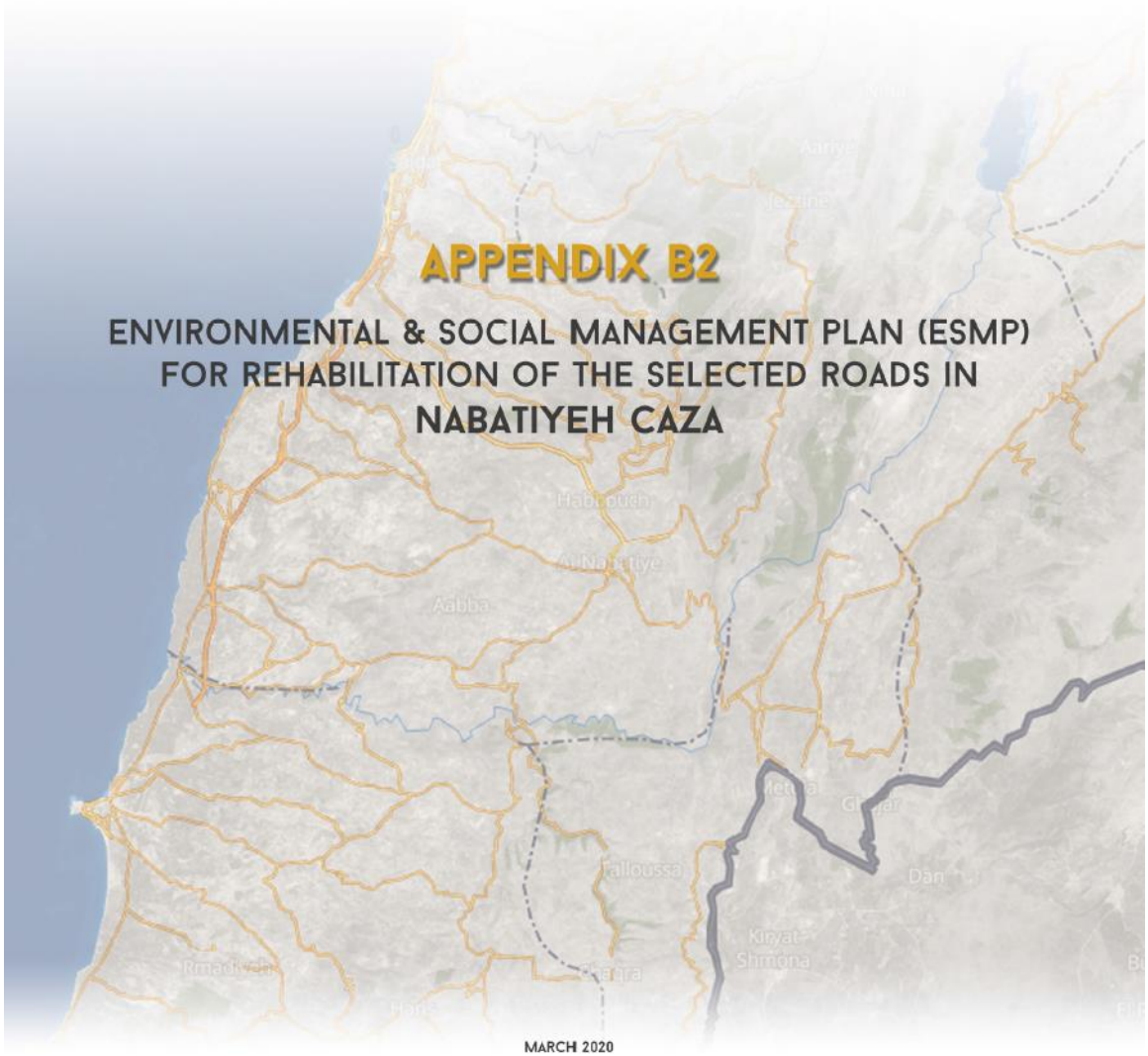
ROADS &
EMPLOYMENT PROJECT

REPUBLIC OF LEBANON
COUNCIL FOR DEVELOPMENT
AND RECONSTRUCTION

DETAILED ENGINEERING DESIGN FOR THE
REHABILITATION OF SELECTED ROAD LINKS IN LEBANON

LOT 3A

NABATIYEH - MARJAYOUN - BEKAA WEST - RACHAYA - HASBAIYA



APPENDIX B2

ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN (ESMP) FOR REHABILITATION OF THE SELECTED ROADS IN NABATIYEH CAZA

MARCH 2020

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ص. ب ١١-٣٤٤٦ بيروت - لبنان

Final

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LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACE	Associate Consulting Engineers
BOQs	Bill of Quantities
CBD	Convention on Biological Diversity
CDR	Council of Development and Reconstruction
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CO	Carbon Monoxide
COM	Council of Ministers
EA	Environmental Assessment
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
ESMP	Environmental and Social Management Plans
GBV	Gender Based Violence
GRM	Grievance Redress Mechanism
IBA	Important Bird Area
IFC	International Finance Corporation
LARI	Lebanese Agriculture Research Institute
MOC	Ministry of Culture
MOE	Ministry of Environment
MOIM	Ministry of Interior and Municipalities
MOL	Ministry of Labor
MOPWT	Ministry of Public Works and Transportation
NAAQS	National Ambient Air Quality Standards
NGOs	Nongovernmental Organizations
NO	Nitrogen Monoxide

NOx	Nitrogen Oxides
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
REP	Road and Employment project
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
VAC	Violence Against Children
WB	World Bank
WBG	World Bank Group
WHO	World Health Organization

EXECUTIVE SUMMARY – NON-TECHNICAL SUMMARY

ES1. Introduction

The Council for Development and Reconstruction (CDR) acting as an executing agency on behalf of the Lebanese Council of Ministers (COM) awarded a contract to Associated Consulting Engineers (ACE), hereinafter the Consultant, to prepare the assessment, design and Environmental and Social Management Plans (ESMP) of Lot 3 under Roads and Employment Project (REP). This project is funded by the World Bank (WB).

The Project's main objectives are to enhance the transport connectivity along selected secondary and tertiary road sections in different cazas and to create short-term job opportunities for the Lebanese and Syrian communities. The project will include the rehabilitation of urban and rural stretches of roads from all Lebanese regions. The project covers classified roads in 25 cazas throughout Lebanon with an expected total length of 835 km and grouped in six (6) lots. The project will be implemented over a period of five years.

This document represents an ESMP of the REP in Nabatiye Caza and it was prepared according to the WB OP 4.01 (Environmental Assessment). It covers all components of the proposed project during the rehabilitation and operation phase, assesses of the likely environmental and social consequences of a project, and determines the necessary measures to mitigate the negative ones and increase the positive impact on the environment and natural resources throughout a mitigation plan. In addition, the work included the development of a monitoring plan to ensure compliance of the project with environmental and social conditions and regulations. Moreover, public hearing sessions of the project were conducted and included the participation of the public and concerned communities.

ES2. Existing Policies, Legal and Administrative Framework

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

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

- Labor Law/1946: The Lebanese Labor Code
- law No. 335/2001: Pursuant to the International Labor Organization ILO Convention No 128
- law No. 400/2002: Pursuant to ILO Convention No 138
- Decree 8987/2012 Prohibition of employment of minors under the age of 18 in work that may harm their health, safety or morals
- Decree 3791/2016 Minimum Wage
- Decree 2761/1933 on The prohibition of wastewater discharge into water streams
- Decree 8735/1974 on the Conservation of Public Hygiene
- Law 64/1988: Protection of the environment against pollution from hazardous waste disposal and substances
- Law 558/1996: Protection of forests
- Law 80/2018: Integrated Solid Waste Management

- MOE Decision 52/1 (1996) and 8/1 (2001) on the Requirements to protect air, water, and soil pollution
- MOE Decision 8/1/2001 Revised standards for air emissions, liquid effluents and wastewater treatment plants
- Law 444/2002 Framework Law for Environmental Protection
- Law 77/2018: Water Law
- Law 78/2018: Air Quality Law
- Decree 11802/2008 Occupational prevention, safety, and health in all enterprises subject to the Code of Labor
- Decree-Law 118/1977 on the Municipal Act
- Decree 8803/2002 and its amendments: Organization of quarries activity, rehabilitation and licensing procedures
- Law 37/2008 on the Cultural Policy Law
- Law243/2012: New Traffic Law
- Legislative Decree 340/1943: Penal Code
- Law 58/1991: Expropriation law
- Law 53/2017: Amendment of Penal Code

The World Bank Policies and Procedures: OP/BP 4.01on Environmental Assessment, classifies the proposed project under Category 'B' and OP/BP 4.12 on Involuntary Resettlement (However the project will not include land acquisition or resettlement). In addition to the Public consultation and Disclosure Policy under OP/BP 4.01.

According to OP/BP 4.01, the Bank requires that 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 takes their comments and concerns into consideration

In addition, some international conventions and treaties are relevant to the project and are as follows: The United Nations Framework Convention on Climate Change (UNFCC), and Convention on Biological Diversity (CBD).

ES3. Description of the Proposed Project

The study area where the proposed roads are located is the Caza of Nabatiye of Nabatiye Governorate. The total number of the proposed roads to be rehabilitated under this project is 4 roads with a total length of 25.4 km. All of the roads are already existing and require rehabilitation of various components, including pavement, sidewalks, drainage, safety measures, and street lighting. The selection of the roads was determined by the Cabinet of Ministers in their Meeting Number 32 dated 27/06/2019.

The proposed project consists of the rehabilitation of existing roads in the Caza of Nabatiye. The rehabilitation activities differ for each road depending on the pavement conditions and the road rating that was defined by the consultant.

Determining the condition of the asphalt is important to assign the proper pavement rehabilitation activities. The pavement rehabilitation activities consist of either pavement

maintenance or overlay on existing pavement or complete removal of deteriorated pavement and constructing a new one.

The proposed project also consists of other activities beside the pavement rehabilitation works. These activities consist of:

- Construction or improvement of drainage systems
- Construction or improvement of retaining walls
- Installing concrete safety barriers
- Marking lanes and stoppage line
- Adding adequate traffic signs for stoppage give ways as warning signs, mirrors at sharp edges, and other regulatory and warning signs
- Rehabilitating sidewalks
- Repairing street lighting
- Relocation of existing utilities as needed

ES4. Baseline Environmental and Social Conditions

Topography, Geology and Hydrogeology

Nabatiye Governorate, where the proposed roads are located, is around 75 km away from Beirut, the capital. Nabatiye lies on an elevation of around 430 meters above sea level. The main geological formation within the study belongs to the following: Sannine Limestone of Cenomanian age unit (C4) and its subunits, Eocene (E2) and the Senonian and base of Eocene (C6). As for the main water body, Al Zahrani River was identified within the study area, mainly near L3-NA-RD02 and L3-NA-RD8a. The hydrological maps representing these water courses and watershed are represented in this report.

Climate and Meteorology

The climate data of Nabatiye were represented in this study. The average annual temperature in Nabatiye is 18.7 °C and the average annual precipitation is 852 mm. The climate of Nabatiye for the year 2018 was represented in a climograph from data obtained from the nearest meteorological station of the Lebanese Agriculture Research Institute (LARI) (temperature, precipitation, wind speed and wind direction)

Air Quality and Noise

Ambient air quality of the project area was requested from MOE. Data was available 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 results have shown that the concentrations of NO_2 in all the cells comply with the national standards and the WHO Guidelines. As for the concentrations of PM10, the obtained values were not in compliance and slightly above the WHO Guidelines while PM2.5 in all the cells were not in compliance with the WHO standards for air quality. As for the level of noise in the region, the team had measured noise levels at two site locations during a 3 minute period. The results were reported in the study.

Land Use/Land Cover

In Nabatiye, land use is residential and commercial, as the area is mostly urbanized. During the site visits, different kind of trees and areas were observed such as groves of olive trees and fruitful trees along the roads, the presence of Eucalyptus and pine trees along all the

road project were also observed. The table below represents the visual classification of land use based on google maps.

Municipality	Land Use
Zefta	Densely populated, natural landscapes, sparse vegetation cover
Nmayriyeh	Moderately populated, terraced landscapes, moderate vegetation cover
Charqiyeh	Densely populated, natural landscapes, sparse vegetation cover
Habbouch	Densely populated, natural landscapes, sparse vegetation cover
Arab Salim	Densely populated, terraced landscapes, moderate vegetation cover
Sarba	Moderately populated, terraced landscapes, moderate vegetation cover
Houmine el Faouqa	Moderately populated, natural landscapes, moderate vegetation cover
Ansar	Densely populated, terraced landscapes, dense vegetation cover
Abou El Aswad	Sparsely populated, natural landscape, dense vegetation cover

Biological Environment and Ecologically Sensitive Areas

Many trees were identified along the proposed roads

- Peach, palm, quercus, cypress, salix, eucalyptus, olive, and pine trees were observed throughout road L3-NA-RD02, along with vine and ornamental shrubs and flowers.
- Eucalyptus, olive, and pine trees were observed throughout road L3-NA-RD10 along with flowers.
- Olive, pine, and eucalyptus trees were observed along road L3-NA-RD08A.
- Eucalyptus, cypress, and fruitful trees were observed along road L3-NA-RD14

The fauna in the Caza includes mainly animals that are raised for livestock production such as goats and sheep. During the site visits, wild animals including mammals and birds were not identified. Also grazing livestock was not noticed along the project roads.

The District of Nabatiye comprises Ebel Es Saqi area that was declared as an Important Bird Area (IBA). Moreover, the MOE has declared in 2006 Ebel Es Saqi a Hima that was among the list of sites of natural and/or ecological importance in need for protection and the word Hima refers to protected area.

Demographic Profile

The Nabatiye Governorate has around 330,000 inhabitants (including Syrian and Palestinian refugees). The population density in the Caza of Nabaitye is around 305 people per km2. The unemployment rate in Nabatiye is estimated at 6.0% compared to the national average 11.4%. There are 21,500 Syrian refugees in Nabatiye Caza however, the number of Syrian Refugees registered in each village of the project area is presented in the report.

Economic Activities

The main economic activities in Nabatiye are concentrated in trade and services and real estate. It is considered as the main market for villages of the Caza'. Nabatiye is also the administrative city of the Nabatiye governorate. During the site visits, many shops, pharmacies, gas station and car repairing shops were identified along the way and are in

close proximity to some road stations especially in the residential areas. All these features were described in the report.

Education

Some of the schools in Nabatiye have only primary education level while others have both the intermediate and secondary education level. Others might have secondary level only. Students seeking vocational training and higher education attend schools and universities in Nabatiye, Saida and Beirut. Three private universities along with a branch of the Lebanese University are located in Nabatiye. There are 11 educational institutions none of which are in the study area.

Health Services

Nabatiye includes six hospitals, of which five are private and one is public. The hospitals are not in the study area. The health facilities which are limited to some health clinics and hospitals are considered as acceptable to the needs of the Caza and Governorate.

Cultural Heritage

The caza has some ancient rock tombs, Roman and Byzabtine ruins and several old mosques as well as old churches such as the central church el-Saydeh is Sabra. The caza is also known for the presence of several old traditional souks. No sites of archaeological or cultural importance are located along the project roads. Moreover, none of the proposed roads leads to any archaeological site.

Summary of Baseline

During the site visits that were conducted in November 2018 and December 2019[1], all the sensitive areas that might be affected as a result of the proposed project are mainly water bodies (Al Zahrani River) and some shops and pharmacies. All these establishments were identified along the project roads and detailed in the report.

[1] Roads were visited in November 2018 and in December 2019 as the project was on hold for many months due to changes in the road selection by the Council of Ministers.

