalt Dump Truck
Concrete Trans mixer Truck
Concrete Pump
Forklift
Weight Bridge
Silo Bus
Generator
Mobile Compressor
Mobile Diesel Welding Machine
Staff vehicles
Low Bed Trailer
Lube Tanker
Tire Repair Truck
Mobile Crane
Steel Cutting Bending Set

The noise emission levels are expected to exceed the EHS Guidelines for noise levels (presented in the table below) and pose a significant health risk to the workers using the equipment.

	Distance between Equipment and Recipient					
Туре	5m	20m	50m			
Loader	90	78	70			
Grader	90	78	70			
Vibration Roller	86	74	66			
Bulldozer	86	74	66			
Sprayer	87	75	67			
Generator	98	86	78			
Impact drill	87	75	67			
Impact piling	112	100	92			
Concrete mixer	91	79	71			
Concrete pump	85	70	62			
Pneumatic hammer	84	86	78			

Table 3-3 Noise Emission Levels dB (A) and Distance to the Equipment

4. 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 1.

4.1. Physical environment

4.1.1. Topography

The topography shows that the two proposed roads in the Hermel Caza are:

• Hermel Primary Road-01 (17.6 km): from Ras Al Assi (next to Qasr El Maalaka restaurant) to Charbine (Qoubaiyat-Qasr Road). The elevations range from 732 m to 995 m, respectively.

4.1.2. Geology

4.1.2.1. Lithology and main geological formations

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).

The studied road is situated on the followingformations provided in the geological map in Figure C, Annex B:

4.1.3. Hydrology

Geological units can be defined as aquifer or aquiclude in terms of storing and transmitting water, and these types depend on the geological environment in which they occur.

An aquifer can be a subsurface rock or sediment unit that is porous and permeable, high enough that it stores and transmits useful quantities of water. Aquifers are divided into the following categories:

- > Confined: overlain by an impermeable rock unit,
- Unconfined: that is not overlain by an -impermeable rock unit, where the water in this aquifer is under atmospheric pressure and is recharged by precipitation that falls on the land surface directly above the aquifer,
- or Semi-confined: partially confined, or overlain, by gravel, sand, silt or soil layers of low permeability through which recharge and discharge can still occur.

Aquiclude is a geological formation which, although porous and capable of absorbing water, does not permit its movement at rates sufficient to furnish an appreciable supply for a well or spring. Alternatively, it could be an impermeable body of rock or stratum of sediment that acts as a barrier to the flow of groundwater.

In the context of Hermel road, the following characteristics apply:

The study area includes several springs, Nahr El Assi River, Wadi esh' Sharbine River and Wadi Fissane River in (Figure D in Annex 1).

The Orontes or Al Assi River is a natural stream of water that is prized for its harsh currents and rocky path. Unlike other rivers, Al Assi offers enough water depth all year round.

4.1.4. Climate and meteorology

The climate and meteorological parameters play a vital role in transport and dispersion of pollutants in the atmosphere. Thus, the collection and analysis of meteorological information, including primarily precipitation, ambient temperature, wind direction and speed, are essential data for adequately assessing environmental impacts. The most significant meteorological parameters that influence the direct environmental impacts at the proposed project are: wind due to its ability to carry dust and odors to nearby communities; and precipitation due to its ability to enhance the infiltration of accidental spills and contaminated rehabilitation wastewater within the area depending on site operation procedures. Meteorological data are obtained either from the closest available stations and whenever not available satellite data are used and referenced in the text.

Hermel Road:

Precipitation rates

Precipitation in the summer season between the month of June and September is negligible (\sim 6.5 mm) (Figure H in Annex 1). The highest precipitation is recorded in January with an average value of 127 mm and the total annual precipitation is 594 mm.

Temperature (Land Surface)

The hottest month in the area is August (32.8° C) and the coldest month is January (3° C) . Fluctuations in the temperature values are shown in Figure I (in Annex 1).

Wind Records

This report will use freely publicly available modelled or prognostic data provided by Meteoblue. Meteoblue is a prognostic climate model that has more than 220 million data points and a resolution of 30 arc seconds, with a spatial resolution of maximum 30 km, and has been collecting climate data from the year 1982 until 2012 (30-year period).

In this context dominant wind in the area blows from the North-West and West-North West, with speeds varying between 0.3 m/s and 8 m/s. Refer to Figure J for distribution of wind speed, direction, and frequency.

4.1.5. Ambient air quality and noise levels

a) Air

Air quality is an essential component in assessing social wellbeing and health status of a community. Developing baseline information will help in comparing the impacts of the project relative to the existing conditions. Ambient air quality data was gathered from the UNDP project "Air quality assessment in an East Mediterranean country: the case of Lebanon" which is based at the Ministry of Environment. The UNDP/MoE monitors the criteria pollutants:

Particulate Matter (PM), Ozone (O₃), Carbon monoxide (CO), Nitrogen dioxide (NO₂), Sulfur dioxide (SO2) which are recognized by national and international organizations as good indicators of anthropogenic emissions.

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. 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.

Data for Cell 2, cell 4, cell 7 and cell 8 are considered to be the most representative, being the closest to this study area in terms of distance as well as prevalent socio-economic activities, i.e. mostly rural and light residential. Table 4-1 shows that the annual concentrations for all criteria air pollutants for these cells and for the other cells which are located close to the urban/rural region, are below the national ambient air quality standards defined by MOE Decision 16/1.

Air quality cells for Hermel road are presented in Figure M.

Cell ID	NO ₂	O 3	PM ₁₀	PM2.5	SO ₂	CO
2	5.67	85.68	13.97	12.43	6.12	180.13
4	5.07	85.68	13.14	11.78	5.20	175.40
7	4.32	84.26	12.61	11.36	4.56	173.02
8	8.28	80.03	14.03	12.62	6.99	190.34
Lebanese Ambient Air Quality standards, Decision 16/1	100	100	80	-	80	10,000
NAAQS, EPA	107.6	147.7	150	35	84.6	11,070
Exposure Duration	1 year	8 hours	24 hours	24 hours	1 year	8 hours

Table 4-1 Ambient air quality in µg/m³ for Hermel roads

The average concentration of the chosen criteria pollutants presented in Table 4-1 above show good ambient air quality along the roads as the numbers are much less than permissible limits presented in the national guidelines (Decision 16/1) and the international USEPA National Ambient Air Quality Standards (NAAQS) standards.

b) Noise

Similarly, vehicles and some generators in residential areas constitute the main source of noise. While no noise measurements are available along the proposed roads, 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 proposed roads it is expected that the baseline average continuous A-weighted noise levels during the day time will vary between 45 to 80 dBA depending on time of day, traffic conditions and proximity to the roads. Measurements were taken based on the working stations assigned by TEAM INTERNATIONAL. The schedule of the acoustic survey was planned based on availability of transportation, availability of the handheld decibel meter, availability of staff, and availability of time. 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.

4.2. Biological Environment

As mentioned in the previous section, the road in the Hermel Caza pass through various land cover types that harbor different habitats.

4.2.1. Field Survey

Dates, Methodology, and Limitations

Given the limited timeframe of this study, a single field visit was set for each road (not necessarily during the best period for field visits due to time limitations). 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. This general approach allows the identification of the conservation status of the natural habitats.

Moreover, maps were generated for each road and compiled with site visits observations with respect to adjacent key habitats to the concerned roads.

Walking transects were recognized to obtain an understanding of the vegetation communities in the area and record existing species. Knowing that a single visit is not enough, the study had to consider some species as potentially present. Moreover, it was difficult to perform a complete faunal survey. Thus, information on fauna does not only include the encountered species during the field visit, but also potential species were considered in this assessment (fauna listing is only provided for roads that involve rich habitats). The potentiality of presence of a species was based on: (a) the occurrence of the species habitat; (b) observations of the species; and (d) related scientific papers.

4.2.2. <u>Evaluation Criteria</u>

Various regulatory and scientific criteria allow organizing in a hierarchy the importance of habitats and species observed in a given area. These criteria include the endemism, rarity, the ecological importance (key species, specialized species, etc.); the biological status (migratory species, breeding species, etc.); and the biological susceptibility.

There is no list of protected species in Lebanon. The protected species are therefore considered based on international conventions for which Lebanon is part of and the IUCN Middle East red

list. In this assessment, the ecological value of species was based on their local ecological importance (distribution of species and degree of endemism (Tohmé and Tohmé, 2014) and IUCN classification).

4.2.3. <u>Results</u>

Study Area

Primary Road -01(Ras Al Assi to Charbine)

Project settlement

The road is settled at an altitude ranging between 732 and 995 meters. According to CORINE classification, 'Thermo-Mediterranean' zone ranges from 0 to 500 meters, 'EU-Mediterranean' zone ranges from 500 to 1000 meters, whereas, Supra-Mediterranean zone ranges from 1,000 to 1,500. The altitudinal range plays an important role in plant composition (Abi Saleh, 1996). Thus, the studied area covers 'EU-Mediterranean' zones.

Natural Habitats and Associated Flora

The main encountered habitats that are adjacent to Hermel primary road-01 are primarily artificial (built-up) areas, agricultural areas, grasslands and vacant lands as per field visit and the Land use map in Figure E (Annex 1).

The studied road involves a path that is already under anthropogenic influences. The road is mainly bordered by human settlements and agricultural lands.

Given that the studied road does not involve rich ecosystems, no listing of flora or fauna will be provided for this road.