ES5. Summary of Potential Environmental and Social Impacts during Rehabilitation and Operation Phases

Summary of Impacts during Rehabilitation Phase

Potential Impact	Proposed Mitigation
Environmental Impacts	
Air pollution from emissions of machinery, trucks or open burning activities	Use properly maintained equipment Abide by a dust management plan Water the ground when extremely windy Mix material in an enclosed space Cover material when transporting
Dust pollution from rehabilitation and excavation activities	
Noise pollution a result of transportation or delivery of raw materials, trucks movement, concrete mixing, drilling, construction and operation of heavy vehicle movement such as excavators	Maintenance of vehicles and machinery Excavation and any other noisy activity only during working hours Prohibit solid waste disposal into undesignated sites
Disturbance of nearby areas and animal escape through noise and vibrations	
Contamination of surface water and pollution of ground water from improper disposal of wastewater from workers and of wash water coming from cleaning of machines and equipment	Install temporary structures to prevent runoff from reaching nearby water bodies Avoid working in rainy weather Connect the generated wastewater from workers to the sewage network or to polyethylene tank Discharge the pumped wastewater from the polyethylene tank into nearby operational wastewater treatment plants Prohibit the discharge of wastewater into nearby water bodies under any condition
Water pollution due to accidental spill of oils and chemicals from trucks and from transportation of chemicals and oils	Prepare and abide by a Spill Prevention & Management Plan Used oil from occasional maintenance of machinery or chemicals must be stored in an appropriate area until it's collected and disposed in a controlled disposal site Minimize soil exposure time Proper storage of raw material including chemicals and fuel and handling must be on a paved and sealed floor Regular maintenance of vehicles Minimize the use of chemicals Reuse of excavated material whenever possible Disposal of excavated material in controlled disposal site
Improper disposal of cut volume may cause contamination of water bodies in rainy weather	
Contamination of soil and surface water bodies from the improper disposal of solid waste generated from workers and the used materials, construction waste from excavation and drilling activities	Proper disposal of construction waste in controlled disposal site to be identified by the contractor in coordination with the relevant municipality Proper waste management practices Reuse or recycle the generated waste whenever possible Reuse of excavated material whenever possible Disposal of excavated material in controlled disposal site to be identified by the contractor in coordination with the relevant municipality Train workers on waste reduction procedures
High consumption rates of electricity, fossil fuel, etc. contributing to overconsumption and depletion of fuel	Maintenance of the generators and trucks Light in the site offices shut down during the night Construction workers must be trained and provided with

Potential Impact	Proposed Mitigation
	awareness sheets on efficient energy use Machinery and equipment must be turned off when not in use
High consumption rates of water for construction related activities	Use water in the most efficient way and reduce wastage Regular site inspection to detect water leakages Whenever possible, use dry-cleaning instead wet cleaning Training and awareness should be raised to workers concerning water usage best practices and water conservation Proper disposal of construction waste
Reduction in overall ground and surface water quality due to improper disposal of construction waste	
Depletion of natural resources due to the unsustainable extraction of borrowing material (sand,, aggregates, …)	Ensure that the borrow material are extracted from legal sites Avoid agricultural lands to extract borrowing material In case extraction was done from agricultural sites, store the topsoil layer for future rehabilitation Rehabilitate the site where excavation was done
Socioeconomic Impacts	
Temporary Labour Influx	Priority hiring to qualified local community GRM for local communities
Economic Activities and its effect on the livelihood of the shop's owners	Install overpass structures from the road to the shops Proper installation of sign boards Timely completion of the rehabilitation phase
Discrimination from the local community against the foreign workers	Conduct awareness campaigns for the local community regarding foreign workers influx Inform the local community that worker will sign code of conduct before starting the work GRM for local communities and all relevant stakeholders
Possible unequal wage benefits between local and foreign workers	Ensure that all workers (locals and foreign, skilled and unskilled) shall be compensated and are contracted equally as per the scale of market price rates, have equal contractual benefits and working conditions, and have access to GRM
Possible recruitment of children who are under the legal age as workers on the site, especially in the case of the day laborers	Daily registrations of workers and verification of their age to prevent child labor Abide by the Labor Law Ensure the contractor is aware of the penalties that Labor Law imposes in the case of child labor Oblige the contractor to strictly abide by the Labor Law through the CDR tender documents that should include prohibition of child labor
Disruption of local community to access services due to construction activities and temporal road closures	Traffic shall be secured via alternative routes to reach relevant destinations in case the works imply the temporary closure of this road Inform the local community about the location of detours, road blockages or diversions through public announcements and proper diversion signage GRM for surrounding communities
Damage of existing infrastructure	Regular coordination with relevant municipalities
Potential occurrence of sexual abuse and exploitation incidents	Draft Codes of Conduct and the guidelines for a GBV and VAC Action Plan All workers should understand, and sign codes of conduct written in their native language Respond to the reported incidents of sexual abuse

Potential Impact	Proposed Mitigation
	exploitation as a matter of priority Training on gender-based aspects, internal and external GRM
Slight increase in traffic due to the transport of construction materials or due to the material that may fall	Ensure traffic is not blocked during transportation Inform residents and place signs near the working areas Ensure communities have access to GRM Cover transported material Abide by traffic regulations Operate well maintained vehicles
Traffic congestion in the town due to temporal road closure	
Material falling from vehicles during transport may cause traffic accidents or congestion	
Economic Activities and its effect on the livelihood of the shops owners, the visitors of the recreational site and other visited places	Install overpass structures from the road to the shops and the recreational site entrance Proper installation of sign boards Timely completion of the rehabilitation phase Ensure access to external GRM
Community and Occupational Health and Safety	
Increased traffic, accidents rates and risk on pedestrians	Apply Best Applicable Practices on Road Safety
Accident and injuries to workers and public because of rehabilitation activities	Workers to wear proper safety gear (PPE) Presence of first aid kits (at least three) on the construction site Inform residents and place signs near the working areas Proper management of trucks and heavy machinery entering and exiting the construction site Develop a site-specific Public Health and Safety Plan and Occupational Health and Safety Apply Best Applicable Practices on Road Safety
Dust generation and noise may cause health related problems for workers and disturbance to residents	

Summary of Impacts during Operation Phase

Potential Impact	Proposed Mitigation
Environmental Impacts	
Increased vehicular pollutant levels (CO, NOx, SOx, PM_{10}) in the area causing public health risks and other impacts on the environment.	Ensure that the road is regularly maintained to ensure good surface conditions Frequent air quality monitoring must be done along the roads area to ensure that ambient air quality parameters are within the standards
Blockage of drainage systems and overflow of storm water transporting residues and pollutants to nearby water bodies and soils	Ensure that the drainage system is regularly maintained especially before the start of the rainy season and that solid waste is continually collected
Noise pollution from traffic related noise pollution; vibrations from engines and tires and use of pressure horns disturbing wildlife and nearby residential areas	Installation of signs near sensitive areas to prevent people from using the pressure horns
Depletion of natural resources (fuel) used for street lighting purposes	Install eco-friendly light fixtures for the streetlight infrastructure to reduce the consumption of non-renewable sources of energy
Disruption of animal's movement leading to direct mortality or avoidance behavior as a result of increased traffic load in the area	Install speed limit and animal crossing signs at areas were animals cross the roads

Community and Occupational Health and Safety	
Increased traffic, accidents rates and risk on pedestrians	Apply Best Applicable Practices on Road Safety

ES6. Consultation, Disclosure and GRM

A public hearing was held at the union of Ekleem Al Toufah Municipalities on Tuesday, 7 January 2020. The purpose of the hearing was to inform the stakeholders about the proposed project that will rehabilitate 4 roads in Nabatiye Caza and their accompanying infrastructural works and to take into account their concerns and feedback. Over 19 people participated in the meeting including 6 women, two working in the Municipality of Al Taybe, two at the municipality of Ainata, one working in the Union of Ekleem Al Toufah Municipalities, two are social activists one from an NGO (Nedaa Al Ard) and the others were housewives from the caza. During the session, different concerns were raised by the attendees especially those related to the safety measures including widening on the roads and installing sildwalks. Moreover, all participants were noting that CDR and the Consultant must stress on the contractor to hire local workers and to coordinate with the concerned municipalities.

Women that participated in the women's session believed that the project will contribute positively to improving women's participation in the economy by making transportation safer and more convenient and mentioned that there must be clear coordination mechanism with the municipalities and other authorities during the rehabilitation phase not to duplicate the road rehabilitation work.

As for NGOs Consultation, this ESMP has targeted them according to their position in Lebanon. They consist of two levels as follows: (1) Local: they are specific to each Caza. Their mission is to address different concerns and issues among the local society including social, economic, gender equality, environment, poverty, women empowerment, etc. and (2) International: They are covering the whole country and their consultation will be applied to all the ESMPs of the REP. 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.

In addition, a formal grievance readiness mechanism (GRM) will be implemented during both the rehabilitation and operation phases. The purpose of the GRM is to ensure that all feedback and complaints received from stakeholders, customers, employees, contractor staff and the public in general are documented, considered and addressed in an acceptable and timely manner (45 days).

ES.7 Conclusion

It was concluded that most of the negative impacts will occur during the rehabilitation phase. These impacts are mainly related to the disruption of nearby residents from the rehabilitation activities along with some impacts on the surrounding environment such as deterioration of soil and water quality if the generated liquid waste and solid waste were not managed properly. In addition to the negative impact on the air quality that might arise as a result of heavy rehabilitation activities especially where new pavement is proposed for the roads. On the other hand, job opportunities will be created to the local community during the rehabilitation phase which is considered as a positive impact. However, these impacts are short in term and will diminish as soon as the project is completed. The assessed socioeconomic impacts during the operational phase were mostly positive in

nature in terms of traffic and road safety and livelihood improvement within the project area. However, on the long term the proposed project will contribute in increasing vehicular pollutant levels in the area as well as traffic related noise causing public health problems and other impacts on the environment. Nevertheless, the negative environmental impacts that might arise from the rehabilitation of the proposed roads in Nabatiye Caza can be minimized and even eliminated through proper management and mitigation practices that were proposed in the report.

ملخص تنفيذي - موجز غير تقني

مقدمة

منح مجلس الانماء والاعمار، الذي يعمل كجهة منفذة بإسم مجلس الوزراء اللبناني، عقدا للشركة الإستشاريّة العالمية الهندسية (ACE)، المستشار، لإعداد خطة إدارة بيئية واجتماعية لـ "Lot 3" في اطار مشروع الطرق والعمالة في لبنان الممول من البنك الدولي.

يهدف هذا المشروع إلى تحسين قطاع الطرق من طرق ثانوية وفرعية في عدة بلدات من كافة الأقضية اللبنانية، وخلق فرص عمل قصيرة الأجل للمجتمعات اللبنانية والسورية. يتضمن المشروع إعادة تأهيل الطرقات الممتدة في المناطق المدنية والريفية في جميع المناطق اللبنانية. يغطي المشروع طرقات مصنفة في ٢٥ قضاء في جميع أنحاء لبنان حيث يبلغ طولها الإجمالي المتوقع ٨٣٥ كيلومترا، موزعة على ست مجموعات وسينفذ المشروع على مدى خمس سنوات.

يمثل هذا التقرير خطة الإدارة البيئية والإجتماعية لقضاء النبطية، وقد أعدت الدراسة وفقا لسياسة ضمانات البنك الدولي (سياسة تشغيلية رقم ٤،٠١) (التقييم البيئي). هذا التقرير يغطي ايضا جميع عناصر المشروع المقترح خلال مرحلة إعادة التأهيل والتشغيل، ويقيم الآثار البيئية والإجتماعية المحتملة من المشروع ، ويحدد التدابير اللازمة للتخفيف من الآثار السلبية وزيادة الأثر الإيجابي على البيئة والموارد الطبيعية من خلال خطة الإجراءات التخفيفية للآثار السلبية. وإضافة إلى ذلك، يتضمن التقرير وضع خطة تحديد وسائل الرصد والمراقبة لضمان إمتثال المشروع للأنظمة البيئية والإجتماعية. بالإضافة، عقدت جلسات المشاورة العامة وشملت مشاركة المعنيين والهتمين بالمشروع.

السياسات القائمة والإطار القانوني والإداري

المؤسسات الحكومية العامة المعنية بمختلف مراحل تنفيذ مشروع الطرق، فضلا عن مختلف مكوناتها المؤلفة من مجلس الإنماء والإعمار ووزارة النقل ووزارة الأشغال العامة ووزارة البيئة ووزارة العمل ووزارة الداخلية والبلديات ووزارة الثقافة.
القوانين واللوائح المختلفة التي يجب ان تتقيد بها مشروعات الطرق:

- قانون العمل/١٩٤٦: قانون العمل اللبناني
- قانون رقم ٢٠٠١/٣٣٥: عملا باتفاقية منظمة العمل الدولية رقم ١٢٨
- قانون رقم ٢٠٠٢/٤٠٠: عملا باتفاقية منظمة العمل الدولية رقم ١٣٨
- مرسوم ٢٠١٢/٨٩٨٧: تحظر استخداما الأحداث قبل بلوغهم سن ١٨ في الأعمال التي تشكل خطر على صحتهم أو سلامتهم أو سلوكهم الأخلاقي
- مرسوم ٢٠١٦/٣٧٩١: تعديل المرسوم رقم ٧٤٢٦ تاريخ ٢٠١٢/١/٢٥ المتعلق بتعيين الحد الأدنى الرسمي لأجور المستخدمين والعمال الخاضعين لقانون العمل ونسبة غلاء المعيشة وكيفية تطبيقها
- مرسوم ١٩٣٣/٢٧٦١: التعليمات المتعلقة بتصريف المياه المبتذلة والمواد القذرة
- مرسوم ١٩٧٤/٨٧٣٥: المحافظة على النظافة العامة
- قانون ١٩٨٨/٦٤: المحافظة على البيئة ضد التلوث من النفايات الضارة والمواد الخطرة
- قانون ١٩٩٦/٥٥٨: قانون حماية الغابات
- قانون ٢٠١٨/٨٠: الإدارة المتكاملة للنفايات الصلبة
- قرار وزارة البيئة رقم ١/٥٢ (١٩٩٦) و١/٨ (٢٠٠١): تحديد المواصفات والنسب الخاصة للحدّ من تلوث الهواء والمياه والتربة
- قرار ٢٠٠١/١/٨: المواصفات والمعايير المتعلقة بملوثات الهواء والنفايات السائلة المتولدة عن المؤسسات المصنفة ومحطات معالجة المياه المبتذلة
- قانون ٢٠٠٢/٤٤٤: قانون حماية البيئة
- قانون ٢٠١٨/٧٧: قانون المياه
- قانون ٢٠١٨/٧٨: قانون حماية نوعية الهواء

- مرسوم ٢٠٠٤/١١٨٠٢: تنظيم الوقاية والسلامة والصحة المهنية في كافة المؤسسات الخاضعة لقانون العمل
- المرسوم الاشتراعي رقم ١٩٧٧/١١٨ قانون البلديات
- المرسوم ٢٠٠٢/٨٨٠٣ وتعديلاته: تنظيم المقالع والكسارات
- قانون ٢٠٠٨/٣٧: قانون الممتلكات الثقافية
- قانون ٢٠١٢/٢٤٣: قانون السير الجديد
- المرسوم التشريعي ١٩٤٣/٣٤٠: قانون العقوبات
- قانون ١٩٩١/٥٨: قانون الاستملاك
- قانون ٢٠١٧/٥٣: الغاء المادة ٥٢٢ وتعديل بعض مواد قانون العقوبات

سياسات و قوانين البنك الدولي: السياسة التنفيذية رقم ٤,٠١ بشأن التقييم البيئي، يصنف المشروع المقترح في إطار الفئة "B" و السياسة التنفيذية رقم ٤,١٢ بشأن إعادة التوطين الجبري (غير أن المشروع لن يشمل حيازة الأراضي أو إعادة التوطين) بالإضافة إلى سياسة أجتماعات الحلقه التشاوريه و عرض النتائج بموجب السياسة التنفيذية رقم٤,٠١.

وفقا للسياسة التنفيذية رقم٤,٠١ يشترط البنك الدولي إجراء أجتماع حلقه تشاوريه ومع العديد من المهتمين والمعنين بالمشروع والمنظمات غير الحكومية المحلية بشأن جميع المشاريع التي تندرج في الفئة A والفئة B. والهدف من هذه المشاورات هو عرض عناصر المشروع إلى جانب الآثار البيئية والإجتماعية التي يمكن ان تنتج، وأخذ كل تساؤلات و ملاحظات الموجودين بالأعتبار.

وبالإضافة إلى ذلك، لقد تم عرض في هذا المستند بعض الإتفاقيات والمعاهدات الدولية ذات صلة بالمشروع وهي كما يلي: إتفاقية الأمم المتحدة المتعلقة بإطار العمل بشأن تغير المناخ، واتفاقية القضاء على جميع أشكال التمييز ضد المرأة واتفاقية التنوع البيولوجي واتفاقية الأمم المتحدة لمكافحة التصحر واتفاقية بازل بشأن تنظيم نقل النفايات الخطرة عبر الحدود والتخلص منها و إتفاقيات العمل الدولية.

وصف المشروع المقترح

يقع المشروع المقترح في قضاء النبطية محافظة النبطية. يبلغ مجموع الطرق المقترحة والتي سيتم إعادة تأهيلها في إطار هذا المشروع ٤ طرق يبلغ طولها الإجمالي ٢٥,٤ كيلومترا. جميع الطرق موجودة سابقا وتتطلب إعادة تأهيل لمختلف مكوناتها بما في ذلك من الطبقات الإسفلتية والاساس، الأرصفة، عبارات لتصريف مياه الأمطار و شبكات إنارة. ولقد اختيرت الطرقات من خلال إجتماع مجلس الوزراء رقم ٣٢ بتاريخ ٢٠١٩/٦/٢٧.

يتضمن المشروع المقترح إعادة تأهيل طرق موجودة سابقا في قضاء النبطية. وتختلف أنشطة إعادة التأهيل بالنسبة لكل طريق حسب ظروف الطبقات الإسفلتية والاساس و تصنيف الطرق التي حددها الإستشاري.