Habitats types in Map	Field visit observation
Agricultural areas	Agricultural terraces Fallow lands Cultivated trees
Grasslands	Degraded grasslands Scrublands and grasslands used for grazing, agriculture and forage
Artificial areas	Residential and industrial areas

 Table 4-2: Main habitats encountered along primary road-01

It is to be noted that the residences and commercial units near the concerned road will be made aware of the project activities, schedule and GRM prior to commencement.

4.2.4. Ecologically Sensitive Areas

The roads are in close proximity to Al Assi Perennial River, Wadi esh' Sharbine and Wadi Fissane (refer to Figure D in Annex 1).

4.3. Socioeconomic Environment

4.3.1. Demographic Profile

Demographic Profile

The district of Hermel is one out of the 26 districts of Lebanon, occupying 731 km² of surface area. According to the latest national report (MoPH, 2016), Hermel caza has a total population of 61,955 (excluding Syrians displaced), accounting for 1.42 % of the total national population. According to UNDP (2008), the overall headcount poverty within Hermel-Baalbek strata is 32%, compared to Lebanon's average of 27%. Approximately 7,075 Syrian refugees are registered in Hermel (UNHCR, 2023). Syrian refugees are generally spread out through different areas of the community.

Syrian Refugees

Approximately 7,075 Syrian refugees are registered in Hermel (UNHCR, 2023). Syrian refugees are generally spread out through different areas of the community. In the Baalbek-El Hermel district, the total displaced Syrian population in need is 200,124 (OCHA, 2023).

It is to be noted that the project activities will have negligible significant impacts on the Syrian refugees' camps, as the works are localized, limited in scale, short in time and will not entail any possible full road closure. Most of the refugee camps are located between 80 m and 150 m away from the concerned road, thus necessary measures for their safety and particularly children should be put in place, maintained and monitored throughout project works.

In the Baalbek-Hermel governorate where the population is over 400,000 residents, 33% are registered Syrian refugees and 12% are Palestinian refugees (Anera in Baalbek-Hermel, 2023).

Table 4-3 Number of Syrians Displaced as per UNHCR

Caza	Total No. of Persons
Hermel	7,075

Source: UNHCR, 2023 (refer to Figure K in Annex 1)

According to the map of Syrian Refugees Distribution in Hermel Caza (refer to Figure G, Annex 1), the number of Syrians in close proximity to the activities under this project is about 2,500 persons (Source: UNHCR 2021).

4.3.2. Social Activities

Hermel Caza offers various social outlets and activities including public parks, as well as cultural, commercial and educational centers (schools), restaurants, and religious buildings etc. It offers an environment rich with cultural heritage with people visiting from inside and outside the city. Social activities are relatively limited to in or out of village visits between family or friends, picnics, church/mosque visits, periodic municipal or parliamentary elections, or other range of celebrations of births, anniversaries, weddings to condolences in funerals.

A detailed social survey at the level of each village was not conducted. To the extent available and accessible, data was extracted from reported literature to provide a brief socio-economic overview as outlined below.

4.3.3. Economic Activities

Rafting is well developed in the Hermel area, due to the presence of the Assi River there, which led to the operation of several rafting clubs and a significant number of restaurants. However, together with its directly related sub-sectors of input supply, processing, marketing and transport of farming produce, agriculture represents by far the most important livelihood opportunity, especially in the poorest sub governorates of Baalbek-Hermel. In other words, agriculture is the primary source of income and employment, particularly for the poorest communities. In fact, an estimated 20% of all farmers in Lebanon are located in Baalbek-Hermel and the Bekaa (UN/FAO, 2014). Also, the overall headcount poverty rate in Baalbek/Hermel is 32%, compared to Lebanon's average of 27 % (UNDP, 2008).

4.3.4. Educational Services

Illiteracy remains a social problem in Hermel, which contains only a total of five schools. The overall average of illiteracy exceeds 16%, compared to a national average of 13.4%. Moreover, illiteracy among women is very high. It reaches often more than twice the frequency of illiteracy among men. Also, it is one of the districts that have the lowest concentration of private schools (CDR, 2005).

Two schools are established in the project area including Al Hermel School (5 m away from Hermel primary road), and للنموذجية الرسمية (Hermel Official Intermediate School) (25 m away from Hermel primary road). Refer to Figure L in Annex 1.

4.3.5. Infrastructure

Due to the increase in the overall population of Hermel in the past few years and a decrease in the average precipitation level over the past 30 years, the area continues to suffer from scarcity in water supply and inadequate water quality and sanitation services. Regarding infrastructure, no wastewater treatment plants are available in the Hermel Caza. In fact, safe sewage networks are almost non-existent. Most residents rely entirely on sewage pits, with all the related risks for the environment and for human health. Even open discharge into valleys or along roads is practiced. It can be safely assumed that the poor management of sewage indicates an equally poor status of handling solid waste. These observations confirm the elevated environmental risks in Hermel (CDR, 2005)¹.

Hermel is part of the group of districts that are considered to have the least developed infrastructure. While about 90% of residents in Beirut, Mount Lebanon, Tripoli, Bekaa, Nabatiyeh, and the South are connected to the public water network, this percentage is much lower in other regions as only 60% are connected in Hermel and Baalbek.

Also, it was observed that in Hermel the bad road conditions are leading to numerous accidents (CDR, 2005).

The roads in Hermel are damaged and greatly lack proper safety measures, hence increasing the risk of accidents. Such deteriorating roads also hinder the easy access to the rural peripheries by limiting the mobility of the general population. Moreover, the absence of

¹ Despite its date, this is the latest source that is published, available online, and contains comprehensive information regarding different aspects of Hermel's caza background (the situation remains the same based on-site visit of February 2020).

sufficient rainwater collection canals leads to often blocked roads during severe weather, mainly during the winter.

4.3.6. Traffic Assessment

The road to be maintenained is of a 17,6 km length, stretching from the village of Ras Al Assi towards Charbine (Qoubaiyat-Qasr Road).

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 total blockage of the roads.

Traffic assessment was done by the designer using previous collected data (traffic count was carried out by the same designer (TEAM Int.) in 2018 during the rehabilitation phase) due to time constraints. Accordingly, traffic volume is moderate to low and vehicle vary between passenger cars, transportation trucks, busses and vans.

4.3.7. Healthcare Services

Regarding health care facilities, Hermel caza consists of different facilities ranging from public and private hospitals, and private clinics. However, the number of these facilities is not very high. The main healthcare centers in Hermel are: Hermel El Kobra Pharmacy (15 m away from the road), . The hospitals in the area are at a safe distance from the concerned road: Al Assi Hospital is 600 m away (branching from the main road and following the asphalt road), Al Batoul Hospital and Hermel Governmental Hospital are both 1,300 m away (branching from the main road and following the asphalt road). Therefore, these hospitals will not be affected by the project.

4.3.8. Road Sensitive receptors

Categories considered as sensitive receptors during road maintenance are natural reserves, schools, churches, hospitals, mosques, closest residential buildings and commercial shops, and other historical and/or archeological features.

The sensitive receptors directly affected by the proposed primary road based on the field survey are green areas, agricultural lands, residential areas, commercial areas.

Additionally, a historical and religious site in the heart of Hermel — Deir Mar Maroun Caves (170 meters from the source of the El-Assi River) is a protected site in Hermel (2.7 Km away from the concerned road).

Kamouh El Hermel is an unprotected ancient pyramid near the concerned road (860 m away) which requires constant close supervision and close coordination with the municipality and the Directorate General of Antiquities (DGA).

Furthermore, The Assi River which is a natural reserve is situated 100 m away from the Hermel primary road.

Other nearby rivers are Wadi Esh' Sharbine and Wadi Fissane.

Also, several public and private schools are established in the project area such as Al Hermel School (5 m away from Hermel primary road), and ثانوية الهرمل النموذجية الرسمية (Hermel Official Intermediate School) (25 m away from Hermel primary road).

Extra precautions concerning noise levels, working hours and daytime need to be concerned near these areas.

In summary, the main sensitive receptors of concern include rivers, green areas, agricultural lands, nearby residences and few schools and a religious site.

Refer to Figure D for surrounding water bodies and Figure F for protected areas (Annex 1).

4.3.9. Land use/land cover patterns

The land use and land cover in an area refers to both natural landscape and anthropogenic activities occupying the regions. The proposed roads in the Hermel Caza pass largely through rural areas. Figure E (Annex 1) shows the main land use and land covers of the Hermel Caza as well as those in the immediate vicinity of the proposed roads. The roads generally cross through vacant lands, few commercial units and scattered residencies as well as agricultural fields.

4.3.10. Archeology and cultural heritage

The main sites of cultural heritage significance in the area are Kamouh El Hermel (860 m away from the concerned road), and Deir Mar Maroun Caves (2,7 km awasy from the concerned road). These sites will not be affected by the project.

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 2.

5.1. Potential Environmental and Social impacts during the maintenance phase

Table 5-1. En	ivironmental a	and Social Negati	ve Impacts f	or the Hermel	district roads	during the
maintenance	phase					

Potential Impact	Receptor	Activity generating impacts	Impacts Description	Rating
		Environmental		
Deterioration of Air quality	Surrounding Communities, Fauna and Flora, and Water resources.	 Usage of maintenance equipment Shallow excavation Levelling works Transport vehicles delivering maintenance materials, Disturbances of stockpiles by winds and material handling 	Negative impact from Air Emission of equipment and dust from stockpiles	Minor to moderate negative impact
Increase in Noise levels	Surrounding Communities and Fauna.	 Use of heavy machinery Excavation and milling works Labours shouting Evacuation of materials Vibrations of heavy equipment 	Negative impact creating stress on local inhabitants, and close vicinity to road works	Moderate negative impact
Loss of Biodiversity	Surrounding Fauna and Flora	 Dust from maintenance works Wastewater from maintenance and domestic disposal Destruction of surrounding trees and plantations Disturbance of surrounding inhabitants with load sounds 	Negative impact that could cause loss of surrounding inhabitant	Minor negative impact
Generation of Maintenance 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.	Major negative impact
Deterioration of 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 maintenance material, and water depletion	Moderate to low negative impact

Potential Impact	Receptor	Activity generating impacts	Impacts Description	Rating
	Water resources.	 Increase transportation of heavy vehicles Increase water pumping 		
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		
Traffic	Surrounding Communities and road users, and workers	 Reducing traffic flow Possible temporary block of accessibility 	Negative Impact due to 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. 	Negative Impact due to possible loss of services	Moderate during short time negative impact
Social tensions	Surrounding Communities and workers	The feeling of discrimination or harassment due to hiring of foreign labours	Negative impact due to conflict over jobs or dissatisfaction	Minor to low negative impact
Child labour	Refugee and poor communities	Allowing children to work in unsafe construction environment and preventing them the right of proper education	Negative Impact due to abuse and exploitation	High during long time negative impact
Labour conditions	Refugee and poor communities	 low wages, absence of social security and employment benefits unequal job opportunities 	Negative Impact due to possible abuse of rights	High during long time negative impact
SEA/SH associated with potential Labour Influx	Women and children	Labor influx in close proximity to local communities may increase the risk of SEA/SH incidents	Negative Impact due to possible hassle creation with surrounding communities and road users	High during short time negative impact
Health and safety impacts	Surrounding Communities and road users (The Public)	 Improper traffic management Land obstacles and uncovered holes 	Negative Impact due to accident occurrence	High during long time negative impact
	Workers	 Work accident due to PPE noncompliance Speedy project heavy machineries Improper covering of pointy maintenance materials. 	Negative Impact due to accident occurrence	High during long time negative impact
Risks on sensitive receptors	Agricultural land, shop owners, residencies, archaeology and cultural heritage	 Disturbance of surrounding inhabitants with noise and dust emissions Improper waste disposal Soil erosion Possible temporary block of accessibility 	Negative impact due to close proximity of location to sensitive receptors	High, since agricultural activities are highly prevalent in Hermel and given the ancient pyramid's close proximity to the project location and the River Assi being a natural reserve

5.2. Potential positive impacts during maintenance

During maintenance, the project is expected to have positive impacts on socioeconomics. Being labor intensive, construction projects will result in job creation and in business opportunities for skilled and unskilled labor among 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 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 Hermel Caza could not be estimated at this stage, however, compared to other similar projects, the project shall require between 20 and 30 labors, 2 Formen, 2 Engineers and 2 skilled drivers on daily basis.

5.3. Potential positive impacts during the operation phase

Table 5-2 Environmental and Social	Positive]	Impact fo	or the	Hermel	district	roads	during	the
operation phase								

Potential Impact	Receptor	Activity generating impacts	Impacts Description	Rating
		Environmental Impacts		
Air quality & Traffic	Surrounding Communities, Fauna and Flora, and Water resources.	Improve traffic flow that led to improved fuel efficiency and better engine performance,	Positive impact due to reducing vehicle emissions Dust Emission	Major positive impact
Noise	Surrounding Communities, and Fauna.	 Reduce traffic congestion Higher risk of noise production 	 Positive impact by reducing stress on local inhabitants 	Moderate negative to 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.	Major positive during long time impact
Landscape and visual intrusion	Surrounding Communities	 Elimination of road holes, falling retaining walls and improving stress lights Sourcing maintenance material from unlicensed quarries 	 Positive impact due to the road refurbishment to improved appearance Negative due to increased raw materials depletion, and dust, noise, and vibrations generation 	Moderate negative to positive impact
		Social Impacts		
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- economic impacts	Surrounding Communities and road users	 Improve accessibility of people (including school and university students), goods and services 	Positive Impact due to improvement in local economic and social development	Positive

Potential Impact	Receptor		Activity generating impacts	Impacts Description	Rating
		•	Reduced trip times and less traffic congestion Smoother road surfaces may lead to fewer vehicle repairs	and enhanced livelihood opportunities	
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 With improved road conditions, the vehicle speeds increase	Negative to Positive Impact in accident occurrence	Moderate negative to positive

5.4. 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.

Potential Impact	Maintenance phase		Operation p	hase
Traffic	Moderate neg	ative	Minor negative to	Positive
Air quality	Minor nega	tive	Minor negative to	Positive
Noise	Moderate neg	ative	Minor negative to	Positive
Biodiversity	Minor nega	tive	Minor nega	tive
Maintenance Waste	Major negative		Neutral	
Soil and water	Moderate negative		Minor negative to Zero	
Resources consumption	Moderate negative		Neutral	
Existing infrastructure	Minor nega	tive	Neutral to Po	sitive
Visual Intrusion	Minor nega	tive	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	

 Table 5-3 Summary of potential impacts of proposed roads in Hermel district

6. 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.

6.1. Environmental and Social Mitigation Measures during maintenance

Potential	Receptor	Activity generating impacts	<i>Impacts</i>	Mitigation Measure
Impacis		Fnvironmental	Description	
		Environmentar	3.7 .1	
Air quality	Surrounding Communities, Fauna and Flora	 Usage of construction equipment Shallow excavation Levelling works Transport vehicles delivering maintenance materials, Disturbances of stockpiles by winds and material handling 	Negative Impact from Dust Emission	 Ensuring adequate maintenance and repair of maintenance machinery and vehicles Maintaining good housekeeping practices Turning off all equipment when not in use Sprinkling water on the maintenance site on windy days Proper handling of cement material Covering all vehicles hauling materials Ensuring good fuel quality is used in trucks transporting maintenance material to and from site Ensuring optimum and regular transportation of maintenance materials to minimize storage of large heaps Restricting vehicle speeds to 15km/h on unpaved roads and trucks Ensure that all materials are sourced from licensed commercially operating quarries and asphalt and concrete batch plants. Proper storage of stock piles and coverage of loose materials.
Noise	Surrounding Communities, and Fauna.	 Use of heavy machinery Excavation and milling works Labours shouting Evacuation of materials 	Negative impact creating stress on local	Use of quiet equipment and noise mufflers, proper maintenance of equipment, and limiting noisy activities to normal daylight working hours.

 Table 6-1 Environmental and Social Mitigation Measures for the Hermel district roads during the maintenance phase

Potential Impacts	Receptor	Activity generating impacts	Impacts Description	Mitigation Measure
		 Increased vehicle speed and noise due to new good road condition 	and close vicinity to road works	The increased vehicle speed and noise will require speed limitation methods such as speed bumps
Biodiversity	Surrounding Fauna and Flora	 Dust from maintenance 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	 Workers' movement and activities should not infringe on 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).
Waste Generation	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 maintenance waste at suitable permitted locations by local municipalities Ensure proper handling of fuels, lubricants and other chemicals while maintaining maintenance equipment and prevent possible leakage. Maintain equipment in dedicated repair shops. Collect waste to hand to recycling entity (if available)
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 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 maintenance material should be covered with an impermeable layer All refuelling 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 washdown 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)
Resources consumption	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 maintenance material, and water depletion	 Using water-efficient equipment during maintenance operations to avoid excessive and overuse of water Recording monthly fuel consumption.

Potential Impacts	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 maintenance material only from permitted quarrying sites
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	 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 maintenance Ensuring that lights are turned off when not needed
Traffic	Surrounding Communities and road users, and workers	Soc Impact to Traffic • Reducing traffic flow • Possible temporary block of accessibility	ial Negative Impact due possible traffic congestions or accidents occurrence.	 Scheduling transportation of maintenance material during off -peak traffic hours and during night time. Informing the public about the schedule of maintenance activities Maintaining access to roadside businesses Ensuring adequate warning, signing, delineation and channelling 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 through wide dissemination, mobile GRM signs and coordination with affected municipalities.
infrastructure	Communities	- Cut-off water supply pipes	Impact due	- Avoid damaging any possible existing infrastructure and try to

Potential Impacts	Receptor	Activity generating impacts	Impacts Description	Mitigation Measure
		 Destruction of electricity cables or/and phone lines. Block of drainage channels and/or wastewater collection network 	to possible loss of services	 obtain plans prior to commencement of any maintenance works, in coordination with relevant municipalities. 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.
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 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 being clearly explained. Verify that the GRM is being adequately implemented
Child labour	Refugee and poor communities	Child Labour Allowing children to work in unsafe construction environment and preventing them 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
Labour conditions	Refugee and poor communities	 low wages, absence of social security and employment benefits unequal job opportunities 	Negative Impact due to possible abuse of rights	Provide workers with the right wages and job opportunities and keep close monitoring to prevent lack of social security and employment benefits
Labour Influx	Women and children	SEA/SH Verbal and/or action harassment	Negative Impact due to possible Sexual Abuse and Exploitation and Harassment (SEA/SH)	Provide workers with the necessary training and awareness raising session on issues regarding SEA/H, prior to signing the CoC.
Health and safety impacts	Surrounding Communities and road users (The Public)	 Accidents/Incidents Improper traffic management Land obstacles and uncovers holes Increased vehicle speed due to new good road condition 	Negative Impact due to accident occurrence	 Comply with the standard safety, health and environmental regulations of the CDR and the WB. Installing proper warning signs, Making the Bank team aware of an incident occurrence within 24 hours. Developing Public Health and Safety Plans The increased vehicle speed and noise will require speed limitation methods such as speed bumps
	Workers	 Work accident due to PPE noncompliance Speedy project heavy machineries 	Negative Impact due to accident occurrence	 Developing Occupational Health and Safety Plans Work within work zone only