بهدف تحديد أنشطة إعادة التأهيل المناسبة، من المهم دراسة حالة الطبقات الإسفلتية والاساس. وتتألف أنشطة إعادة تأهيل الطرق: صيانة أو غشاء الطبقات الإسفلتية القائم أو إزالة الطبقات الإسفلتية المتدهورة بالكامل واعادة انشاءها من جديد.

ويتضمن المشروع المقترح أيضا أنشطة أخرى إلى جانب أعمال إعادة التأهيل. وتتألف هذه الأنشطة من:

- تأمين/تأهيل أقنية، عبارات لتصريف مياه الأمطار
- تأمين/تأهيل جدران دعم إستنادية
- تأمين/تأهيل حواجز سلامة جانبية
- تخطيط الطرقات
- تأمين/تأهيل إشارات سير و إشارات تحذير
- تأهيل أرصفة
- تأهيل شبكات إنارة
- نقل المرافق الموجودة حسب الحاجة

الوضع البيئي والاجتماعي الحالي

التضاريس والجيولوجيا والهيدروجيولوجيا

تقع محافظة النبطية، حيث الطرق المقترحة، على بعد ٧٥ كيلومترا من العاصمة بيروت. وتقع النبطية ضمن مدى ٤٣٠ مترا فوق سطح البحر. ينتمي التكوين الجيولوجي الرئيسي داخل الدراسة إلى ما يلي: Sannine Limestone of Cenomanian age unit (C4) and its subunits, Eocene (E2) and the Senonian and base of Eocene (C6. أما بالنسبة لمصادر المياه الموجودة، فقد تم تحديد نهر الزهراني داخل منطقة الدراسة، وخاصة بالقرب من L3-NA-RD02 و L3-NA-RD8a وتبين في هذا التقرير الخرائط الهيدرولوجية التي تمثل تمثل هذه المصادر المائية وأحواض المياه.

المناخ والأرصاد الجوية

لقد اخذت منطقة النبطية لتمثّل مناخ منطقة المشروع حيث يبلغ متوسط درجة الحرارة السنوية فيها ١٨.٧ درجة مئوية، ويبلغ متوسط هطول الأمطار السنوي ٨٥٢ ملم. وكانت البيانات التاريخية للمناخ (١٩٨٢-٢٠١٢) لمنطقة النبطية ممثلة في رسم بياني مناخي وكذلك في البيانات التي تم الحصول عليها (درجة الحرارة والهطول وسرعة الرياح واتجاه الرياح) من أقرب محطة أرصاد جوية تابعة لمصلحة الأبحاث العلمية الزراعية (LARI).

جودة الهواء والضوضاء

لقد اخذت البيانات المتعلقة بجودة الهواء المحيطة بمنطقة المشروع من وزارة البيئة من خلال مشروع برنامج الأمم المتحدة الإنمائي. وقد أظهرت النتائج أن تركيزات ثاني أكسيد النيتروجين (NO_2) في جميع الخلايا متوافق مع المعايير الوطنية و معايير منظمة الصحة العالمية. اما فيما يتعلق بتركيزات$PM_{2.5}$ و PM_{10}، أظهرت القيم التي تم الحصول عليها انها غير متوافقة مع معايير منظمة الصحة العالمية الخاصة بنوعية الهواء. أما بالنسبة لمستوى الضوضاء في المنطقة فقد قام الفريق بقياس مستويات الضوضاء في موقعين خلال فترة ٣ دقائق. وقد وردت النتائج في الدراسة.

غطاء الأرض

تستخدم الأراضي في النبطية لأغراض سكنية وتجارية، حيث أن معظمها أراضي سكنية. خلال زيارة الموقع، لوحظ أن معظم الأراضي الزراعية على طول الطرق تزرع بأشجار الزيتون والأشجار المثمرة ، كما لوحظ وجود أشجار الكينا وأشجار الصنوبر على طول جميع الطرق. يمثل الجدول التالي التصنيف البصري لاستخدام الأراضي استنادا إلى خرائط جوجل .

البلدية	غطاء الأرض
زفتا	ذات كثافة سكانية مرتفعة – وجود مناظر طبيعية - مع غطاء نباتي متوسط
النميرية	ذات كثافة سكانية متوسطة - جود أراضي طبيعية – مع غطاء نباتي متوسط
شرقية	ذات كثافة سكانية مرتفعة – وجود مناظر طبيعية - مع غطاء نباتي متوسط
حبوش	ذات كثافة سكانية مرتفعة - وجود مناظر طبيعية - مع غطاء نباتي متوسط
عرب صاليم	ذات كثافة سكانية مرتفعة – وجود مساحات خضراء – مع غطاء نباتي متوسط
صربا (النبطية)	ذات كثافة سكانية متوسطة - وجود أراضي طبيعية - مع غطاء نباتي متوسط
حومين الفوقا	ذات كثافة سكانية متوسطة – وجود أراضي طبيعية - مع غطاء نباتي متوسط
إنصار	ذات كثافة سكانية مرتفعة - وجود أراضي طبيعية - مع غطاء نباتي كثيف
ابو الأسود	ذات كثافة سكانية منخفضة - وجود أراضي طبيعية - مع غطاء نباتي كثيف

البيئة البيولوجية والمناطق الحساسة إيكولوجيا

تم تحديد الكثير من الأشجار على طول الطرق المقترحة:

- أشجار الخوخ والنخيل والسرو والكينا والزيتون والصنوبرعلى طول الطريقL3-NA-RD02 ، إلى جانب أشجار الكرم و اشجار الزينة والزهور.
- ▪ أشجار الكينا والزيتون والصنوبر مع الأزهار على طول الطريق.L3-NA-RD10
- أشجار الزيتون، الصنوبر، والكينا على طول الطريقL3-NA-RD08A
- أشجار الكينا والسرو والأشجار المثمرة على طول الطريقL3-NA-RD14

تضم الحيوانات الموجودة في النبطية المواشي مثل الماعز والأغنام. وخلال زيارة الموقع لم يتم تحديد الحيوانات البرية بما فيها الثدييات والطيور. كما لم يلاحظ رعي الماشية على طول طرق المشروع.

يضم قضاء النبطية منطقة إبل السقي التي أعلنت منطقة للطيورالمهمة (IBA). وعلاوة على ذلك، أعلنت وزارة البيئة في عام ٢٠٠٦، إبل السقي منطقة "حمى"، التي كانت من بين قائمة المواقع ذات الأهمية الطبيعية و/أو الإيكولوجية التي تحتاج إلى الحماية، وتشير كلمة "حمى" إلى المنطقة المحمية.

الديموغرافيا

يبلغ مجموع السكان المسجلين في النبطية، بمن فيهم اللاجئون السوريين والفلسطنيين٣٣٠ ألف نسمة. وتبلغ الكثافة السكانية في النبطية حوالي ٣٠٥ أشخاص لكل كيلومتر مربع. ويقدر معدل البطالة في النبطية ب٦،٠٪ مقارنة بالمتوسط الوطني ١١،٤٪. يبلغ عدد اللاجئين السوريين في قضاء النبطية ٢١٥٠٠ لاجئا ، كما ويرد في التقرير عدد اللاجئين السوريين المسجلين في كل قرية من قرى منطقة المشروع

الأنشطة الإقتصادية

تتركز النشاطات الاقتصادية الرئيسية في النبطية في قطاع التجارة والخدمات والعقارات. وتعتبر النبطية السوق الرئيسي لقرى القضاء وهي أيضا المدينة الادارية لمحافظة النبطية. تم خلال زيارة الموقع تحديد عدد كبير من المحلات التجارية والصيدليات ومحطة الوقود ومحلات تصليح السيارات على طول الطريق وهي قريبة من بعض الطرق خاصة في المناطق السكنية. وقد وصفت كل هذه المحلات في التقرير.

قطاع التعليم

يوجد في بعض مدارس النبطية التعليم الابتدائي فقط، بينما في مدارس أخرى لا وجود الا للتعليم المتوسط والثانوي او المستوى الثانوي فقط. ويدرس الطلاب الذين يطلبون التدريب المهني والتعليم العالي في مدارس وجامعات النبطية وصيدا وبيروت. ويوجد في النبطية ثلاث جامعات خاصة إلى جانب فرع من الجامعة اللبنانية. وهناك ١١ مؤسسة تعليمية لكنها غير موجودة ضمن منطقة الدراسة.

قطاع الرعاية الصحية

تضم النبطية ستة مستشفيات منها خمسة مستشفيات خاصة وواحدة حكومية الا ان المستشفيات غير موجودة ضمن منطقة الدراسة. ويعتبر قطاع الرعاية الصحية الذي يقتصر على بعض العيادات والمستشفيات الصحية مقبولة لتلبية إحتياجات المحافظة واالقضاء.

التراث الثقافي

يوجد في المحافظة بعض المقابر الصخرية القديمة، و الآثار الرومانية والبيزنطية ، إضافة إلى عدد من المساجد القديمة والكنائس القديمة ككنيسة السيدة ا في صبرا. ويعرف أيضا القضاء بوجود العديد من الأسواق التقليدية القديمة. غير أن الفريق لم يكتشف أيا من هذه المواقع ذات الأهمية الأثرية أو الثقافية على طول الطرق و أيا من الطرق المقترحة لا يؤدي إلى أي موقع أثري.

ملخص الوضع الحالي

خلال زيارة الموقع التي جرت في تشرين الثاني/نوفمبر ٢٠١٨ وكانون الأول/ديسمبر ٢٠١٩[2]، ، تبين أنّ جميع المناطق الحساسة التي قد تتأثر نتيجة المشروع المقترح هي المصادر المائية (نهر الزهراني) وبعض المحال والصيدليات. وتم تحديد جميع هذه المؤسسات والمراكز على طول الطرق المقطرحة، وقد ورد ذلك بالتفصيل في التقرير.

موجز الآثار البيئية والاجتماعية المحتملة والتدابير التخفيفية خلال مرحلتي التأهيل والتشغيل

ملخص للآثار البيئية والاجتماعية والاقتصادية المحتملة والتدابير التخفيفية خلال مرحلة التأهيل:

الآثار	التدابير التخفيفية
البيئية	
تلوث الهواء الناجم عن انبعاثات الآلات أو الشاحنات أو أنشطة الاحتراق المفتوح	استخدام معدات خاضعة لصيانة بشكل صحيح الالتزام بخطة إدارة الغبار ري الأرض عندما تكون الرياح شديدة مزج المواد في أمكان مغلقة تغطية المواد عند النقل
تلوث الغبار الناجم عن أنشطة إعادة التأهيل والحفر	
تلوث الضوضاء الناجم عن نقل أو المواد الخام وحركة الشاحنات والحفر وتشغيل المركبات الثقيلة مثل الحفارات	صيانة المركبات والآلات حصر الحفر وأي نشاط ضوضائي خلال ساعات العمل فقط حظر التخلص من النفايات الصلبة في مواقع غير مخصصة
انزعاج الحيوانات والسكان في المنطقة المجاورة من الضوضاء والارتجاجات	
تلوث المياه السطحية من جراء التخلص غير السليم من مياه الصرف الصحي من العمال والمياه القادمة من تنظيف الآلات والمعدات	تركيب هياكل مؤقتة لمنع الجريان السطحي للمياه من الوصول إلى المياه السطحية القريبة تجنب العمل في الطقس الممطر شبك مياه الصرف الناتجة عن العمال بشبكة الصرف الصحي أو بخزان البولي إيثيلين تصريف مياه الصرف الصحي المضخ من خزان البولي إيثيلين إلى محطات معالجة مياه الصرف الصحي القريبة منع تصريف مياه الصرف الصحي الى المياه السطحية القريبة تحت أي ظرف
تلوث المياه بسبب انسكاب الزيوت والمواد الكيميائية عن طريق الخطأ من الآلات والشاحنات ونقل المواد الكيميائية والزيوت	الاستعداد والالتزام بخطة منع الانسكاب وإدارته تخزين الزيوت المستعملة والناتجة عن صيانة الآلات أو المواد الكيميائية في منطقة مناسبة حتى يتم جمعها والتخلص منها في موقع خاضع للرقابة تقليل وقت التعرض للتربة يجب تخزين المواد الخام بما في ذلك المواد الكيميائية والوقود على أرضية معبدة ومغلقة الصيانة الدورية للمركبات التقليل من استخدام المواد الكيميائية إعادة استخدام المواد المحفورة كلما أمكن ذلك التخلص من المواد المحفورة في المكبات الخاضعة للرقابة
التخلص غير السليم من كميات الحفر يسبب تلوث المياه في الطقس الممطر	
تلوث التربة والمياه السطحية بسبب التخلص غير السليم من النفايات الصلبة الصادرة عن العمال والمواد المستعملة، ومخلفات البناء الناجمة عن أعمال الحفر	التخلص السليم من مخلفات البناء في المكبات الخاضعة للرقابة وتحديدها من قبل المقاول بالتنسيق مع البلدية المعنية إدارة النفايات بالممارسات المناسبة إعادة استخدام أو إعادة تدوير النفايات الناتجة كلما أمكن ذلك إعادة استخدام المواد المحفورة كلما أمكن ذلك

[2] تمت زيارة الطرق في تشرين الثاني ٢٠١٨ وكانون الأول ٢٠١٩ حيث توقف المشروع لعدة أشهر بسبب التغييرات في اختيار الطريق من قبل مجلس الوزراء

الآثار	التدابير التخفيفية
	التخلص من المواد المحفورة في المكبات الخاضعة للرقابة وتحديدها من قبل المقاول بالتنسيق مع البلدية المعنية تدريب العمال على إجراءات تخفيف النفايات
إرتفاع معدلات إستهلاك الكهرباء مما يسهم في زيادة إستهلاك الوقود واستنفاده	صيانة المولدات والشاحنات اطفاء الأضواء في مكاتب الموقع أثناء الليل تدريب عمال البناء وتزويدهم بأوراق التوعية حول الاستخدام الفعال للطاقة إيقاف تشغيل الآلات والمعدات عند عدم استخدامها
إرتفاع معدلات إستهلاك المياه في الأنشطة المتصلة باعادة التأهيل	استخدام المياه بأكثرالطرق كفاءة والتقليل من هدرها فحص الموقع بانتظام للكشف عن أي تسرب للمياه استخدم التنظيف الجاف بدلاً من التنظيف الرطب كلما أمكن ينبغي رفع مستوى التدريب والتوعية للعاملين بشأن أفضل الممارسات لاستخدام المياه والحفاظ عليها التخلص السليم من مخلفات البناء
انخفاض في نوعية المياه الجوفية والسطحية الإجمالية بسبب التخلص غير السليم من نفايات البناء	
إستخراج مواد الخام واستنفاد الموارد الطبيعية (الرمل، البحص، ...)	تأكد من استخراج مواد الخام من المواقع القانونية تجنب الأراضي الزراعية لاستخراج مواد الخام تخزين الطبقة العليا من التربة في حالة إجراء الاستخراج من مواقع زراعية لإعادة تأهيلها في المستقبل إعادة تأهيل الموقع الذي تم فيه التنقيب
اقتصادي و اجتماعي	
تدفق اليد العاملة	إعطاء أولوية التوظيف الى المجتمع المحلي المؤهل آلية مراجعة الشكاوى (GRM) للمجتمعات المحلية
الأنشطة الاقتصادية وأثرها على معيشة أصحاب المحلات	تركيب هياكل مؤقتة من الطريق إلى المحلات التجارية تركيب لوحات الإشارات بشكل صحيح الانتهاء من مرحلة إعادة التأهيل في الوقت المناسب
التمييز من المجتمع المحلي ضد العمال الأجانب	تنظيم حملات توعوية للمجتمع المحلي بشأن تدفق العمال الأجانب أبلاغ المجتمع المحلي أن العامل سيوقع على على شروط قواعد السلوك قبل ذكر العمل آلية مراجعة الشكاوى (GRM) للمجتمعات المحلية وجميع أصحاب المصلحة المعنيين
توترات إجتماعية نتيجة تصور أن العمال الأجانب يحصلون على نسبة كبيرة من الوظائف التي خلقها المشروع	التأكد أن جميع العمال (السكان المحليين والأجانب ، ذوي المهارات أولا) متعاقد معهم على قدم المساواة وفقًا لجدول أسعار السوق، ولديهم مزايا تعاقدية وظروف عمل متساوية، وإمكانية التأكد من الوصول إلى آلية مراجعة الشكاوى (GRM)
احتمال عمالة الأطفال ما دون السن القانونية في مواقع التأهيل خاصة العاملين في النهار	التسجيلات اليومية للعمال والتحقق من سنهم لمنع عمل الأطفال الالتزام بقانون العمل التأكد من أن المقاول على علم بالعقوبات التي يفرضها قانون العمل في حال عمل الأطفال إلزام المقاول بالتقيد الصارم بقانون العمل من خلال وثائق المناقصة التابعة لمجلس الإنماء والإعمار التي يجب أن تتضمن حظرعمل الأطفال
تعزر وصول المجتمع المحلي إلى الخدمات بسبب أنشطة اعادة التأهيل وإغلاق الطرق مؤقتا	تأمين حركة المرورعبر طرق بديلة للوصول إلى الوجهات ذات الصلة في حال استدعت أعمال التأهيل لإغلاق مؤقت لهذا الطريق إبلاغ المجتمع المحلي عن موقع الطرق المقفلة أو التحويلات من خلال الإعلانات العامة ولافتات التحويل المناسبة آلية مراجعة الشكاوى (GRM) للمجتمعات المحيطة