Potential Impacts	Receptor	Activity generating impacts	Impacts Description	Mitigation Measure
		 Improper covering of pointy maintenance materials. 		 Providing personnel protective clothing and equipment PPEs. Making the Bank team aware of an incident occurrence within 24 hours.
Risks on sensitive receptors	Agricultural land, shop owners, residencies, archaeology and cultural heritage	 Disturbance of surrounding inhabitants with noise and dust emissions Improper waste disposal Soil erosion Possible temporary block of accessibility 	Negative impact due to close proximity of location to sensitive receptors	 Extra precautions taken in the vicinity of archaeological sites and residencies to not cause disturbance, in terms of frequency, intensity and timing of works Prevent road closure Monitoring air and noise emissions, and waste generation to not affect nearby agricultural lands

7. 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:

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, etc.)	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	Visual inspection and maintenance logs checkin	Environmental, Health & Safety, and Social EHS expert employment salary of about \$2,500/month
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

Table 7-1. Environmental and Social Monitoring Plan for the Hermel district roads during the maintenance phase

_			Frequency/			
Impact	Monitoring indicators	Responsibility	Duration	Location	Methods	Estimated Cost ¹
	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	If there are community complains, measurement may take place. Single sample per location (average 1hr reading-15min intervals) during morning (7-8am), evening (1-2pm) and	500\$/ event
Maintenance 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 seasonal 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	Coordination with municipalities	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	Checking accident logs and ensuring proper	Contractor	Daily	At	Visual observation and	Environmental, Health &

Page | 41

			Frequency/			
Impact	Monitoring indicators	Responsibility	Duration	Location	Methods	Estimated Cost ¹
Safety	recording of all incidents including near-misses	under supervision of the Consultant		maintenance site	documentation with photos	Safety, and Social EHS expert employment salary of about \$2,500/month Each road has one full time officer
Socio- economic	 Periodic site inspection by EHS expert with documentation of employment and grievance, sharing maintenance schedule with the public, access to roadside businesses, vendors and residences, and grievance record. Documentation of training and raising awareness for SEA/SH 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
	Labor working conditions	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
	Monitoring community satisfaction.	Contractor under supervision of the Consultant	Daily	At maintenance site	The site engineer receives community complaints (if any)	Environmental, Health & Safety, and Social EHS expert employment salary of about \$2,500/month
	Operational SEA/SH violation	Contractor under supervision of the Consultant	Daily	At maintenance site	The site engineer receives community complaints (if any	Environmental, Health & Safety, and Social EHS expert employment salary of about \$2,500/month
	• In case of public SEA/SH violation	Contractor under supervision of the Consultant	Daily	At maintenance site	The site engineer receives community complaints (if any	Environmental, Health & Safety, and Social EHS expert employment salary of about \$2,500/month

7.1.1. 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 maintenance 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 maintenance phase. The training program will emphasize on pollution prevention measures and techniques during both phases, Health and Safety and implementation of TMP. 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 dav.

The training will include Social risk management as well as Environmental risk management.

The training program will cover the following topicsn and the number of attendees and date of trainings conducted will be documented:

- GRM
- SEA/SH
- Codes of conduct
- OHS, etc.

7.1.2. 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.
- □ Incident reporting needs to be done within 24 hours to inform the bank task team and for further guidance on next steps

7.1.3. 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. 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.

7.1.4. 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.

Also, the contractor should develop and implement detailed HS plan under supervision of the Engineer.

8. CONSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHANISM

8.1. Public Consultation

A public consultation meeting was conducted on August 24, 2023 at the Hermel Municipalities Union in Hermel. The attendees included 6 heads of municipalities in Hermel Caza, and one engineer representing TEAM International. Additionally, an online public meeting was conducted with international NGOs, on August 29, 2023. The complete attendance list is presented in Table 8-1, Table 8-2 and Annex 5.

During the public consultation, one attendee was a woman while three women attended the online meeting.

PAPs were not consulted at this stage due to the challenge of inviting local residents from all municipalities to the public meeting at Hermel Municipalities Union in Hermel. However, it's important to note that those living and working near the affected road will be informed about the project activities, schedule, and GRM before it begins.





Figure 8-1 Public participation session with Hermel Caza heads of municipalities

The main issues raised by the attendees were as follows:

- □ The heads of the municipalities who are members of the municipalities' union of Hermel insisted on the necessity that the project includes other villages that did not benefit from the project's first stage which constituted the rehabilitation and maintenance of primary roads in several villages.
- □ Additionally, there were requests that the secondary roads of the villages concerned in the project, be taken into consideration as they are also in need of maintenance. (Union letter of requests Annex 5)

They were informed that they can inquire about additional information and/or submit a complaint (if any) by contacting the Grievance Redress Mechanism (GRM) Unit on 01980096 ext: 317 or send an Email to INFOCENTER@CDR.GOV.LB or register by hand an official letter at the CDR.

Profession of Attendee	Phone Number
Engineer (representing	71/129459
TEAM International)	
Head of Fisane	71/340102
Municipality	
Head of Mazraat Sejoud	71/120140
Municipality	
Member of Mazraat	03/835816
Sejoud Municipality	
Vice Head of Jouar El	71/637799
Hachich Municipality	

Table 8-1 list of attendees

Head of Charbine	03/749156
Municipality	
Head of Al-Kouwakh	71/733603
Municipality	
Head of Hermel	
Municipalities Union	

International NGOs: they are covering the whole country and their consultation will be applied to all the ESMPs of the REP. They provide relief and developmental aid to many developing countries. They support the society in responding to crises and helps people whose lives and livelihoods are shattered by conflict and disaster to survive, recover and gain control of their future. When the crisis in Syria erupted in early 2011, numerous International NGOs responded to the humanitarian crisis and worked directly with the Syrian in Lebanon by providing aid and responding to their critical situation.

This ESMP consulted International NGOs (see Table 8-2) in an online meeting to inform them about the Project, disseminate it, ask them to circulate its impacts and activities among Syrian and tell them that they can inquire about additional information and/or submit a complaint (if any) by contacting the Grievance Redress Mechanism (GRM) Unit on 01980096 ext:317 or send an Email to <u>GRM.REP@cdr.gov.lb</u> B or register by hand an official letter at the CDR.

NGO Name	Contacts	Intervention Sector(s)	Comments
ANERA Lebanon	Deputy Country Director T: 01382590 (ext: 105) M: 70051813 E: anera@anera.org	 Children & Youth Development Education Relief Services Water sanitation and hygiene 	the deputy country director received the Project information sheet and explained that recently Anera operations in Lebanon have grown substantially to cope with the Syrian crisis. They have six offices throughout Lebanon. She welcomed the idea of the Project and will disseminate it across her organization.
ACTED	Deputy Country Director T: 01324331 M: 79160375 E: beirut@acted.org	 Development Infrastructure & Services Rehabilitation Labor & Livelihoods Shelter Water sanitation and hygiene 	the deputy country director received the Project information sheet and explained that ACTED is working with Syrian in Beirut and northern districts of Mount Lebanon (Baabda, Metn, Keserwane and Jbeil) and Bekaa, as well as in Akkar District. He welcomed the idea of the Project and will disseminate it across his organization.

Table 8-2 Consulted International NGOs and their Activities

Danish Refugee Council (DRC)	Country Director T: 01339052 (ext.: 201) E: drc@drc.ngo	 Direct Assistance Protection Shelter Community Empowerment and Livelihoods 	the deputy country director received the Project information sheet and explained that DRC is working with Syrian on many sectors in different locations across Lebanon including Beirut, Tripoli, Kobayat and Bekaa. He
			Lebanon including Beirut, Tripoli, Kobayat and Bekaa. He
			welcomed the idea of the Project and will disseminate it across his organization

Table 8-2 List of Contacted Local NGOs

Organization	Contacts	Activities	Feedback
Kafa	kafa@kafa.org.lb	KAFA (enough)	They requested
		Violence & Exploitation	explanation concerning
		is a feminist, secular,	grievance action
		Lebanese, non-profit,	mechanism and what
		non-governmental civil	methodology to submit.
		society organization	Also explanation on the
		seeking to create a	Also, explanation on the
		society that is free of	works and the possibility
		social, economic and	of increasing the items
		legal patriarchal	and volumes for works
		structures that	and volumes for works.
		discriminate against	
		women.	The answer was that
Himaya	himaya@himaya.org	Himaya was founded in	there is no possibility of
	01 205 215	2008 with the	increasing project
	01 395 315	notification number	activities due to
		748/2009. The	constraints in terms of
		organization has	budget and time
		continued to grow,	
		responding to child	
		national level	
Lost	media@lostlb.org	Lebanese NGO that	
	8	works with people,	
		particularly women and	
		youth to create a more	
		developed and equitable	
		society through reducing	
		poverty, eliminating	
		exclusion, and tostering	
		a culture of peace.	

Disclosure

It is to be noted that the residences and commercial units near the concerned road will be made aware of the project activities, schedule and GRM prior to commencement.

8.2. Grievance Redress Mechanism

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

Moreover, the contractor 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 and Sexual Harassment (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:

- <u>Level 1</u>: If any person has any complaint or concern regarding the project implementation, he/she can lodge an oral or written grievance to the site Manager. In case an oral complaint is made, it should be written by the Contractor Social expert. The issue must be resolved within a maximum duration of one week (immediate investigation shall be carried out and corrective actions shall be taken in case of issues assessed as critical).
- <u>Level 2</u>: If the person is not satisfied with the action of the Contractor, he/ she can send the complaint to the PIU social specialist through Phone: 01980096 ext:317, Email: GRM.REP@cdr.gov.lb or official letter registered at the CDR. The issue shall be resolved within a maximum of two weeks. The contact details are made available to the public by being presented on the project and mobile sign boards.
- <u>Level 3</u>: If the person is not satisfied with the decision of the social specialist of PIU, he or she can bring the complaint to the attention of the PIU Director's Office. Once the PIU Director receives the complaint, it needs to be resolved within a maximum of two weeks. Citizens can also register an official letter at the CDR (Address: Tallet al Serail Riad el Solh, Beirut Lebanon).

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 6) 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.

Figure 8-2 (overleaf) presents a detailed flowchart describing the process of grievance starting form reception of grievance to implementation of corrective measures.

8.2.2. 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 6).





Source: CDR, 2018

REFERENCES

Abdallah C. 2007. Application of remote sensing and geographical information system for the study of mass movements in Lebanon. Tectonics. Université Pierre et Marie Curie - Paris VI.

ABI-SALEH, B., SAFI, S. ET AL. 1996. LA Flore Terrestre: Habitats Forestiers et Ecosystèmes Naturels. In: UNDP - Ministère de l'Agriculture (LIBAN), ÉTUDE DE LA DIVERSITE BIOLOGIQUE DU LIBAN, T. III, PROJET PNUE / GF / 6105-92-72.

- Canter, L.W. 1995. Environmental impact assessment. McGraw-Hill, New York.
- CAS & ILO. 2019. Labour Force and Household Living Conditions Survey (LFHLCS) 2018–2019 Lebanon. Funded by the European Union.
- CAS, UNDP and MoSA. 2004. Living Conditions and Household Budget Survey.
- CDR. 2018. Environmental and Social Management Framework for the Roads and Employment Project. Republic of Lebanon.
- DOLIDAR (2017). Occupational Safety and Health Guidelines. Government of Nepal
- De Nevers, N. 2000. Air Pollution Control Engineering. McGraw-Hill Inc., New York.

Dubertret M., 1949. Carte Geologique detaille au 1:50,000, feuille de Baalbek, Liban. Delegation Generale de France au Levant, Beirut.

- Federal Highway Administration (FHWA). 1997. Procedures for abatement of highway traffic noise and construction noise-23 CFR PART 772. Online. Available: http://www.fhwa.dot.gov///environment/23cfr772.htm#table1.
- Huijer C., Harajli M. and Sadek S. 2011. Upgrading the seismic hazard of Lebanon in light of the recent discovery of the offshore thrust fault system. Lebanese Science Journal, Vol. 12, No. 2.
- Ministry of Environment. 2001. State and Trends of the Lebanese Environment. Beirut. Lebanon.
- Ministry of Environment. 2010. State and Trends of the Lebanese Environment. Beirut. Lebanon.
- Ministry of Public Health. 2016. Statistical Bulletin 2016. Online. Available: https://www.moph.gov.lb/en/Pages/8/327/statistical-bulletins
- Salem, S. 2014. Assessing the Environmental Impacts of Work Zones in Arterial Improvement Projects (No. N14-16). TranLIVE.
- Schwab, K. (2017). The Global Competitiveness Report 2017***** 2018. World Economic Forum.
- Sbayti, H. 2000. Air pollution modeling of transport-related emissions in the Solidere area. M.S. thesis, Department of Civil and Environmental Engineering, American University of Beirut, Lebanon.
- Supe S.M. Gawande. 2013. Effect of dust fall on vegetation. International Journal of Science and Research (IJSR) 4: 2319 7064.

- The World Bank Group. 2019. Climate Change Knowledge Portal. [Online] Available at: http://sdwebx.worldbank.org/climateportal/index.cfm?page=country_historical_climate&T hisCCode=LBN
- UNDP 1970. Liban etude des eaux souterraines. New York, 186 p.
- UNDP. 2014. Assessment of Groundwater resources of Lebanon. Beirut, Lebanon
- World Bank. 2002. The World Bank Policy on Disclosure of Information. June 2002. The World Bank, Washington D.C.

ANNEX

Annex 1: Figures and Tables Related to Chapter 4



Figure A Satellite image of the Hermel primary road (source: Google Earth)



Figure B Administrative Map



Figure C Geology Map



Figure D Hydrology and Hydrogeology Map



Figure E Land use / cover map



Figure F Protected areas map


Figure G Syrian Refugees Distribution Map in Hermel Caza (source: UNHCR 2021)



Figure H Precipitations values along all Hermel roads (period extending between 1996-2018) CHIRPS satellite 4.5 km spatial resolution (Source: CHIRPS satellite)



Figure I Land surface temperature variation for all Hermel roads (period extending between 2000-2018) MODIS satellite 1km spatial resolution (Source: MODIS satellite)



Figure J Windrose diagram Hermel area (wind direction, speed, and frequency, Source: Meteoblue prognostic model



This map has been produced by the inter-Agency information Management Unit of UNHCR based on maps and material provided by the Government of Lebanon for operational purpose. It does not constitute an official United Nations map. The designations employed and the presentation of material on this map do not imply the approximation of any opinion whates over on the part of the Government of the Government of the agent status of any country tentiony, day or area or of its authorities, or concerning the definitiation of its frontiers or boundaries.

Data 3ources - Religee population and location data by UNHCR as of 30 June 2023. For more information on refugue data, contact Dians EH datat elleval rejuritor org

GIS and Mapping by UNHCR Lebanon. For further information on map, contact. Maroun Sader at sadergrunhic.org

Figure K Syrian Refugees Map in Lebanon (UNHCR, 2023)

Environmental and Social Management Plan



Figure L Schools in close proximity of the concerned road

Routine Maintenance / Hermel Caza



Figure L Air quality cells for Hermel road (Source: MoE, 2019)



Figure M Cultivated trees and degraded grasslands bordering Hermel primary road-01



Figure N Residencies near the road (It is to be noted that the residences and commercial units near the concerned road will be made aware of the project activities, schedule and GRM prior to commencement).



Figure O Commercial stores near the road (It is to be noted that the residences and commercial units near the concerned road will be made aware of the project activities, schedule and GRM prior to commencement).



Figure P Road bordered by residential area and trees



Figure Q Green areas bordering the primary road



Figure R Deir Mar Maroun Caves



Figure S Kamouh El Hermel



Figure T Assi River

Annex 2: Assessment Methodology

The assessment followed the Lebanese MoE grading methodology stated in Decree 260/1, dated 2015. The impact grading methodology is explained in this section.

This approach was adopted in order to address the several sources of impacts from the project's rehabilitation and operational phases. The stages of the evaluation process are the following:

- 1. Identification of project-related activities (sources) and environmental aspects.
- 2. Identification of potential impacts to the environment (physical, biological, human, cultural).
- 3. Evaluation and assessment of the related unmitigated impact significance.

Impacts are first classified as shown the table below:

Matrix	Classification	Criteria
	P (Positive)	• The proposed activity offers benefits for the overall project
N	N (Negative)	• Impacts having minimal to major negative influence
(Nature)	D (Direct)	• Impact arising directly from the project activities
	I (Indirect)	• Impacts arising from activities not directly related to the project development
	L (Low)	 High potential to mitigate negative impacts on the physical, biological or human environment to the level of insignificant effects. Disturbance of degraded areas with little conservation value. Minor changes in species occurrence or variety. Simple mitigation measures may be needed to minimize impacts
M (Magnitude)	M (Moderate)	 Medium range (beyond site boundary but restricted to local area). Medium-term (reversible over time, duration of operational phase). Potential to mitigate negative impacts on physical, biological or human environment. However, the implementation of mitigation measures may still not prevent some negative effects. Destruction/Disturbance of areas with potential conservation value. Complete changes in species occurrence or variety.