الآثار	التدابير التخفيفية
ضرر على البنية التحتية القائمة	التنسيق المنتظم مع البلديات المعنية
احتمال وقوع حوادث اعتداء واستغلال جنسي بسبب تدفق اليد العاملة	مسودة مدونات السلوك والمبادئ التوجيهية لخطة عمل للعنف القائم على النوع الاجتماعي (GBV) والعنف ضد الأطفال (VAC) على جميع العمال التوقيع على مدونات قواعد السلوك المكتوبة بلغتهم الأم الرد على حوادث الاستغلال الجنسي المبلغ عنها واعطائها الأولوية التدريب على الجوانب القائمة على نوع الجنس وآلية مراجعة الشكاوى (GRM) داخلية وخارجية
إزدحام المرور في المناطق المعنية بسبب نقل مواد البناء والمواد التي قد تسقط أو بسبب الإغلاق المؤقت للطرق	التأكد من عدم حظر حركة المرور أثناء النقل إعلام السكان ووضع لافتات بالقرب من مناطق العمل ضمان وصول المجتمعات إلى آلية مراجعة الشكاوى (GRM) تغطية المواد المنقولة الالتزام بقواعد المرور تشغيل المركبات التي تتم صيانتها جيدًا
إزدحام المرور في المناطق المعنية بسبب الإغلاق المؤقت للطرق	
حوادث مرور أو إزدحام نتيجة سقوط مواد من المركبات أثناء النقل	
الأنشطة الاقتصادية وتأثيرها على حياة أصحاب المحال التجارية والزائرين والمواقع الترفيهية	تركيب هياكل مؤقتة من الطريق إلى المحلات التجارية ومدخل المواقع الترفيهية تركيب لوحات الإشارات بشكل صحيح الانتهاء من مرحلة إعادة التأهيل في الوقت المناسب التأكد من الوصول إلى آلية مراجعة الشكاوى (GRM)
الصحة والسلامة المهنية والمجتمعية	
زيادة حركة المرور ومعدلات الحوادث والمخاطر على المشاة	تطبيق أفضل الممارسات المطبقة على السلامة على الطرق
الحوادث والإصابات التي تلحق بالعمال بسبب أنشطة التأهيل (المخاطر الصحية التنفسية بشكل رئيسي)	على العمال ارتداء معدات الحماية الشخصية (PPE) المناسبة وجود عدّة الإسعافات الأولية (ثلاثة على الأقل) في موقع البناء إعلام السكان ووضع لافتات بالقرب من مناطق العمل الإدارة السليمة للشاحنات والآليات الثقيلة التي تدخل وتخرج من موقع البناء وضع خطة للصحة العامة والسلامة الخاصة بالموقع والصحة والسلامة المهنية تطبيق أفضل الممارسات المطبقة على السلامة على الطرق
توليد الغبار والضوضاء قد يسبب في مشاكل صحية للعمال وللمقيمين القريبين	

ملخص للآثار البيئية والاجتماعية و الاقتصادية المحتملة والتدابير التخفيفية خلال مرحلة التشغيل:

الآثار	التدابير التخفيفية
البيئي	
زيادة مستويات تلوث الهواء في المنطقة مما يسبب مخاطر صحية عامة وآثار أخرى على البيئة	تأكد من صيانة الطريق بانتظام لضمان ظروف سطح جيدة إجراء مراقبة متكررة لجودة الهواء على طول منطقة الطرق للتأكد من أن جودة الهواء المحيط تقع ضمن المعايير
انسداد شبكات الصرف وتدفق مياه الأمطار الناقلة للملوثات إلى المسطحات المائية والتربة المجاورة	التأكد من أن صيانة نظام الصرف بانتظام خاصة قبل بداية موسم الأمطار و أن النفايات الصلبة تجمع باستمرار
تلوث الضوضاء الناجم عن حركة المركبات وارتجاجاتها واستخدام الأبواق التي تزعج السكان في المناطق السكنية القريبة والحياة البرية	تركيب لافتات بالقرب من المناطق الحساسة لمنع الناس من استخدام أبواق السيارات
استنفاد الموارد الطبيعية (الوقود) المستخدمة لإضاءة الشوارع	تركيب إضاءة صديقة للبيئة لإضاءة الشوارع لتقليل استهلاك مصادر الطاقة غير المتجددة
تعطيل حركة الحيوانات مما يؤدي إلى الموت المباشر أو	وضع علامات تحديد السرعة وعلامات عبور الحيوانات في

الآثار	التدابير التخفيفية
تجنبها بسبب زيادة حركة مرور المركبات في المنطقة	المناطق حيث تعبر الطرق
الصحة والسلامة المهنية والمجتمعية	
زيادة حركة المرور ومعدلات الحوادث والمخاطر على المشاة	تطبيق أفضل الممارسات المطبقة على السلامة على الطرق

مشاورة وإبلاغ العامة وعرض النتائج

عقدت جلسة مشاركة عامة في اتحاد بلديات اقليم التفاح يوم ا الثلاثاء ، ٧ كانون الثاني/يناير ٢٠٢٠. وكان الغرض من هذه الجلسة اهو إبلاغ أصحاب المصلحة (بما في ذلك المنظمات غير الحكومية في منطقة المشروع)، بالمشروع المقترح لإعادة تأهيل ٤ طرق في قضاء النبطية وما يصاحبها من أعمال اخرى، ومراعاة ملاحظاتهم. وشارك في الاجتماع ١٩ شخصا، منهم ٦ سيدات، أحدهم يعمل في اتحاد بلديات اقليم التفاح ، واثنتان نشطاء اجتماعيين أحدهما من منظمة غير حكومية (نداء الأرض) والآخرات ربات منازل من القضاء. خلال الجلسة، أثار الحضور مخاوف مختلفة خاصة تلك المتعلقة باجراأت السلامة و التأكيد على المقاول بتوظيف عمال محليين والتنسيق مع البلديات المعنية.

اعتقدت النساء اللواتي شاركن في جلسة مشاركة المرأة أن المشروع سيساهم بشكل إيجابي في تحسين مشاركة المرأة في الاقتصاد من خلال جعل النقل أكثر أمانًا وملاءمة ، وذكرت أهمية وجود آلية تنسيق واضحة مع البلديات والسلطات الأخرى خلال مرحلة إعادة التأهيل لمعالجة المشاكل المحتملة سريعا و عدم تكرار أعمال إعادة تأهيل الطرق .

تمت المشاورات مع المنظمات غير الحكومية في هذه الخطة الإدارية البيئية والاجتماعية وفقًا لموقعها في لبنان وتمثل هذه المنظمات مستويين (١) المحلية: وهي مخصصة لكل قضاء وتتمثل مهمتهم في معالجة مختلف القضايا في المجتمع المحلي، بما في ذلك المسائل الاجتماعية والاقتصادية والمساواة بين الجنسين والبيئة وتمكين المرأة و(٢) الدولية: وهي تغطي كل البلد وستطبق المشاورة معها على جميع الدراسات البيئية لمشاريع الطرق والعمالة في لبنان. يجدر الذكر الى انه عندما اندلعت الأزمة في سوريا في مطلع عام ٢٠١١، إستجابت العديد من المنظمات الدولية غير الحكومية للأزمة الإنسانية وعملت بشكل مباشر مع السوريين في لبنان من خلال تقديم المساعدات والاستجابة لأوضاعهم الحرجة.

وبالإضافة إلى ذلك، سيتم تنفيذ آلية مراجعة الشكاوى (GRM) خلال مرحلتي اعادة التأهيل والتشغيل. والغرض من هذا هو ضمان توثيق جميع الملاحظات والشكاوى الواردة من المعنيين والزبائن والمقاول والموظفين وللعامة، والنظر فيها ومعالجتها بطريقة مقبولة وفي الوقت المناسب (٤٥ يوم).

الخلاصة

معظم الآثار السلبية للمشروع يتوقع أن تحدث خلال مرحلة إعادة التأهيل. هذه الآثار تتعلق بإزعاج السكان القريبين من أنشطة إعادة التأهيل إلى جانب بعض الآثار على البيئة المحيطة، مثل تدهورنوعية التربة و المياه إذا لم تتم إدارة النفايات السائلة والنفايات الصلبة بشكل سليم. اضافة إلى ذلك فهناك أثر سلبي على نوعية الهواء نتيجة أعمال اعادة التأهيل خاصة عند إزالة الطبقات الإسفلتية المتدهور بالكامل و اعادة انشاءها من جديد. ومن ناحية أخرى سيتم توفير فرص العمل للمجتمع المحلى خلال مرحلة اعادة التأهيل التى تعتبر اثرا ايجابيا. و لكن تعتبر هذه الآثار قصيرة الأمد وستتقلص بمجرد انهاء المشروع. اما الآثار الاجتماعية والإقتصادية التي تم تقييمها خلال مرحلة التشغيل فهي إيجابية في معظمها من حيث تحسين حركة المرور والسلامة العامة على الطرقات وتحسين الاحوال الاقتصادية في منطقة المشروع. لكن المشروع المقترح سيسهم على المدى الطويل في زيادة مستويات ملوثات االهواء في المنطقة فضلا عن الضوضاء المتصلة بحركة المرور التي تسبب مشاكل صحية عامة وآثارا أخرى على البيئة. ومع ذلك، يمكن التقليل من الآثار البيئية السلبية التي قد تنشأ عن اعادة تأهيل الطرق المقترحة في قضاء النبطية بل وازالتها من خلال ممارسات خطة ادارة البيئة و المجتمع و الاجراءات الاحترازية المقترحة في التقرير.

1. INTRODUCTION

1.1 Project Background

The Council for Development and Reconstruction (CDR) acting as an executing agency on behalf of the Lebanese Council of Ministers (COM) awarded a contract to Associated Consulting Engineers (ACE), hereinafter the Consultant, to prepare the assessment, design and Environmental and Social Management Plans (ESMP) of Lot 3 under Roads and Employment Project (REP) – *See more about the Project in Section 3.*

The Roads and Employment Project is funded by the World Bank (WB). Its objectives are (1) to improve transport connectivity along select paved road sections and (2) to create short term jobs for Lebanese and Syrians. The project covers classified roads[3] in 25 Cazas[4] throughout Lebanon with an expected total length of 835 km and grouped in six (6) lots. The project will be implemented over a period of five years.

This report represents the ESMP of the REP in Nabatiye Caza that is part of Lot 3.

1.2 Project Rationale

Lebanon has a total of around 8,000 km of roads along with a highway network linking the country with Syria (WFP, 2016). Despite this large road network coverage, a significant percentage of these roads is in poor condition. This situation hinders local and economic development mainly in rural and lagging regions, where the condition of the main network is worse than the national average. Moreover, this state has been aggravated by the influx of Syrian refugees which has significantly increased traffic and the utilization of the road network (CDR, 2018). As such, the proposed project aims to improve the efficiency of road sector expenditures through the prioritization of road works and the improvement of road asset management techniques (CDR, 2018).

The Project's main objectives are to enhance the transport connectivity along selected secondary and tertiary road sections in different cazas and to create short-term job opportunities for the Lebanese and Syrian communities. The project will include the rehabilitation of urban and rural stretches of roads from all Lebanese regions.

The specific objectives of the project are as follows:

- Providing road reconstruction/rehabilitation and road safety activities such as pavement structure, retaining walls, drainage systems, edge safety barriers, marking and traffic signing;
- Creating job opportunities for the local community by engaging them in several construction activities;
- Promoting gender workforce equality to the extent possible through encouragement of employment of both genders within the project.

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

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

1.3 Report Objectives

Pursuant to the World Bank OP 4.01 (Environmental Assessment), this ESMP report seeks to satisfy the following objectives:

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

It is worth mentioning here that Decree No. 8633/2012 about Fundamentals of Environmental Impact Assessment (EIA) is not relevant to the Project since this latter is not categorized under either Annex I or II of the EIA Decree.

1.4 Methodology

This ESMP of the REP in Nabatiye Caza that is part of Lot 3 was prepared to cover all components of the proposed project during the rehabilitation and operation phases, to assess the likely environmental and social consequences of a project, and to determine the necessary measures to mitigate the negative ones and increase the positive impact on the environment. As such, the task was initiated by conducting site visits and a literature review in order to determine the current environmental and social conditions (such as hydro-geological and groundwater quality, air meteorological data, biological and socio-economic conditions, and cultural heritage sites), along with relevant local and WB legislations, guidelines, and standards. The review also included the identification and assessment of the suggested alternatives to the project.

In addition, the environmental team communicated closely with the technical team in order to obtain the necessary information on both the status of each road, as well as the proposed rehabilitation activities, thus describing the proposed project in a thorough manner. In terms of the assessment, negative and positive impacts were identified, and mitigation measures were proposed to address the negative ones. As such, an ESMP was developed and included a monitoring plan, which is needed to ensure compliance of the project with environmental and social conditions and regulations.

Furthermore, the scope of work included also the development of an institutional setup to ensure that the project implementers have sufficient technical and human resources available to effectively undertake the environmental management and monitoring tasks. As

for the participation of the public and concerned communities, this was done through conducting a public hearing in a central location and invited all stakeholders and local community to participate.

2. EXISTING, LEGAL, ADMINISTRATIVE AND POLICIES FRAMEWORK

2.1 National Legal Environmental and Social Framework

The rehabilitation of roads involves a variety of activities that need to abide by national legislations that are enforced by various government institutions. Table 2-1 describes a legal framework governing the REP for Lot 3 in Nabatiye Caza, taking into consideration that no land acquisition or expropriation will be required during its implementation.

Table 2-1: National Legal Framework related to Project

Year	Law5 / Decree6 / Decision7	Title	Relevant Provisions
Labor			
1946	Labor Law	The Lebanese Labor Code	The Labor Law covers the industrial accident prevention and compensation. It regulates the minimum wage, the minimum age of employment based on their ages and the workplaces, resting periods and vacations for adolescent workers. It also sets the working hours, and the penal code regulation of strikes and lock out in essential employments
2001	Law No. 335	Pursuant to International Labor Organization (ILO) Convention No 128	This ratified convention addresses the minimum age of employment
2002	Law No. 400	Pursuant to the ILO Convention No 138	Elimination of the worst form of child labor
2012	Decree 8987	Prohibition of employment of minors under the age of 18 in work that may harm their health, safety or morals	This Decree restrict the employment of minors under the age of 18 in activities and works that can be harmful to their health, morals and that can limit their education
2016	Decree 3791	Minimum Wage	Raises the minimum daily wage to 20$/day
Environment			
1933	Decree 2761	The prohibition of wastewater discharge into water streams	States the characteristics of channels and reservoirs where wastewater is discharged. In addition to the prohibition of its discharged into natural environment
1974	Decree 8735	Conservation of Public Hygiene	Solid waste management including collection and disposal is under the

[5]Lebanon's legislative body is represented by the Lebanese Parliament that approves and issues Laws.
[6]Lebanon's executive body is represented by the Council of Ministers (COM) and is headed by the Presidency of the Council of Ministers. The COM enacts regulations in the form of Decisions (denoted COM Decision Number) and Decrees.
[7]Decisions are issued by a specific minister and are limited to the affairs of the ministry that promulgated it. Ministerial Decisions are subject specific.

Year	Law5 / Decree6 / Decision7	Title	Relevant Provisions
			control of the municipality. It restricts dumping of wastes in public or private lands adjacent to roads and residential districts
1996	Law 558	Protection of forests	Classifies protected forests and defines the prohibited activities and works into the mentioned forests. It also contains offences and penalties.
1996	MOE Decision 52/1	Requirements to protect air, water, and soil pollution	Allowable noise level according to type of areas and the permissible duration of exposure
2001	MOE Decision 8/1	Revised standards for air emissions, liquid effluents and wastewater treatment plants	The decision sets limits for discharge of wastewater into water bodies
2002	Decree 8803 and its amendments	Regulating stone quarries	It organizes the activity of quarries and crushers, licensing procedures, as well as the operation, management and rehabilitation of quarries.
2002	Law 444	Framework Law for Environmental Protection	Protect the national environment against all forms of degradation, air and water and soil pollution, and the promotion of sustainable use of natural resources and conservation of biodiversity
2018	Law 77	Water Law	Tackles protection of water resources from pollution and management and monitoring of public wastewater treatment facilities
2018	Law 78	Air Quality Law	The investment in any facility or establishment that emanate foul or toxic odors should abide by the different environmental conditions issued by a decision from MOE
2018	Law 80	Integrated Solid Waste Management	Covers the management of non-hazardous and hazardous waste, and responsibilities and penalties related to violations of waste management laws
Health and Safety			
2008	Decree 11802	Occupational prevention, safety, and health in all enterprises subject to the Code of Labor	Provides the general regulations for the prevention of occupational hazards and accidents, and the promotion of health and safety in all industrial establishments subject to the Labor Law. These cover prevention and safety, occupational health, the safe use of chemicals at work, as well as occupational noise standards
Cultural and Municipal			
1977	Decree-Law 118	Municipal Act	Defining the responsibilities of municipalities

Year	Law5 / Decree6 / Decision7	Title	Relevant Provisions
2008	Law 37	Cultural Policy Law	Any archaeological artefact located in Lebanon and deemed to be of historical, artistic, architectural or anthropological significance by the Ministry of Culture must be protected
Traffic			
2012	Law 243	New Traffic Law	Provide general driving rules and defines the penalties upon violation of the law
General			
1943	Legislative Decree 340	Penal Code	The law defines the type of crimes such as rape; lewd acts by threat, violence, or against minors; and other similar crimes. It also states punishments and legality of penalties
1991	Law 58	Expropriation law	States general and specific provisions for land acquisition. Also is includes improvement tax resulting from the implementation of public works
2017	Law 53	Amendment of Penal Code	Under sexual violence Article 522 of the Penal Code exonerated a perpetrator of kidnapping and adultery who married his victim. This was repealed in this law

In terms of the national legal requirements for speed limits, Lebanon uses the American Association of State Highway and Transportation Officials (AASHTO) 7th edition "Policy on Geometric Design of Highways and Streets" of 2018, which leaves designers to select the design speed which is appropriate for the roadway and correlate the various features of the design. The selected design speed should realistically represent actual or anticipated operating speeds and conditions on the roadway being designed or studied.

2.2 Institutional

Numerous governmental public institutions will be involved in the different stages of the ESMP of the REP. They are described in Table 2-2, along with their mandate and relevant responsibilities.

Table 2-2: Relevant Institutions

Institution	Main Role	Relevant Role
Council for Development & Reconstruction (CDR)	Securing funding for projects, allocating funds to different government agencies, supervising the execution of plans and contributing to the rehabilitation of public institutions	Securing funds for rehabilitation of road networks, issuing invitations for tenders and awarding construction contracts
Ministry of Public Works and Transportation (MOPWT)	Management of all public roads, for developing a sustainable strategy for the transportation sector, road and street plans within cities and villages	Under the MOPWT, the Directorate General of Roads and Buildings oversees the design, execution and maintenance of roads, bridges, walls and water channels. It is responsible for land use planning and cleaning the sides of the

Institution	Main Role	Relevant Role
		roads from wastes
Ministry of Environment (MOE)	Safeguard natural and environmental resources in Lebanon	Setting regulations and standards, and approving implementation and the development of projects sustainably
Ministry of Agriculture (MOA)	The Forestry and Natural Resources Administration of MOA is responsible for constructing public parks and afforestation work in all state lands including communal and private lands. Providing assistance for the implementation of afforestation and reforestation and soil conservation, water conservation and the investment in public and forests	Under decision 476/1 dated 2012 gives permissions for cutting trees for rehabilitation purposes
Ministry of Labor (MOL)	Responsible for all labor issues. It prepares, coordinates and executes legislations in the labor, trade union and social fields	Responsible for ensuring that the labor law is applied for all workers present on the working sites
Ministry of Interior and Municipalities (MOIM) / Municipalities	The MOIM is responsible for internal policy affairs and maintenance of the system and security, supervises governorates affairs, villages, districts, electors, elective councils, municipalities and municipal federations, parties and associations. The municipalities and the Union of municipalities represent the level of local government with legal status, financial and administrative independence, which exercises powers and responsibilities over the territory it is granted by law	The MOIM is responsible for law enforcement and stopping infractions and violations and oversees the affairs and operations of local authorities. On the other hand, responsibilities of municipalities include general programs of works, cleanliness, health, water, lighting projects, the implementation, rectifying and enlarging of roads, transportation organizing. In addition, it includes preparation of general plans related to sanitary projects, maintenance of infrastructure including wastewater networks, as well as working for the protection of the environment
Ministry of Culture (MOC)	Responsible for the protection of heritage, antiquities, arts, literature, cultural industries and historical property in Lebanon.	Any artefacts of potential historical importance that can be found on a rehabilitation site fall under the jurisdiction of the Directorate General of Antiquities at the MOC

In addition to the national public institutions, the local community represented by the Non-Governmental Organizations (NGOs) were consulted (refer to Tables 8 1 and 8-2 in Section 8.1).

2.3 Environmental Standards

2.3.1 Wastewater Discharge Targets

Table 2-3 represents the allowable contaminants concentration for wastewater when discharged into the surface water bodies, sea, or wastewater network according to the MOE decision 8/1 dated 30/1/2001.

Table 2-3: Limits for Wastewater Discharge into Receiving Water Bodies (MOE Decision 8/1)

Parameter	Discharge into Public Sewer	Discharge into Surface Water Bodies	Discharge into the Sea
Color	non	non	non
pH	6-9	6-9	6-9
Temperature	350C	300C	350C
BOD (5 day 20°C)	125 mg/l	25 mg/l	25 mg/l
COD (dichromate)	500 mg/l	125 mg/l	125 mg/l
Total Phosphorus	10 mg/l	10 mg/l	10 mg/l
Total Nitrogen[8]	60 mg/l	30 mg/l	30 mg/l
Suspended solids	600 mg/l	60 mg/l	60 mg/l
AOX	5	5	5
Detergents	-	3 mg/l	3 mg/l
Coliform Bacteria 370 C in 100 ml[9]	-	2,000	2,000
Salmonellae	Absence	Absence	Absence
Hydrocarbons	20 mg/l	20 mg/l	20 mg/l
Phenol Index	5 mg/l	0.3 mg/l	0.3 mg/l
Oil and grease	50 mg/l	30 mg/l	30 mg/l
Total Organic Carbon (TOC)	750 mg/l	75 mg/l	75 mg/l
Ammonia (NH4+)	-	10 mg/l	10 mg/l
Silver (Ag)	0.1 mg/l	0.1 mg/l	0.1 mg/l
Aluminum (Al)	10 mg/l	10 mg/l	10 mg/l
Arsenic (As)	0.1 mg/l	0.1 mg/l	0.1 mg/l
Barium (Ba)	2 mg/l	2 mg/l	2 mg/l
Cadmium (Cd)	0.2 mg/l	0.2 mg/l	0.2 mg/l
Cobalt (Co)	1 mg/l	0.5 mg/l	0.5 mg/l
Chromium total (Cr)	2 mg/l	2 mg/l	2 mg/l
Hexavalent Chromium (Cr vl+)	0.2 mg/l	0.2 mg/l	0.2 mg/l
Copper total(CU)	1 mg/l	0.5 mg/l	1.5 mg/l
Iron total (Fe)	5 mg/l	5 mg/l	5 mg/l
Mercury total (Hg)	0.05 mg/l	0.05 mg/l	0.05 mg/l
Manganese (Mn)	1 mg/l	1 mg/l	1 mg/l
Nickel total [Ni)	2 mg/l	0.5 mg/l	0.5 mg/l

[8] Sum ot Kjeldohl-N (orgcnic N + NH3).NO3-N. NO2-N

[9] For discharges in close distance to bathing water stricter environmental limit value could be necessary

Parameter	Discharge into Public Sewer	Discharge into Surface Water Bodies	Discharge into the Sea
Lead total (Pb)	1 mg/l	0.5 mg/l	0.5 mg/l
Antimony (Sb)	0.3 mg/l	0.3 mg/l	0.3 mg/l
Tin total (Sn)	2 mg/l	2 mg/l	2 mg/l
Zinc total (Zn)	10 mg/l	5 mg/l	5 mg/l
Active (Cl2)	-	1 mg/l	1 mg/l
Cyanides (CN+)	1 mg/l	0.1 mg/l	0.1 mg/l
Fluorides (F)	15 mg/l	25 mg/l	25 mg/l
Nitrate (NO3-)	-	90 mg/l	90 mg/l
Phosphate (POP43-)	-	5 mg/l	5 mg/l
Sulphate (SO42-)	1,000 mg/l	1,000 mg/l	1,000 mg/l
Sulphide (S2-)	1 mg/l	1 mg/l	1 mg/l

2.3.2 Air Emissions Targets

MOE Decision No. 52/1 of 1996 covers the National Ambient Air Quality Standards (NAAQS) for Lebanon and is presented in Table 2-4.

Table 2-4: NAAQS of MOE Decision 52/1-1996

Parameters	NAAQS Maximum Levels (µG/M3)
Nitrogen dioxide (NO_2)	200 (1 hr) 150 (24 hrs) 100 (Annual)
Carbon Monoxide (CO)	30,000 (1 hr) 10,000 (8 hrs)
Ground-level Ozone (O_3)	150 (1 hr) 100 (8 hrs)
Total Suspended Particles (TSP)	120 (24 hrs)
PM_{10}	80 (24 hrs)
$PM_{2.5}$	NA
Lead	1 (annual)
Benzene	16.2 (annual)

2.3.3 Noise Emissions Targets

Article 46 of Law 444 recognizes that loud noises, particularly noises caused from machinery and vehicles, may be harmful to human health and the environment. According to MOE decision 52/1 for 1996, noise pollution levels should not exceed the following listed limits in different workplace locations (Table 2-5).

Table 2-5: Permissible Noise Levels in Various Areas

Type of Area	Noise Limit (dB)

	Day (7 am – 6 pm)	Evening (6 pm – 10 pm)	Night (10 pm – 7am)
Administrative and commercial area in the City Center	55-65	50-60	45-50
Residential Area with some commercial areas or along main road	50-60	45-55	40-50
Residential Areas in the City	45-55	40-50	35-45
City Suburbs	40-50	35-45	30-40
Rural Areas, hospitals, and gardens	35-45	30-40	25-35
Industrial Areas	60-70	55-65	50-60

Table 2-6 contains the hours of work permitted under various noise levels over 90 dB.

Table 2-6: Hours of Work Permitted under Noise Level

Noise Level (dB)	95	100	105	110	115
Hours permitted to work	4	3	1	0.5	0.25

2.4 Word Bank Policies

The Project activities should comply with the safeguards operational policies and procedures of the World Bank– specifically OP/BP 4.01 on Environmental Assessment and OP/BP 4.12 on Involuntary Resettlement.

This project falls under Category "B", according to the Project Appraisal Document (PAD) and its Environmental and Social Management Framework (ESMF) (CDR, 2018).

Under OP/BP 4.12 on Involuntary Resettlement, involuntary displacement does not cover only the physical displacement such as the relocation or loss of home but also the economic displacement that includes loss of access to natural resources or restrictions on land use. The policy aims to avoid involuntary resettlement to the extent possible or to minimize the negative socioeconomic impacts that might affect the targeted community. Moreover, resettlement should be done in a sustainable way when its avoidance is not feasible. This policy also requires the borrower to prepare a suitable resettlement planning instruments prior to Bank assessment of the proposed project. However, no involuntary resettlement or land acquisition will take place in the proposed project in Nabatiye Caza.

2.4.1 World Bank Policy: Access to Information

This Policy governs the public accessibility of information in the Bank's possession. The World Bank allows access to any information in its possession that is not on a list of exceptions.

This Policy is based on five principles:

- Maximizing access to information;
- Setting out a clear list of exceptions;
- Safeguarding the deliberative process;

- Providing clear procedures for making information available; and
- Recognizing requesters' right to an appeals process.

2.4.2 Guidelines and Manuals

The World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines are mandatory and need to be adopted throughout the project duration. In addition, the WB has developed guidelines and manuals that need to be adopted during the ESMP implementation phase of the project. These guidelines and manuals include technical reference documents with general and sector-specific examples of good practices during all phases of the proposed project. Guidelines and manuals include:

- WBG Environmental, Health and Safety (EHS) Guidelines.
- Disclosure Handbook.
- The World Bank Participation Sourcebook.
- Roads and the Environment. A Handbook. World Bank Technical Paper.
- Doing Better Business through Effective Public Consultation and Disclosure – A good Practice Manual, issued by IFC.
- Good Practice note addressing Gender Based Violence in Investment Project Financing involving Major Civil Works.

2.5 International Treaties and Conventions

Table 2-72-8 presents the international conventions that Lebanon is a signatory to whose provisions may be relevant to the project.

Table 2-72-8: Relevant International Treaties and Conventions

Convention	Ratification	Description
United Nations Framework Convention on Climate Change (UNFCCC) - 1992	Ratified through Law No. 359 (1994)	Considers greenhouse gas emissions from REP activities
Convention on Biological Diversity (CBD) - 1992	Ratified through Law No. 360 (1/8/1994)	Considers terrestrial biodiversity in the vicinity of the project.

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

2.6.1 Wastewater and Ambient Water Quality

Table 2-9 shows the EHS guidelines for treated sanitary sewage discharges into surface water bodies at are adopted by the IFC of the World Bank Group in the Environmental, Health, and Safety Guidelines for environmental wastewater and ambient water quality (WBG-IFC, 2007) and the allowable contaminants concentration for wastewater when discharged into the surface water bodies according to the MOE decision 8/1 dated 30/1/2001. Note that the limits that will apply for Nabatiyeh Caza are those of WBG EHS guidelines for treated sanitary sewage discharges.

Table 2-9: WBG EHS and National wastewater effluent quality for the discharge into surface water bodies

Pollutant	EHS guidelines for treated sanitary sewage discharges	National discharge to surface water bodies decision 8/1

Pollutant	EHS guidelines for treated sanitary sewage discharges	National discharge to surface water bodies decision 8/1
pH	6-9	5-9
BOD	30 mg/L	100 mg/L
COD	125 mg/L	250 mg/L
TN	10 mg/L	30 mg/L
TP	2 mg/L	10 mg/L
Oil and Grease	10 mg/L	30 mg/L
TSS	50 mg/L	200 mg/L
Total coliform bacteria	400	-

Source: EHS 2007 and MOE Decision 8/1 for 2001

2.6.2 Air Emissions and Ambient Air Quality

Table 2-10 shows the WHO Ambient Air Quality Guidelines (WHO, 2005) that are adopted by the IFC of the World Bank Group in the Environmental, Health, and Safety Guidelines of Air Emissions and Ambient Air Quality and the NAAQS of MOE Decision 52/1-1996. As can be noted from comparison of these levels, the NAAQS maximum levels of the ambient air quality are much higher for several pollutants comparing to the same pollutants of the WHO. These elements are SO_2, NO_2, PM10, Lead and Benzene. However, the other pollutants have similar values. Therefore, for this project, the WHO standards apply.

Table 2-10: WHO Guidelines for Ambient Air Quality of 2005 and NAAQS of MOE Decision 52/1-1996

Parameters	WHO Guidelines (µG/M3)	NAAQS Maximum Levels (µG/M3)
Sulfur dioxide (SO_2)	500 (10 minutes) 20 (24 hrs)	-
Nitrogen dioxide (NO_2)	200(1 hr) 40(Annual)	200 (1 hr) 150 (24 hrs) 100 (Annual)
Carbon Monoxide (CO)	30,000 (1 hr) 10,000 (8 hrs)	30,000 (1 hr) 10,000 (8 hrs)
Ground-level Ozone (O_3)	100 (8 hrs)	150 (1 hr) 100 (8 hrs)
Total Suspended Particles (TSP)	150 (24 hrs)	120 (24 hrs)
PM10	50 (24 hrs) 20 (Annual)	80 (24 hrs)
PM2.5	25 (24 hrs) 10 (Annual)	NA
Lead	0.5 (annual)	1 (annual)
Benzene	Unit Risk Life 6.10^{-6}	16.2 (annual)

Source: WHO 2005 and MOE Decision 52/1-1996

2.6.3 Noise Management

Table 2-11 shows the noise level guidelines according to the EHS Guidelines. Comparing these levels with the national one, although some characteristics differ for WHO in reference to the type of area and the day hours that extend to 10 pm instead of 6 pm for the national standards, the noise limits for institutional, and educational areas by the WHO are more stringent and therefore apply. Noise limits for residential, industrial and commercial areas are more stringent in the national standards and therefore apply.

Table 2-11: WHO Noise Level Guidelines Compared to National Levels

Type of Area	WHO Noise Level (dB)		Noise Standards as per MOE Decision 52/1-1996		
	Day (7 am – 10 pm)	Night (10 pm – 7 am)	Day (7 am- 6 pm)	Evening (6 pm – 10 pm)	Night (10 pm – 7 am)
Residential	55	45	45-55	40-50	35-45
Institutional	55	45	-	-	-
Educational	55	45	55-65	50-60	45-50
Industrial	70	70	60-70	55-65	50-60
Commercial	70	70	55-65	50-60	45-50

3. DESCRIPTION OF THE PROPOSED PROJECT

3.1 Location

The study area where the proposed roads are located, is in the Caza of Nabatiye of the Governorate of Nabatiye. The total number of the proposed roads to be rehabilitated under this project is four roads with a total length of around 25 km. All the roads are already existing and need rehabilitation works. The length of each road along with the municipalities that is passes through is presented in the table below (Table 3-1).