Table A Classification of impacts

Matrix	Classification	Criteria
	H (High)	 Mitigation measures will help minimize impacts Disturbance to areas of high conservation value. Destruction of rare or endangered species. Mitigation is required. Largely irreversible impacts on the physical, biological or human environment. Has a massive impact on the surrounding livelihood. Potentially irreparable damage to a site of social and/or cultural importance
		a Timital to the united and
E (Extent)	L (Local)	 Limited to the project area Locally occurring impact within the locality of the proposed project
(Extent)	G (Global)	Extend beyond the local areaNational impact affecting resources on a national scale
	·	
	S (Short-term)	• Activities and their related impacts are characterized by a short duration of effect
T (Timing)	M (Medium-term)	• Activities and their related impacts are characterized by a medium duration of effect
	L (Long-term)	• Activities and their related impacts are characterized by a long duration of effect
D	C (Construction)	• Impacts arise during the construction phase of the proposed project
(Duration)	O (Operation)	• Impacts arise during the operational phase of the project
R	R (Reversible)	• Impacts may be reversible, or able to be rehabilitated upon the decommissioning of the proposed project
(Reversibility)	I (Irreversible)	• Impacts may not be reversible, or able to be rehabilitated upon the decommissioning of the proposed project
T	L (Low)	• The classified impact is unlikely to occur under normal operating conditions
L (Likelihood of occurrence)	M (Medium)	• The classified impact may possibly occur
	H (High)	• The classified impact is unlikely to occur under normal operating conditions
S	L (Low)	• Results in no substantial adverse change to existing environmental conditions
(Significance)	M (Medium)	• Substantial adverse change to existing environmental conditions

Matrix	Classification	Criteria
		• Can be mitigated to less-than-significant levels by implementation of proposed potentially feasible mitigation measures or by the selection of an environmentally superior project alternative
	H (High)	 Substantial adverse change to existing environmental conditions Cannot be fully mitigated by implementation of all feasible mitigation measures

The environmental significance matrix adopted is based on the well-known "weighted scoring" or "weighing and scoring" method used as a tool in various decision analysis applications. In this method, the following steps takes place:

- 1. Attributes relevant to the project are chosen
- 2. Weights or numerical values are assigned to each attribute depending on its importance (values should be based on objective data or expert opinion to exclude subjectivity during the process).
- 3. Scores are allocated to each option to reflect its status with respect to each attribute

The final result is a single weighted score for each option, which is used to quantify its overall performance/significance. As such, the adopted matrix is designed to allow subjective conclusions to be numerically recorded or quantified, therefore providing at the same time an impact evaluation and quantitative record to revert to in the future:

		-		-							
				Magnitude x Extent x Duration							
			1	2	3	4	5	6	7	8	9
-		>	2	4	6	8	10	12	14	16	18
ihood	`	iency	3	6	9	12	15	18	21	24	27
ikeli		requ	4	8	12	16	20	24	28	32	36
		Ξ.	5	10	15	20	25	30	35	40	45
	6	12	18	24	30	36	42	48	54		

Table B Signifiance Impact Matrix

Yellow: Negligible / *Green:* Low significance / *Blue:* Medium significance / *Red:* High significance



Annex 3: Road signs, markings, lights, and barricades to be used during rehabilitation works





$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	SIDE 0.70 m STANDARD SIGNS PAI AK2 $AK3$ $AK4$ $AK5$ $AK5$ $AK5$ $AK3$ $AK5$ $AK5$ $AK5$ $AK3+KM1AK3+KM1$ $AK3+KM1$	WARNING SIGNS TYPE AK					BY	FLAGMEN
AK14+KM9+KM2	AK14 AK17 AK22 ماطل ماطل أطريق ماطل AK14 AK17 AK22 ماطل AK5+KM9 AK14+KM9+KM2 EXAMPLE	AK2	SIDE 0.7	om	الله الله	200 m AK3+KM1 مدن یات AK5+KM9	STANDAR	RD SIGNS PADDLE



Annex 4: Code of Conduct

Table C Contractor Code of Conduct Form

Contractor Code of Conduct:

- 1. All employees, associates, and representatives commit to treating women, children (under the age of 18), and men with respect, regardless of race; colour; language; religion; political or other opinion; national, ethnic or social origin; sexual orientation or gender identity; disability; birth or other status.
- 2. GBV constitutes acts of gross misconduct and is therefore grounds for sanction, which may include penalties and/or termination of employment. All forms of GBV are unacceptable, regardless of whether they take place on the worksite, the worksite surroundings, or off-site. In addition to the potential sanctions listed above, legal prosecution will be pursued, if appropriate, for any employees, associates, and representatives alleged to have committed GBV.
- 3. Demeaning, threatening, harassing, abusive, or sexually provocative language and behaviour are prohibited among all company employees, associates, and representatives.
- 4. Sexual favors, making promises or favourable treatment dependent on sexual acts are prohibited.
- 5. Unless there is the full consent by all parties involved, sexual interactions between the company's employees (at any level) and members of the surrounding communities are prohibited. This includes relationships involving the withholding or promise of any kind of reward.
- 6. All employees, including volunteers and sub-contractors are expected to report suspected or actual GBV by a fellow worker, whether in the same company or not. Reports must be made in accordance with GBV allegation procedures.
- 7. All employees are required to attend an induction training course prior to commencing work on site to ensure they are familiar with the GBV Code of Conduct.
- 8. All employees must attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the institutional GBV Code of Conduct.
- 9. All employees will be required to sign an individual code of conduct confirming their agreement to support GBV activities.

I do hereby acknowledge that I have read the foregoing GBV Code of Conduct, and on behalf of the company agree to comply with the standards contained therein. I understand my role and responsibilities to prevent and respond to GBV. I understand that any action inconsistent with this Code of Conduct or failure to act mandated by this Code of Conduct may result in disciplinary action.

Company Name:

Signed by:

Title:

Date:

Table D Contractor Code of Conduct Form (in Arabic)

:مدونة قواعد سلوك المقاول

.[يلتزم جميع الموظفين والمنتسبين والممثلين بمعاملة النساء والأطفال (تحت سن 18 عامًا) والرجال باحترام ، بغض النظر عن العرق ؛ اللون؛ اللغة؛ الدين؛ الرأي السياسي أو غيره ؛ الأصل القومي أو العرقي أو الاجتماعي ؛ التوجه الجنسي أو الهوية الجنسية ؛ العجز ؛ الولادة أو حالة أخرى.

- 2يُشكل العنف المبني على النوع الاجتماعي أفعال سوء سلوك جسيمة ، وبالتالي فهو سبب للعقوبة ، والتي قد تشمل عقوبات و / أو إنهاء العمل. جميع أشكال العنف المبني على النوع الاجتماعي غير مقبولة، بغض النظر عما إذا كانت تحدث في موقع العمل، أو محيط موقع العمل، أو خارج الموقع. بالإضافة إلى العقوبات المحتملة المذكورة أعاله، ستتم متابعة المقاضاة القانونية، إذا كان ذلك مناسبًا، ألي من الموظفين والشركاء والممثلين المزعوم أنهم ارتكبوا العنف المبنى على النوع الاجتماعي.

.3تحظر اللغة والسلوك المهين ، أو التهديد ، أو المضايقة ، أو المسيء ، أو الاستفزازي الجنسي بين جميع موظفي الشركة ، والزملاء ، والممثلين.

. 4 يحظر التحيز الجنسى ، والوعود أو المعاملة المفضلة التي تعتمد على الأفعال الجنسية.

.5ما لم يكن هناك موافقة كاملة من جميع الأطراف المعنية ، يحظر التفاعل الجنسي بين موظفي الشركة (على أي مستوى) وأعضاء المجتمعات المحيطة. وهذا يشمل العلاقات التي تنطوي على حجب أو وعد بأي نوع من المكافأة.

.6يُتوقع من جميع الموظفين ، بمن فيهم المتطوعون والمقاولون من الباطن الإبلاغ عن العنف المبني على النوع الاجتماعي المشتبه به أو الفعلي من قبل زميل عامل ، سواء في نفس الشركة أم لا. يجب إعداد التقارير وفقًا لإجراءات ادعاء العنف المبني على النوع الاجتماعي.

.7يُطلب من جميع الموظفين حضور دورة تدريبية تمهيدية قبل بدء العمل في الموقع للتأكد من أنهم على دراية بقواعد السلوك المتعلقة بالعنف المبنى على النوع الاجتماعي.

.8يجب على جميع الموظفين حضور دورة تدريبية إلزامية مرة واحدة في الشهر طوال مدة العقد بدءًا من التدريب التمهيدي الأول قبل بدء العمل لتعزيز فهم مدونة قواحد السلوك المتعلقة بالعنف القائم على النوع الاجتماعي.

. وسيُطلب من جميع الموظفين التوقيع على مدونة سلوك فردية تؤكد موافقتهم على دعم أنشطة العنف المبنى على النوع الاجتماعي.

أقر بموجب هذا بأنني قرأت مدونة قواعد السلوك المتعلقة بالعنف المبني على النوع الاجتماعي السابقة، وبالنيابة عن الشركة أوافق على الامتثال للمعايير الواردة فيها. أفهم دوري ومسؤولياتي لمنع العنف المبني على النوع الاجتماعي والاستجابة له. أفهم أن أي إجراء يتعارض مع مدونة قواعد السلوك هذه أو عدم اتخاذ إجراء يفرضه قانون قواعد السلوك هذا قد يؤدي إلى اتخاذ إجراءات تأديبية.