An overview of the proposed roads locations is presented in Figure 3-1, Figure 3-3 and Figure 3-4.

Table 3-1: Proposed Roads within the Caza of Nabatiye (Roads 8a, 02, 14 and 10)

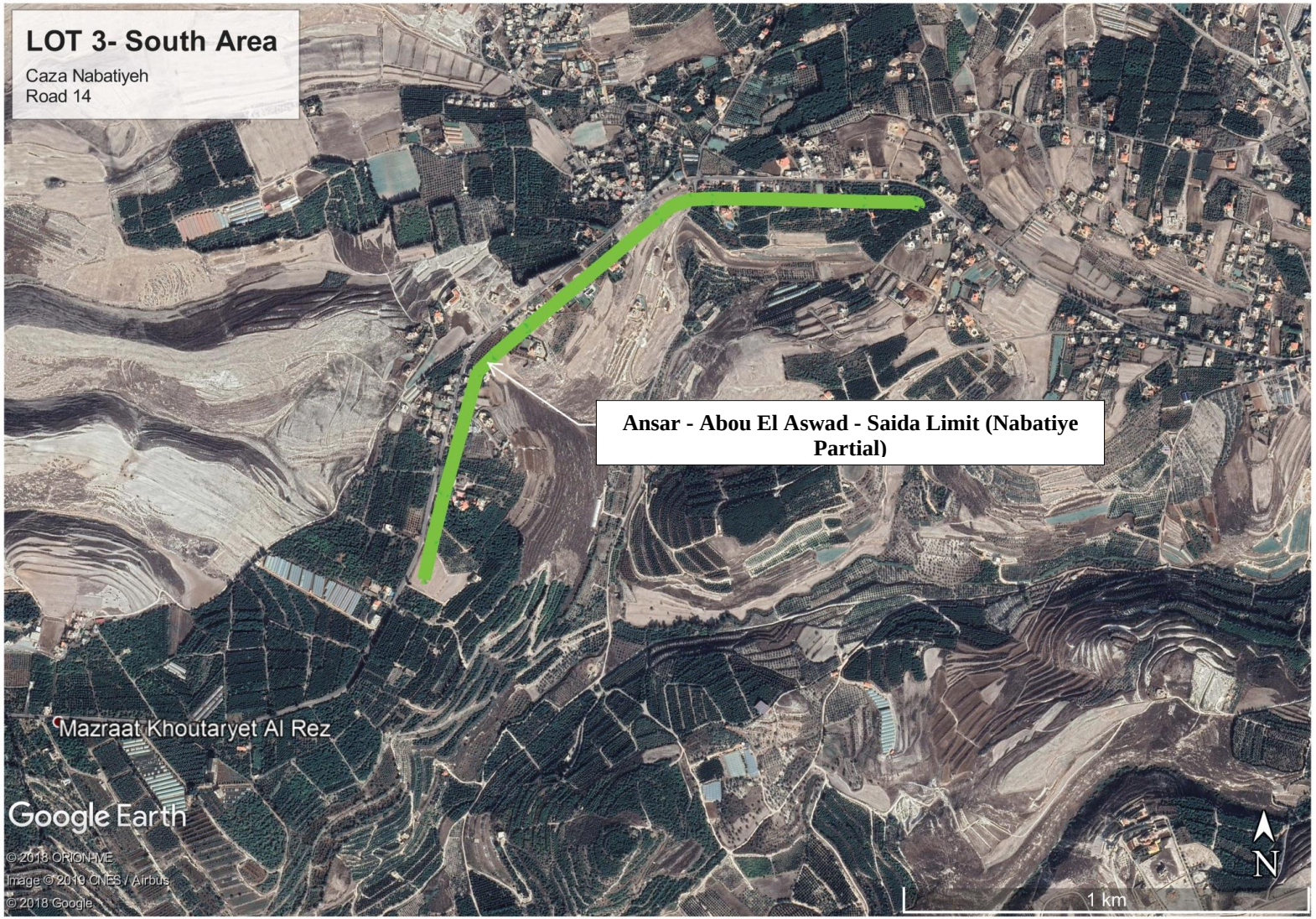
	Road Code	Road Name	Alignment Name[1]	Classification	Municipalities	Length (m)	Average Width (m)
LOT 3a - NABATIYE CAZA (L3-NA)	Road 8a	Mazraat Arab Al Jal - Sarba - Houmine El Fawka	L3-NA-RD08a	Secondary	Mazraat Arab Al Jal Sarba Houmine El Fawka	11713	6.5
	Road 2	Zefta - El Nmayriyeh - El Sharqiyeh	L3-NA-RD02	Tertiary	Zefta El Nmayriyeh El Sharqiyeh	7353	8.0
	Road 14	Ansar - Abou El Aswad - Saida Limit (Nabatiye Partial)	L3-NA-RD14	Secondary	Ansar Abou El Aswad Saida	1786	7.1
	Road 10	Habbouch - Arab Salim - Jezzine Limit (section 1)	L3-NA-RD10	Secondary	Habbouch Arab Salim Jezzine	4586	8.6
					Total Length (m)	25,438m	-

[1] The code for the roads represents the road label for example for L3–NA–RD02: L3=Lot No.3 (Lot Number as per Contract), NA=Nabatiye (Name of Caza as per Contract), RD02=Road label (as per Contract).

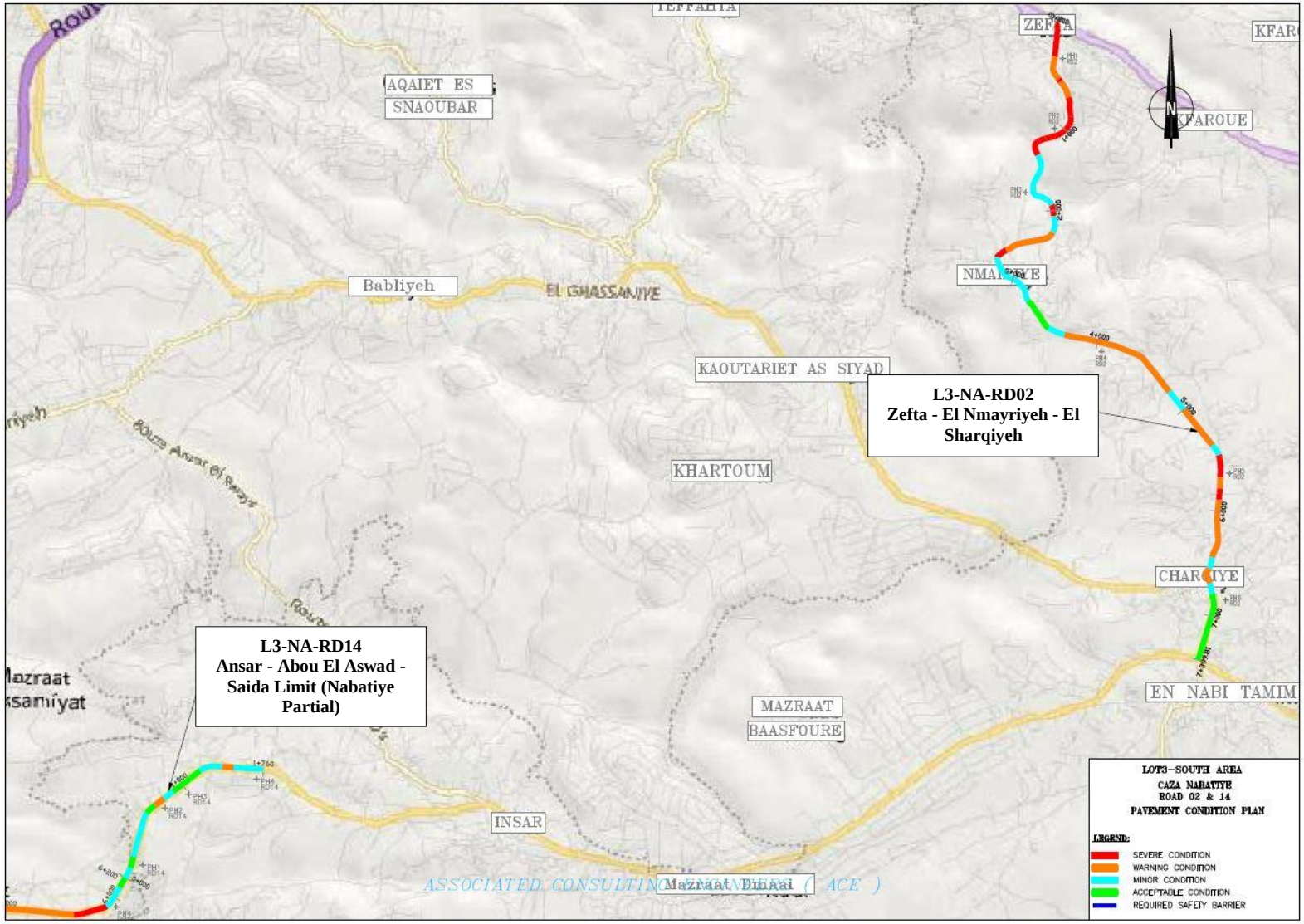
Figure 3-1: Overview of Location of Road L3-NA-RD02in Nabatiye Caza

Source: Google Earth, 2019

Figure 3-2: Overview of Location of Road L3-NA-RD14 in Nabatiye Caza

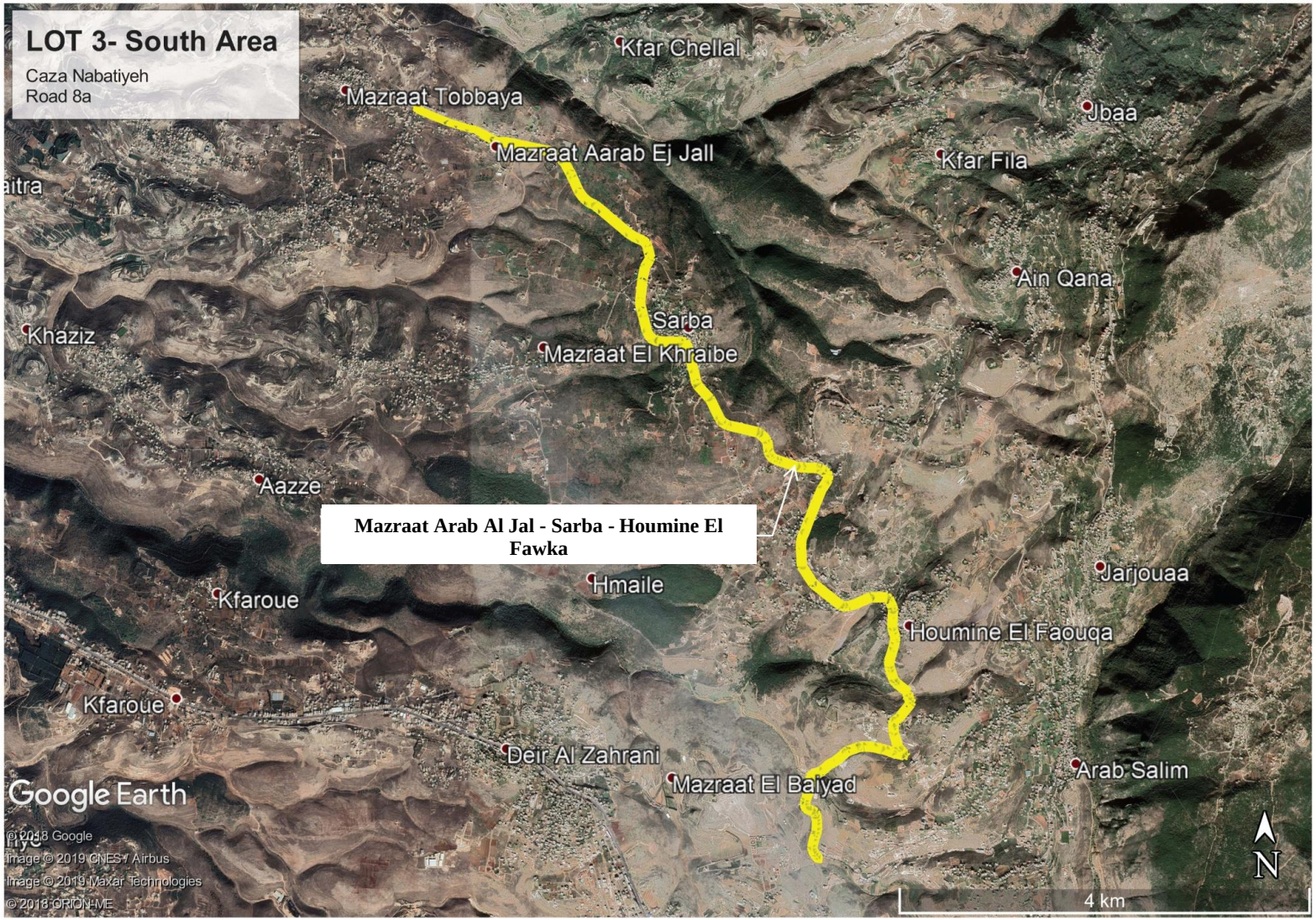


Source: Google Earth, 2019


AQAIET ES SNAOUBAR
Babliyeh
EL GHASSANIYE
KAOUTARIET AS SIYAD
KHARTOUM
MAZRAAT BAASFOURE
INSAR
EN NABI TAMIM
KFAROUE
L3-NA-RD02
Zefta - El Nmayriyeh - El Sharqiyeh
L3-NA-RD14
Ansar - Abou El Aswad - Saida Limit (Nabatiye Partial)
LOT3–SOUTH AREA
CAZA NABATIYE
ROAD 02 & 14
PAVEMENT CONDITION PLAN
LEGEND:
SEVERE CONDITION
WARNING CONDITION
MINOR CONDITION
ACCEPTABLE CONDITION
REQUIRED SAFETY BARRIER

Source: ACE

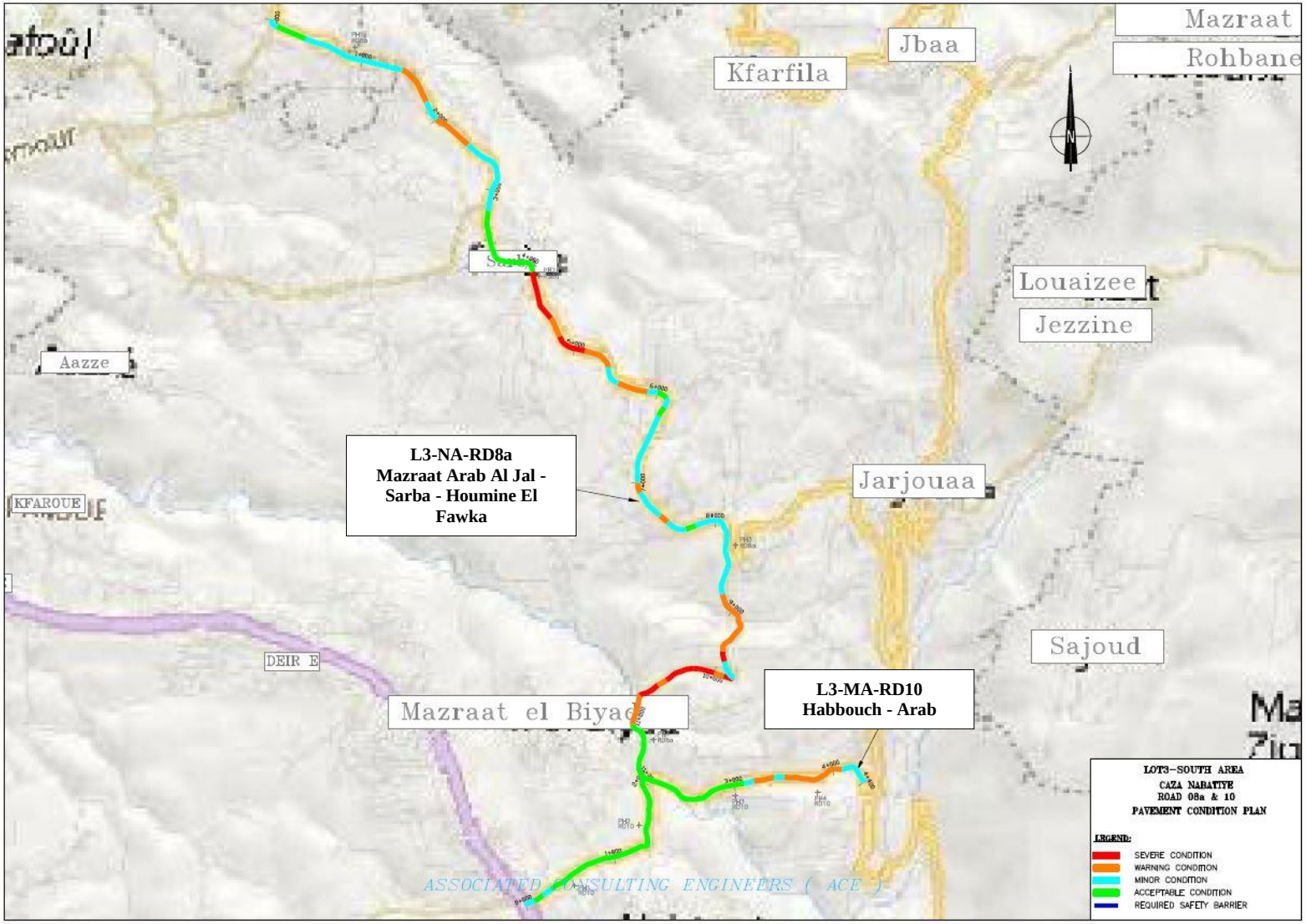
Figure 3-3: Overview of Location of Road L3-NA-RD8a in Nabatiye caza



Source: Google Earth, 2019

Figure 3-4: Overview of Location of Road L3-MA-RD10 in Nabatiye Caza

Source: Google Earth, 2019


Mazraat
Rohbane
Jbaa
Kfarfila
Louaizee
Jezzine
Aazze
L3-NA-RD8a
Mazraat Arab Al Jal -
Sarba - Houmine El
Fawka
Jarjouaa
KFAROUE
DEIR E
Sajoud
Mazraat el Biyad
L3-MA-RD10
Habbouch - Arab
LOT3-SOUTH AREA
CAZA NABATIYE
ROAD 08a & 10
PAVEMENT CONDITION PLAN
LEGEND:
SEVERE CONDITION
WARNING CONDITION
MINOR CONDITION
ACCEPTABLE CONDITION
REQUIRED SAFETY BARRIER
ASSOCIATED CONSULTING ENGINEERS (ACE)

Source: ACE

Photos that were taken during the site visits can be found in Figure 3-5 and Figure 3-6.