اسم الشركة:

موقعة من قبل:

العنوان:

التاريخ:

Table E Individual Code of Conduct Form (in English)

- This individual Code of Conduct should be signed by all employees, from senior managers through the operational staff, and should also be required from any Contractors working with the company.
- I,______acknowledge that preventing gender-based violence (GBV) is important, and that preventing it is my responsibility. At [Company], GBV activities constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. All forms of GBV are unacceptable, be it on the worksite, the worksite surroundings, or in the community. Prosecution of those who commit GBV may be pursued if appropriate.
- I agree that while working on the [Project], I will:
- Consent to a police background check.
- Treat women, children (persons under the age of 18), and men with respect regardless of race; colour; language; religion; political or other opinion; national, ethnic or social origin; sexual orientation or gender identity; disability; birth or other status.
- Not use language or behaviour towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not request or engage in sexual Favors—for instance, making promises or favourable treatment dependent on sexual acts.
- Understand that unless there is the full consent by all parties involved, sexual interactions between the company's employees (at any level) and members of the surrounding communities are prohibited. This includes relationships involving the withholding or promise of monetary or non-monetary reward.
- Attend and actively partake in training courses related to HIV/AIDS and GBV as requested by my employer.
- Report through the grievance redress mechanism or to my manager any suspected or actual GBV by a fellow worker, whether in my company or not, or any breaches of this Code of Conduct. Sanctions

[Company] has established a grievance redress mechanism for receiving, reviewing, and addressing allegations of GBV. If an employee has breached the Code of Conduct, the employer will take disciplinary action which could include:

- Informal warning
- Formal warning
- Additional training
- Loss of up to one week's salary
- Suspension of employment (without payment of salary), for a minimum period of one month up to a maximum of six months
- Termination of employment

In addition to the above, if warranted, [Company] will report the employee to the police as per local legal regulations.

I understand that it is my responsibility to use common sense and avoid actions or behaviours that could be construed as GBV or breach this Code of Conduct. I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Individual Name:

Signed by:

Title:

Date:

Table F Individual Code of Conduct Form (in Arabic)

•يجب التوقيع على مدونة قواعد السلوك الفردية هذه من قبل جميع الموظفين ، من كبار المديرين من خلال الموظفين التشغيليين ، ويجب أن تكون مطلوبة أيضًا من أي مقاولين يعملون مع الشركة.

•أنا ______ الموقع أدناه أقر بأن منع العنف القائم على نوع الجنس مهم وأن منعه هو مسؤوليتي. في [الشركة]، تشكل أنشطة العنف المبني على النوع الاجتماعي أفعال سوء سلوك جسيمة، وبالتالي فهي أسباب للعقوبات أو العقوبات أو إنهاء العمل المحتمل. جميع أشكال العنف المبني على النوع الاجتماعي غير مقبولة، سواء كانت في موقع العمل أو في محيط موقع العمل أو في المجتمع. يمكن ملاحقة من يرتكبون العنف المبني على النوع الاجتماعي إذا لزم الأمر.

أوافق على أنني أثناء العمل في [المشروع] ، سأقوم بما يلي:

•الموافقة على الفحص الأمني للشرطة.

•معاملة النساء والأطفال (الأشخاص الذين تقل أعمار هم عن 18 سنة) والرجال باحترام بغض النظر عن العرق ؛ اللون؛ لغة؛ دين؛ الرأي السياسي أو غيره ؛ الأصل القومي أو العرقي أو الاجتماعي ؛ التوجه الجنسي أو الهوية الجنسية ؛ عجز؛ ولادة أو حالة أخرى.

•عدم استخدام لغة أو سلوك تجاه النساء أو الأطفال أو الرجال غير اللائق أو المضايقة أو التعسفي أو الاستفزازي الجنسي أو المهين أو غير المناسب ثقافياً.

• لا تطلب أو تشارك في خدمات جنسية - على سبيل المثال ، تقديم وعود أو معاملة تفضيلية تعتمد على الأفعال الجنسية.

•افهم أنه ما لم يكن هناك موافقة كاملة من جميع الأطراف المعنية ، يحظر التفاعل الجنسي بين موظفي الشركة (على أي مستوى) وأعضاء المجتمعات المحيطة. وهذا يشمل العلاقات التي تنطوي على حجب أو الوعد بمكافأة نقدية أو غير نقدية.

•حضور والمشاركة بنشاط في الدورات التدريبية المتعلقة بفيروس نقص المناعة البشرية / الإيدز والعنف القائم على نوع الجنس بناء على طلب صاحب العمل.

•الإبلاغ من خلال آلية معالجة التظلمات أو إلى مديري عن أي نوع من أنواع العنف المبني على النوع الاجتماعي المشتبه فيه أو الفعلي من قبل زميل عامل ، سواء في شركتي أم لا ، أو أي انتهاكات لقواعد السلوك هذه.

العقوبات

أنشأت [الشركة] آلية لمعالجة المظالم لتلقي ومراجعة ومعالجة مزاعم العنف المبني على النوع الاجتماعي. إذا انتهك موظف قواعد السلوك، فإن صاحب العمل سيتخذ إجراءات تأديبية قد تشمل:

•تحذير غير رسمي

•تحذير رسمي

•تدريب إضافي

فقدان راتب يصل إلى أسبوع واحد

•تعليق العمل (بدون دفع الراتب) ، لمدة لا تقل عن شهر واحد بحد أقصى ستة أشهر

•الفصل من العمل

بالإضافة إلى ما سبق، إذا لزم الأمر، ستقوم [الشركة] بإبلاغ الموظف بالشرطة وفقًا للوائح القانونية المحلية.

أفهم أنه من مسؤوليتي استخدام الحس السليم وتجنب الإجراءات أو السلوكيات التي يمكن تفسير ها على أنها العنف المبني على النوع الاجتماعي أو خرق قواعد السلوك هذه. أقر بموجب هذا أنني قرأت مدونة قواعد السلوك السابقة، وأوافق على الامتثال للمعايير الواردة فيها وفهم أدواري ومسؤولياتي لمنع العنف المبني على النوع الاجتماعي والاستجابة له. أفهم أن أي إجراء يتعارض مع مدونة قواعد السلوك هذه أو عدم اتخاذ إجراء يفرضه قانون قواعد السلوك هذا قد يؤدي إلى إجراء اتأديبي وقد يؤثر على عملي المستر.

الاسم الفردي:

موقعة من قبل:

العنوان:

التاريخ:

Annex 5: Public Consultation Notes, Presentation, Invitation Letters, and Attendance Sheets

Notes:

This ESMP was publicly consulted where a public participation meeting was arranged for Hermel Caza. The public meeting was held at the Union of Hermel Municipalities on Thursday August 24, 2023.

The number of attendees was 7 of which one was a woman. During the meeting, attendees were informed about the project objectives, the identified natural, economic, and social resources of importance in the area, the project's possible environmental and social risks, the planned mitigation measures and Grievance Redress Mechanism (GRM).

First, local authorities were not satisfied about the selection of roads within the scope of REP. According to them, there are roads that are in greater need for rehabilitation. They asked about the selection process as they were not consulted at the beginning of the project. In this context, the consultant explained that the Government prioritized roads in Hermel Caza based on municipalities' official requests beside several technical criteria.

The second main concern was the coordination with relevant authorities, especially with respect to public works (i.e. wastewater and water infrastructure, etc.). The head of municipalities were worried whether there would be coordination among ministries and infrastructural institutions before the project implementation to avoid re-excavations of roads and further disturbances and pressures. In this context, the public was informed that CDR will ensure that a full coordination among municipalities and authorities prior to project execution.

Further, technical concerns were revealed during the meeting including whether the scope of work encompasses installing new drainage systems when needed and rehabilitating existing wastewater channels that are in bad conditions. In this context, the consultant explained that, when needed, proper drainage systems will be installed, however, wastewater channels are not included in the project scope. Finally, women shared the same concern of the rest of attendees (road selection, coordination between relevant authorities, and works included within the project scope).

المنهورية الليانية وارة الداخلية والتلديات محافظة بعقلك الهرمل اتحاد بلدبات الهرمل حضرة رئيس مجلس الإنماء والإعمار المهندس نبيل الحسر المحترم . بعد الإطلاع من قبل إتحاد بلديات الهرمل على الطرق المطروحة صيانتها في المرحلة الثانية . أبلعنا بأن هناك طريق واحدة يطول مبعة عشر كلم قد اتخذتم قراراً بصيانتها تبدأ من رأس بعليك مروراً بمدينة الهرمل وتنتهى في بلدة الشربين ، وقد شرح ممثل شركة جيوفلنت الأستاذ خليل زين أهداف المشروع لإعادة الصيانة وتقديم دراسة بينية وإجتماعية تفصيلية حول المشروع . وتم الإتفاق على تقديم دراسة من البلديات بالطرقات المنوي صيانتها على مستوى فضاء الهرمل إلى شركة جيوفلنت وأيضاً لمجلس الإنماء والاعمار والطرقات هي النالية : مفرق زغرين – البعول – النفاحة . ۲ مفرق الكواخ - خربة البطم - الكواخ . ٣- خربة البطم - الشربين . ٤- القصر أبش . ٥- القصر رأس النيع - دالك الطاحون . ٢- فيسان - الستان . الهرمل في : ٢٥ / ٨ / ٣٣ رنيس إتحاد بلديات الهرمل تصري الهقي

GE flint

Slides:



خطة الإدارة البيئب لاحتماعيه لمشروع الطرق والعمالة

الإجتماع التشاوري لصيانة الطرق في قضاء الهرمل



المقدمة

TEAM

- يقوم البنك الدولي بتمويل مشروع الطرق والعمالة، وهو مشروع سيمثل جزءاً من إعادة تأهيل وتطوير الطرق في لبنان والبالغة كلفته حوالي 510 مليون دولار أمريكي.
- يهدف هذا المشروع إلى تحسين وتأهيل وضع الطرقات من خلال تحديد الأولويات وتحسين تقنيات إدارة شبكة الطرق
- بحسب تقرير التنافسية العالمية التابع للمنتدى الاقتصادي العالمي 2018 فإن البنية التحتية في لبنان هي ثالث عقبة رئيسية للنمو الإقتصادي.
- ومن بين المؤشرات الفرعية التسعة للبنية التحتية التي يستخدمها المنتدى الاقتصادي العالمي، يحتل لبنان المرتبة الـ 121 بالنسبة لنوعية الطرق (المنتدى الاقتصادي العالمي، 2018).
 - يعاني لبنان من حوادث السير بحيث معدلاتها هي الاعلى عالمياً مقارنةً بعدد السكان.

BROWTLAND

أهداف المشروع

يهدف هذا المشروع إلى تأهيل وصيانة الطرق بحيث تتنوع وتختلف الأنشطة بين طريق وأخر، اعتمادًا على تصنيف الطريق من حيث حالة الرصيف والكثفين ومجاري الصرف والانهيار الأرضى المحتمل و/أو تأكل التربة والجدران الاستنادية وممرات المشاة وإضافة و/أو إعادة تأهيل إنارة الشوارع.

سيتم تنفيذ أنشطة الصيانة الروتينية لمدة عامين، للطرق الرنيسية كأولوية والطرق الثانوية حيث تتوفر الأموال

Road code	Villages: From to	Classification	Length (Km)	Width range (m)	Elevation range (m)
Hermel Primary Road	Ras Al Assi	Primary	17,6	5-7	732-
	to Charbine (Qoubaiyat-Qasr Road)				995
					863

OFUNT SARL





أهداف مشروع الطرق والعمالة



and second states

أهداف الخطة الإدارة البينية والإجتماعية



.....

فهرس خطة الإدارة البيئية والإجتماعية

ملخص تتفيذي مقدمة

- أطر السياسات والأطر القانونية والإدارية.
 - وصف مكونات المشروع
 - وصف البيئة المحيطة
 - مشاركة العامة
 - تقييم الأثار البينية المتحملة
 - خطة الإدارة البينية

SOFTAFTARE

أطر السياسات والأطر القانونية والإدارية

- الفانون رقم ٤٤٤ /٢٠٠٣ قانون حماية البيئة
- مرسوم رقم ٢٠١٢/ ٨٦٣٣ أصول تقييم الأثر البيني الذي حدد المشاريع التي تستلزم حكماً إعداد در اسة تقييم أثر بيني.
 - قرار 1/52 (1996)
 - قرار 1/8 (2001)
 - السياسات التشغيلية للبنك الدولى (OP4.01, OP4.12)

		الأشغال المقترحة
	$\Theta \Theta O$	 إصلاح ورصف الطرق قشط وزيادة طبقات لتصحيح المنخفضات الموضعية
		 إصبلاح الجدران الاستنادية الغرسانية التالغة / جدران الصغرية إصبلاح الأرصفة وحواجز الأمان إصبلاح الأرصفة وحواجز الأمان
000	the star where	 بصندح سبته تصريف ميد المصر إصلاح شبكات الإنارة وكافة الأعمال الكهربانية والمدنية المتطفة بها تنفيذ علامات الطرق
000		 الأعمال المساعدة الأخرى المرتبطة بما في ذلك إدارة حركة المرور أثناء الصيلة.
0 0 0		مدہ المبروع می سنیں

وصف البيئة المحيطة

- نوعية التربة والمياه السطحية والجوفية
- تقييم الوضع الجيولوجي والهيدر وجيولوجي
 - · تقييم الوضع البيولوجي
 - وضع الضجيج
 - الوضع الاجتماعي و الاقتصادي للمنطقة
 - مدى توفر البنى التحتية

OUTUNE SALAS

الآثار البيئية المحتملة

- التأثير على نوعية الهواء ونوعية المياه
- زيادة في نسبة المخلفات الصلبة الناتجة عن عملية التأهيل
 - زيادة في مستوى الضجيج
- تأثر الحركة التجارية للمؤسسات والمحال القائمة على جانبي الطريق
 - تغير في حركة السير
- خطر على الصحة والسلامة المهنية والعامة (في حال حصول اي حادث)





خطة الإدارة البيئية والإجتماعية

هدف الخطة الادارة البينية: مراقبة المشروع والتأكّد من مطابقته مع جميع المعايير البينية. بعد دراسة الاثار المحتملة للمشروع ،تقوم الدراسة باقتراح اساليب تخفيفية لهذه الاثار وسبل لمراقبتها.

خطة الادارة البينية تتضمن:

- مراقبة نوعية المياه
- مراقبة نوعية التربة
- مراقبة نوعية الهواء الآية بي التاريخ ال
- مراقبة نوعية التنوع البيولوجي
 مراقبة الصحة والسلامة العامة
- خطة طوارئ للتصرف السليم في حال حدوث اي حادث مفاجئ.

شكراً لحضوركم



Public Consultation Invitation Letters



ويرقلت قرم و. خلون 200 2014-019 اللكن حكم 2010-00000 اللكن حكم 2010 الملكن الأرضي - طرواز ستر - المزامية مستري به 155 - 165 الهاد لمبطر قركار الم 2012/254 الهاد لمبطر قركار الم 2012/254

Looff or Sard. Call : 60961-3-219009 Phoyo: 90965 5-914-662/3/4 Fast tal. 100 Officer - carter Wartheakea-Bautech P.I.Boo. 45 - 165 FEBUT - LEANCH website more geoffretcom

> جانب المنادة انحاد بلديات الهرمل المحترمين الموضوع: دعوة لحضور اجتماع مشاركة عامة حول مشروع "الطرق والعمالة"

> > تحبة طيبة وبعدء

حيث كانت الحكومة الثبتانية قد حصلة على تمويل من البنك الدولي لمشروع الطرق والتوظيف (REP) . بقرم مجلس الإنماء والإعمار (CDR) بصفته الجهة المنفذة بتحديد أنشطة إعادة الصيلة المحصورة ضمن محاذاة الطرق الحالية مع عدم وجود توسيع للطرق، وعدم إعادة التوطين للقسري، وعدم استملاك الأراضيي. في هذا السياق، منح مجلس الإنماء والإعمار العقد رقم 20379 لشركة الخبراء العرب في الهندسة والإدارة (تيم) TEAM International ، المشار إليها فما يلي باسم الإستشاري، لإعداد التقييم والتصميم وخطط الإدارة البيئية والإجتماعية للطرق في مناطق البترون وبشري والكورة وطر إبلس ويطبك واليرمل.

إن أنشطة الصبانة التي بتحن إجراؤها أنناء المشروع تختلف بين طريق وأخر، اعتمادًا على تصنيف الطريق من حيث حلّة الرصيف والكنفين والصرف والانييار الأرضي المحتمل و/أو تأكل التربة والجدران الاستنادية وممرات المشاة وإضافة و/أو إعادة تأهيل إذارة الشوارع. سيتم تنفيذ أنشطة الصيانة الروتينية لمدة عامين ضمن قضاء الهرمل، للطرق الرئيسية كأرلوية والطرق الثانوية حيث تتوفر الأموال.

ولما كانت تكلفت شركة TEAM International من قبل مجلس الإنماء والإعمار للقيام بالدراسات الهندسية. والبينية المتعلقة بالمشروع والتي بدور ها كلفت شركة جيواللنت ش.م.م. للإستشارات البينية بإعداد خطة ادارة بينية واجتماعية للمشروع المذكور :

وحيث أنه برزت الضرورة لعقد اجتماعات تشاورية مع الجهات المعنية والعلمة بشؤون البينة والأمور الإجتماعية ذات الصلة بمشاريع الطرق والإستماع إلى أراتهم المتعلقة بالمشروع؛

ويما أن قضاء الهرمل يتضمن طرقات من مجموع الطرقات الملحوظة للصيانة في هذا المشروع؛

1221

A Page

.....

2|Page



موقد کرم . طرب 200461-3-219 699 الف 19965-5-954 602204 الفل الرضي ماروکر ستر ، المارمیة الفل الرضي ماروکر ستر ، المارمیة مورث الفل کون تسویل شرقة رام 2392264

Geoffretnand Coll., 00061-3-219 (029 Phone: 00061-3-219 (029 Phone: 300615-5-954 (n62/2)/4 Phone: - convert Nac Neukou-Harmeth Philine: 45 - 165 Biolutt - LESANON website: unwageoffice.com

ندعوكم لحضور اجتماع مشاركة للعامة في تمام الساعة العاشرة صباحاً من يوم الخميس الواقع في 2023/08/24 في مبنى اتحاد يلديات الهرمل، ونتمنى على المواطنين الكرام، إيداء الملاحظات الخطيّة، في حال وجودها، حول المشروع المذكور، وإيلاغها إلى شركة هيوقلنت ش.م.م على الأرقام التالية: 2014/254662/3/4 أو إيداعها لذى اتحاد بلديات الهرمل.

وتفضلوا بقبول فانق الاحترام

ىر شركة چيرقلنت ش.م.م
Attendance Sheet:

GE®flint		
عنوان البريد	F	المهنة
fatenassist @ gomil con	ن	Eng.
Sind 320 grail- con	1	Reijen iec
	4.1	الله بلدته جرالات وتتب للديغات
8	-	المسلم المسلم الم
	-	
	-	

Annex 6: Complaint 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