Figure 3-5: Road L3-NA-RD02 (Zefta - El Nmayriyeh - El Sharqiyeh)

Source: AM, ACE - November, 2018

Figure 3-6: Road L3-MA-RD8a (Mazraat Arab Al Jal - Sarba - Houmine El Fawka)

Source: AM, ACE – November 2018

3.2 Project Activities

The proposed project consists of the rehabilitation of existing roads in the Caza of Nabatiye.

3.2.1 Road Selection

The road selection was determined by the cabinet of Ministers in their Meeting Number 32 dated 27/06/2019. The assessment of pavement condition follows several steps before identifying the type of repair activity needed for each stretch of road. The first step is the initial visual assessment of the engineering design team. The outcome of such step is reflected in the following Table 3-2.

Table 3-2: Percentage of Asphalt Conditions for Each of the Proposed Roads (Based on visual assessment)

Road Code	Severe Conditions	Warning Conditions	Minor Conditions	Acceptable Conditions
L3-NA-RD8a	14.53%	25.64%	41.88%	17.95%
L3-NA-RD02	20.61%	42.23%	25.01%	12.15%
L3-NA-RD14	0.00%	11.36%	60.23%	28.41%
L3-NA-RD10	0.00%	18.18 %	15.91%	65.91%
Total	12.77%	28.21%	33.69%	25.33%

The next step is a thorough visual examination of the identified distresses. After carrying out further studies such as Geotechnical investigation, Automated Traffic Counts and Road geometry (topographic surve0079), the pavement structure calculation takes place leading to identifying the right type of activity needed for each stretch of road.

3.2.2 Rehabilitation Works

Determining the condition of the asphalt is important to assign the proper pavement rehabilitation activities. The pavement rehabilitation activities consist of three activities: (1) either pavement maintenance or (2) overlay on existing pavement or (3) complete removal of deteriorated pavement and constructing a new one.

An estimated 80% of the works to be executed within this project fall under the following pavement related types of activities:

- A- Patching
- B- Milling and Overlay
- C- Pavement Total Reconstruction.

The phases for the main three activities are as follows:

A- Phases of Construction for a stretch of road that needs: Pavement Patching

- A.1- Saw-cut existing pavement in a rectangular shaped area where pavement distresses are located as per tender drawings and specifications.
- A.2- Remove asphalt layer within the limits of the executed saw-cut using hammer drill breaker operated by air compressor.
- A.3- Examine the exposed pavement structure under the removed asphalt using proper testing for base course and sub-base course layers as well as the subgrade level & material.

- A.4- Remove and replace or repair under asphalt layers as per technical assessments and recommendations.
- A.5- Execute asphalt layer(s) similar to surrounding asphalt thicknesses and parameters by either applying binder course asphalt layer and a wearing course asphalt layer (with prime coat & tack coat where required) or by applying directly the final wearing course after spraying prime coat over the prepared base course surface.

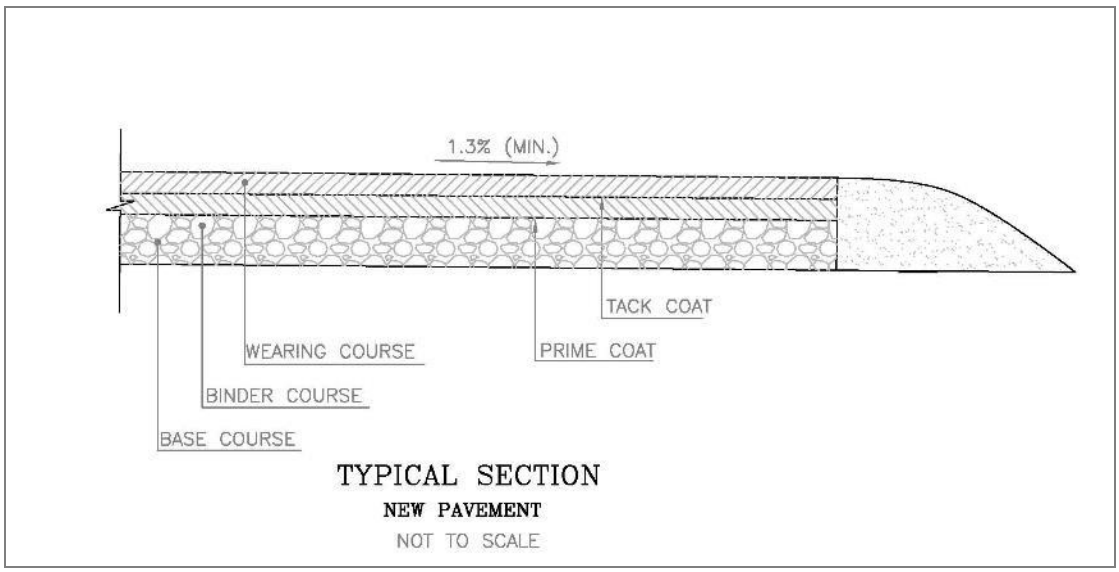
B- Phases of Construction for a stretch of road that needs: Milling & Overlay

- B.1- Contractor to proceed with the milling activity as described in the tender document with regards to the thicknesses of existing asphalt to be milled.
- B.2- New surface of asphalt obtained after milling shall be cleaned from all debris and dust with the use of mechanical road sweepers and water jets.
- B.3- Tack coat will be sprayed on the newly prepared clean surface of existing asphalt.
- B.4- Asphalting activity will take place using the right thickness of the new asphalt layer as per the design/tender documents. Such activity includes spreading asphalt as well as compaction of the new layer.

C- Phases of Construction for a stretch of road that needs: Pavement Total Reconstruction (Figure 3-7)

- C.1- Scrape and remove asphalt layer(s) to reach base course level.
- C.2- Excavate and remove the sub-base and base course layers to reach subgrade level.
- C.3- Prepare sub-grade surface after making sure by soil tests that reached subgrade level is suitable to receive pavement structure. If not, unsuitable material to be replaced by suitable borrow fill and compacted to reach required compaction percentage.
- C.4- Execute sub-base/base course layers as per specifications and thicknesses according to tender documents. Compact sub-base/base-course layers to reach required compaction level/percentage.
- C.5- Spray prime coat over the prepared and leveled surface of base course in order to receive asphalt binder course layer(s).
- C.6- Spread and compact asphalt binder course layer(s) as per the thicknesses and specifications specified in tender documents.
- C.7- Spray tack coat over the newly executed asphalt binder course in order to receive asphalt wearing course layer.
- C.8- Spread and compact asphalt wearing course layer as per the required specifications and thicknesses).

Figure 3-7: New Pavement Cross Section Scheme



The road sections in Nabatiye Caza that require new pavement are as follows:

- NA-RD02:
  - From Station 0+000 to 0+900: Zefta
  - From Station 3+700 to 5+400: El Nmayriyeh and El Sharqiyeh
- NA-RD10:
  - From Station 3+200 to 3+700: Arab Salim
- NA-RD08a:
  - From Station 3+900 to 4+600: Sarba
  - From Station 8+900 to 9+600: Houmine El Fawka
  - From Station 9+800 to 11+100: Houmine El Fawka

The proposed project also consists of other activities beside the pavement rehabilitation works. These activities consist of:

- Installing concrete safety barriers
- Adding adequate traffic signs for stoppage give ways as warning signs, mirrors at sharp edges, and other regulatory and warning signs
- Marking lanes and stoppage line
- Rehabilitating sidewalks
- Construction or improvement of drainage systems
- Construction or improvement of retaining walls
- Relocation of existing utilities as needed
- Repairing street lighting

During the execution of rehabilitation works for a specific road, and in case the works imply the temporary closure of this road, other ancillary and associated works including traffic management during rehabilitation, reinstatement of roads disturbed by the works and tapering to the existing roads as necessary. Thus, traffic will be secured by the project operators via alternative routes to reach relevant destinations. However, the

implementation of detours, diversions and road blockage will be determined during the rehabilitation phase by the contractor.

With regards to electrical street lighting activities, existing networks along the selected roads shall be assessed, repaired and rehabilitated. Works shall be limited to:

- Replacing damaged light poles or brackets,
- Replacing lighting luminaires or bulbs,
- Repairing electrical wiring (directly buried or laid in pipes),
- Adding light poles where needed,
- Removing light poles obstructing the road and placing them at proper locations in addition to executing of other miscellaneous electrical repairs to the existing street lighting network.

As this project is a road rehabilitation project, the speed limit will be assigned based on existing road curves. The designer thus defined the best fit center line for each road, in which the existing radius of each curve could be identified and posted the speed limit that complies with the minimum radius of curvature. The applicable speed limit for most of the roads were 60 kph based on road geometry in general cases and was reduced accordingly at stretches where sharp curves were encountered in which it was reduced as much as to reach 30pkh at very sharp curves.

3.3 Materials and Equipment

The required main materials and equipment for the rehabilitation of the proposed roads and its associated works are presented in the table below (Table 3-3).

Table 3-3: Materials and Equipment Used during the Rehabilitation Works

Materials	Equipment
Aggregates (fine and coarse)	Steel-wheeled Rollers
Asphalt mix	Pneumatic-tyred Rollers
Liquid Asphalt	Asphalt Distributor
Concrete mix	Concrete mixing trucks
Water	Trucks
Fuel	Excavators
Thermoplastic Paint Material	Loaders
Steel Guardrails	Asphalt Milling Machines
Stones (for stone pitching)	Steel Rollers
Reinforcing Steels	Motor Graders
Manhole Covers	Thermoplastic Road Marking Machines
Rubber Bitumen	Liquid Asphalt Spraying Tanks
Cat Eyes	Guardrail Post Driving Machines
Delineators	Paver instead of Asphalt Distributors
Traffic Signals	Dumper Trucks instead of Trucks
	Air Compressors
	Asphalt Cutters

3.4 Site Construction Staffing

The total number of workers for the overall road/project shall be based on the total volume of each activity as per the bill of quantities of the tender documents, as well as the independent assessment of the awarded contractor subject to the project duration and the planner's effort to produce a relevant program of work to cover all project activities. Therefore, the total number will be deduced accordingly.

As a result, the total number of labor (including equipment operators and machinery drivers) shall be in correlation with:

- Volume of each type of work (quantities in Bill of Quantities BOQs)
- Division of work as per the program of works to be submitted for approval by the awarded contractor. Such program of works shall be resource loaded to cover all required activities as per the tender documents and shall reflect actual numbers of labor with regards to each activity and the time dedicated for it, as well as for the total of the Project.

Furthermore, some indicative numbers of workers and drivers are provided in Table 3-4 and Table 3-5 per task and per day. All rehabilitation activities need the involvement of a certain number of workers ranging from unskilled labors to equipment drivers to foremen/engineers.

As described in Table 3-4, the activities vary from pavement works to earthworks, piping, electrical, structural, and road safety. Each of such activity require specialized/skilled resources. As shown in tables below Table 3-4 and
Table 3-5, the number of persons involved from engineers, technicians to workers as well as machinery drivers is variable as per the activity needed on each road. It is assumed that an estimate total number of workers shall range between 150 and 250. In addition, efforts will be made by the contractor to equally hire local (from the same region as the project location) and foreign (refugees) workers and drivers with equal contractual benefits and working conditions. It is worth to mention that the workers will sign code of conduct before starting the work and training sessions will be conducted to inform the workers about their responsibility to act ethically.

Table 3-4: Number of Workers for the Different Project Activities

#	ACTIVITIES	Site Engineer	Safety Officer	Foreman	Surveyor	Assistant Surveyor	Skilled Carpenter	Semi-skilled Carpenter	Bar Bender (Steel Fixer)	Skilled Electrician	Skilled Welder	Skilled Laborer	Semi-skilled Laborer	Laborer	Total
1	Pavement Patching	1	1	1	1	1						1	1	4	11
2	Milling & Overlay	1	1	1	1	1						1	1	6	13
3	Pavement Total Reconstruction	1	1	1	1	1						2	2	10	19
4	Concrete Retaining Walls	1	1	1			1	1	1					3	9
5	Concrete Safety Barriers	1	1	1			1	1	1					3	9
6	Electrical Street Lighting Work	1	1							1	1			2	6
7	Culverts & Channels	1	1	1	1	1	1	1				1	1	4	13
8	Traffic Marking	1	1		1	1		1	1		1		1	2	10
9	Guardrails Fixing	1	1	1	1	1								2	7
10	Sidewalk & Tiling	1	1	1	1	1						2		4	11
11	Structural Elements	1	1	1			1	4	2					4	14
12	Earthwork (Excavation & Backfill)	1	1	1	1	1						2	4	10	21
13	Piping or Pipe Repair	1	1	1								1		2	6

Table 3-5: Numbers of the Machinery Drivers

#	ACTIVITIES	MACHINERY DRIVERS															
		Loader	Excavator	Motor Grader	Steel Roller	Milling Machine	Dump Truck	Water Tank Truck	Asphalt emulsion Sprayer	Asphalt Paver	Pneumatic Asphalt Roller	Mobile Crane	Guardrail Post Driving Machine	Concrete Mixer Truck	Mobile Concrete Pump	Road Marking Machine	Pick-up Truck
1	Pavement Patching	1	1		2		1	1	1	1	1						1
2	Milling & Overlay	1			1	1	3	1	1	1	1						1

#	ACTIVITIES	MACHINERY DRIVERS															
		Loader	Excavator	Motor Grader	Steel Roller	Milling Machine	Dump Truck	Water Tank Truck	Asphalt emulsion Sprayer	Asphalt Paver	Pneumatic Asphalt Roller	Mobile Crane	Guardrail Post Driving Machine	Concrete Mixer Truck	Mobile Concrete Pump	Road Marking Machine	Pick-up Truck
3	Pavement Total Reconstruction	1	2	1	2	1	6	1	1	1	1						1
4	Concrete Retaining Walls							1				1		1	1		1
5	Concrete Safety Barriers							1						1	1		1
6	Electrical Street Lighting Work											1					1
7	Culverts & Channels	1						1						1			1
8	Traffic Marking							1				1				1	1
9	Guardrails Fixing						1						1				1
10	Sidewalk & Tiling							1									1
11	Structural Elements							1				1		1	1		1
12	Earthwork (Excavation & Backfill)		2		1		2	1									1
13	Piping or Pipe Repair																1

3.5 Site Facilities

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

During the work implementation, the Contractor will have to rent a flat located in the Project area to serve as a Project Offices. These offices will be used by the Contractor Engineers, technical skilled workers and Supervising Consultants. The flat will be equipped with toilet, kitchen (including drinking water and appliances), lockers and other supplies needed for the daily administrative activities. It might also serve as a meeting point for all Project workers at the start and end of their shifts.

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

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

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

4. BASELINE ENVIRONMENTAL & SOCIAL CONDITIONS

This section presents an overall description of the baseline environmental and social conditions in the study area, which is the Caza of Nabatiye. It is divided into three sections covering the physical, biological and socioeconomic environment. Additional details on environmental components occurring along each of the roads are presented in Annex 1.

4.1 Physical Environment

4.1.1 Topography

Nabatiye Governorate, where the proposed roads are located, is around 75 km away from Beirut, the capital. Nabatiye lies on an elevation of around 430 meters above sea level. The village covers an area of around 869 acres (8.69km^2). Nabatiye caza is part of the lower Litani River basin and is bordered by Al Zarariya to the north, Tirflisi to the west, Al Humayra to the east, and Dayr Qanoun Al Naher to the South.

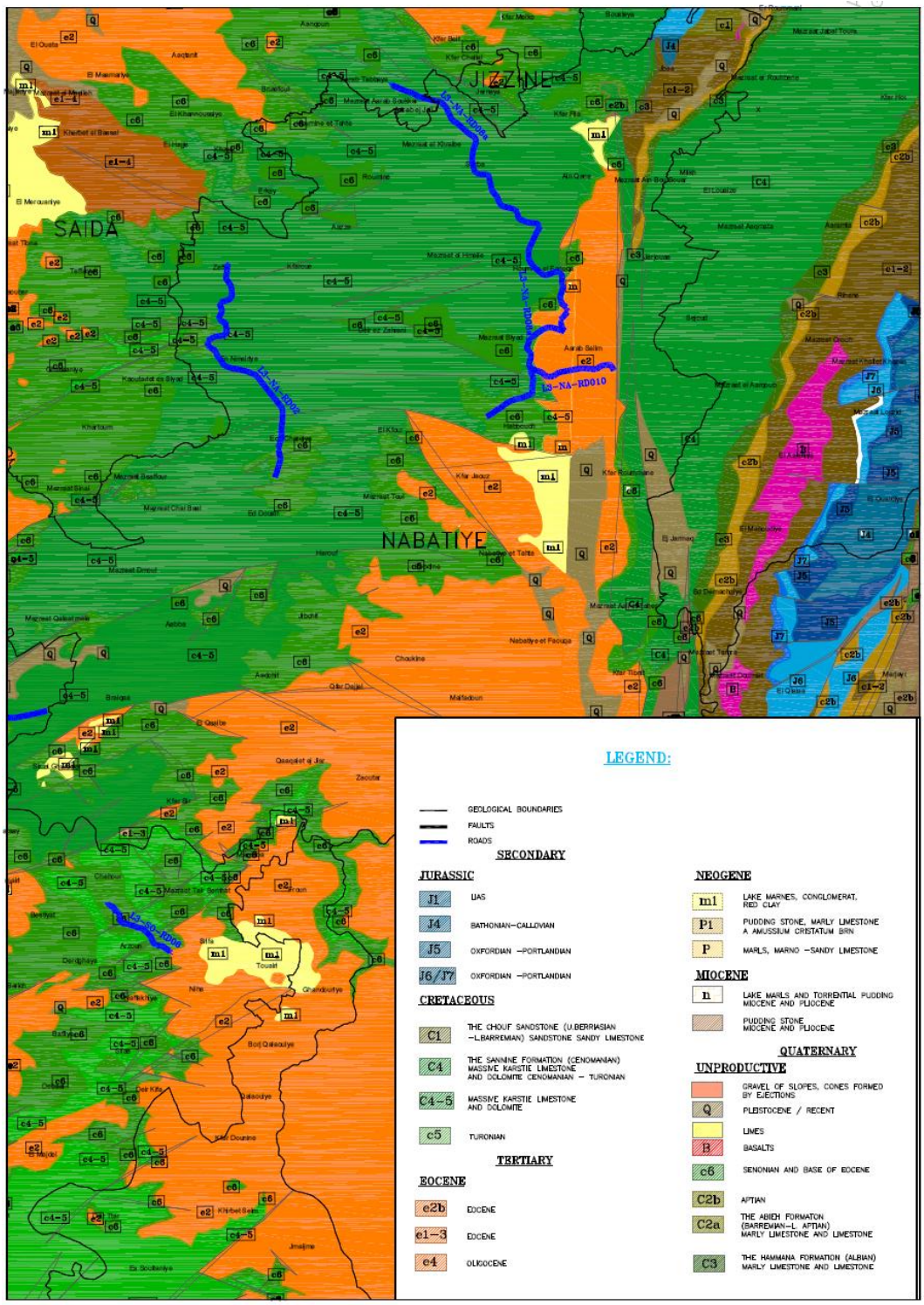
The villages in Nabatiye are distinguished by their slopes of hills (i.e. Jarjouaa, Ain Baysour) and flat meadows (i.e. Zefta, Ansar).

4.1.2 Geology

The geological formation of the proposed roads that are located within the Caza of Nabatiye are presented in Figure 4-1. Based on the geological map below, the main geological formation within the study belong to the following:

- Sannine Limestone, of Cenemonain age unit (C_4); this unit is divided into three subunits namely:
- Dolomitic Limestone (C_{4a}): this formation is characterized by geodes of different sizes filled or voided and a thickness of about 300 meters. Within this unit Ammonites and fish fossils were found.
- Bluish marl and shale (C_{4b}): this formation contains crystals of quartz, chert nodules and bands form. The thickness of this unit is in the range of 80-100 meter
- Limestone and dolomitic limestone (C_{4c}): The Limestone of this unit is highly karstifie. The color of this formation is white to brown and its thickness is about 300 meters.
- Eocene (E_2)
- Senonian and base of Eocene (C_6)

Figure 4-1 Geology Map of the Study Area

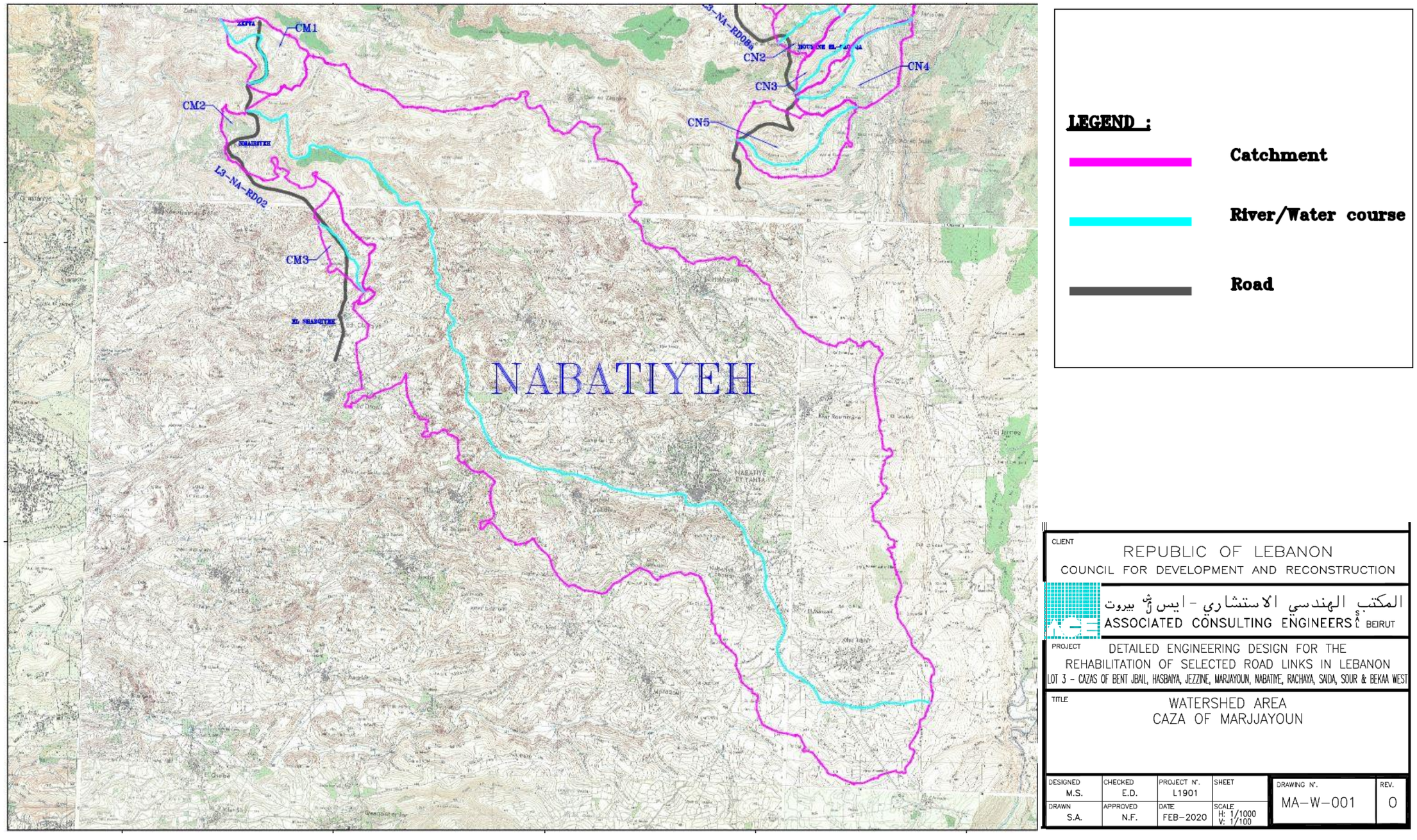


Source: Prepared by ACE based on the geological map of Dubertret scale 1/50000

4.1.3 Hydrogeology

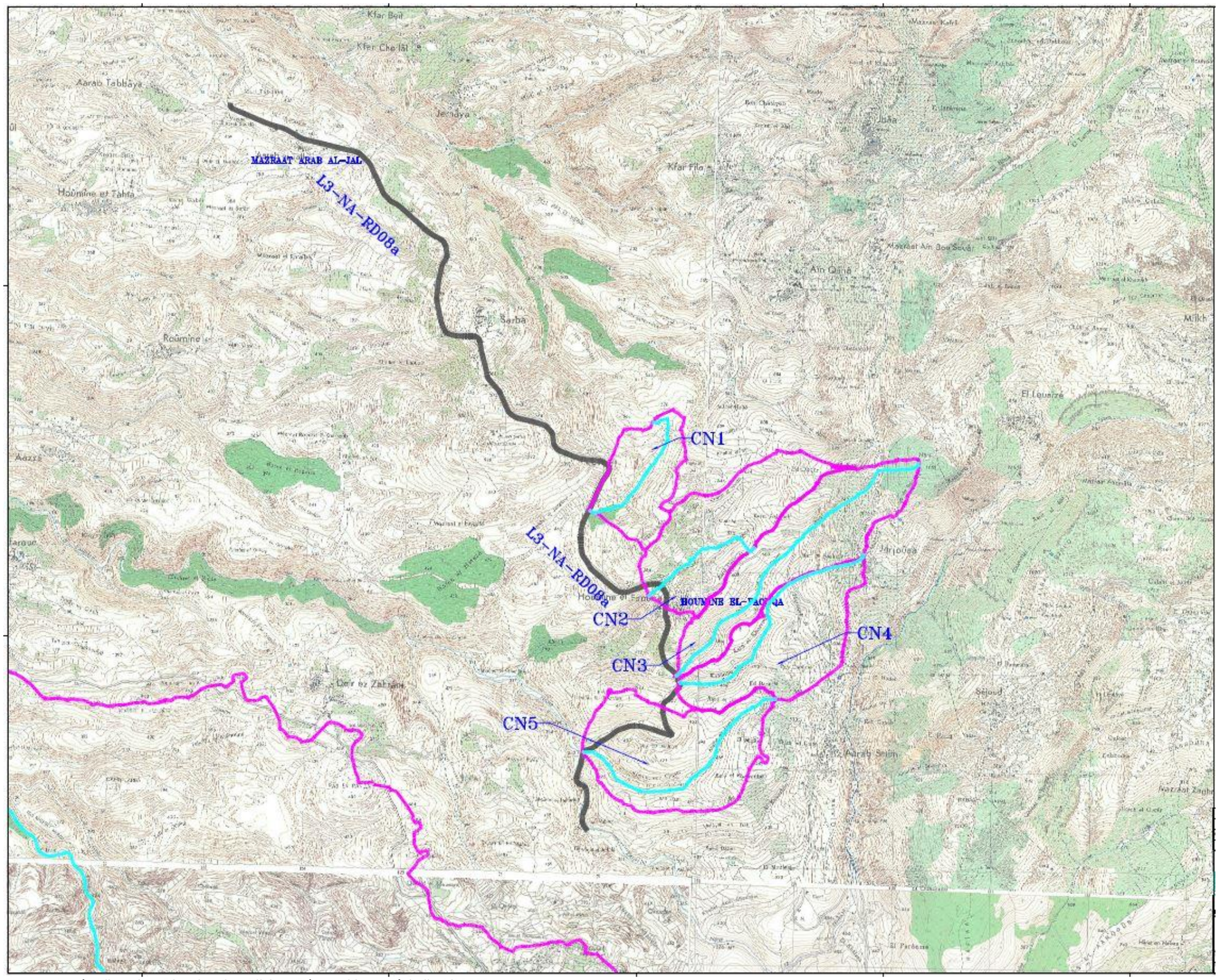
The nearest river to the project area is Al Zahrani River which is approximately 15-20 meter away from roads L3-NA-RD02 and L3-NA-RD8a. This river has a total length of 25 km. the average flow of Al Zahrani River is 0.6 m^3/s (2005-2009). Based on bacteriological analysis conducted at this river, it was noticed that there were fecal coliforms indicating that the water quality is polluted from wastewater discharges (CAS, 2010). The villages that are located at the above-mentioned roads are Houmine El Fawka (L3-NA-RD8a) and El Sharqiyeh (L3-NA-RD02).

Figure 4-2: Major Rivers in Nabatiye District Near Road L3-NA-RD02



Source: Armée Libanaise, Direction des Affaires Géographiques, échelle 1/20000

Figure 4-3: Major Rivers in Nabatiye District Near Road L3-NA-RD8a

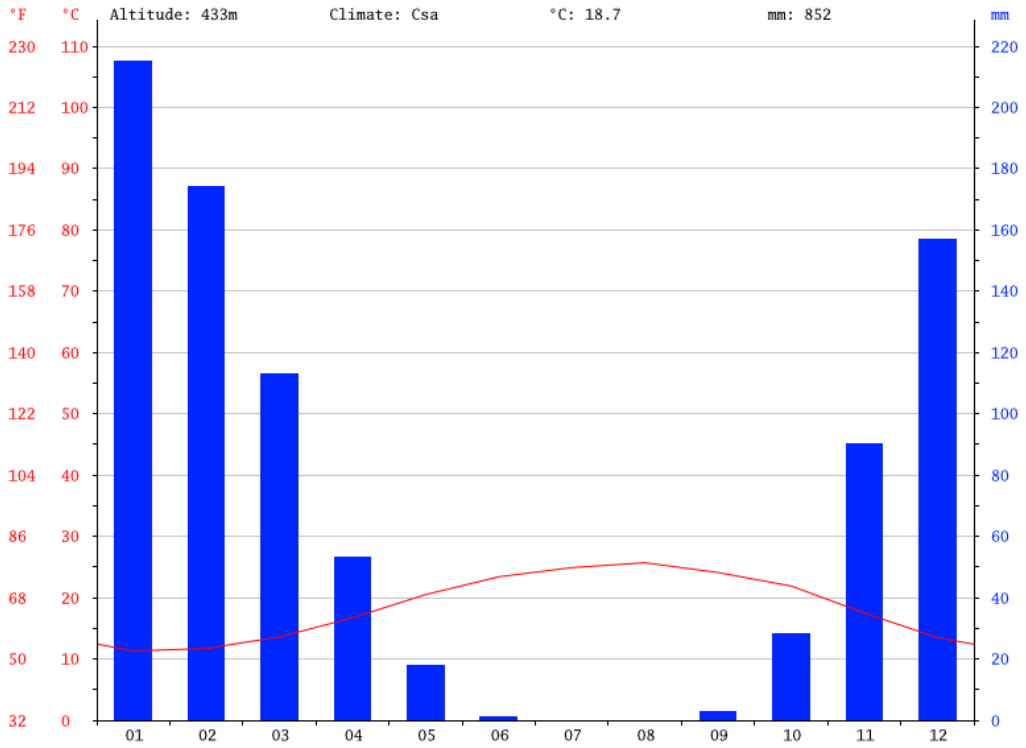


Source: Armée Libanaise, Direction des Affaires Géographiques, échelle 1/20000

4.1.4 Climate and Meteorology

The average annual temperature in Nabatiye is 18.7 °C. In a year, the average annual rainfall is 852 mm. The driest month is July, with no rainfall, however, in January, the precipitation reaches its peak with an average of 215 mm. The warmest month of the year is August, with an average temperature of 25.7 °C. On the other hand, January is the coldest month of the year with an average temperature of 11.3 °C. The variation in annual temperature is around 14.4 °C.

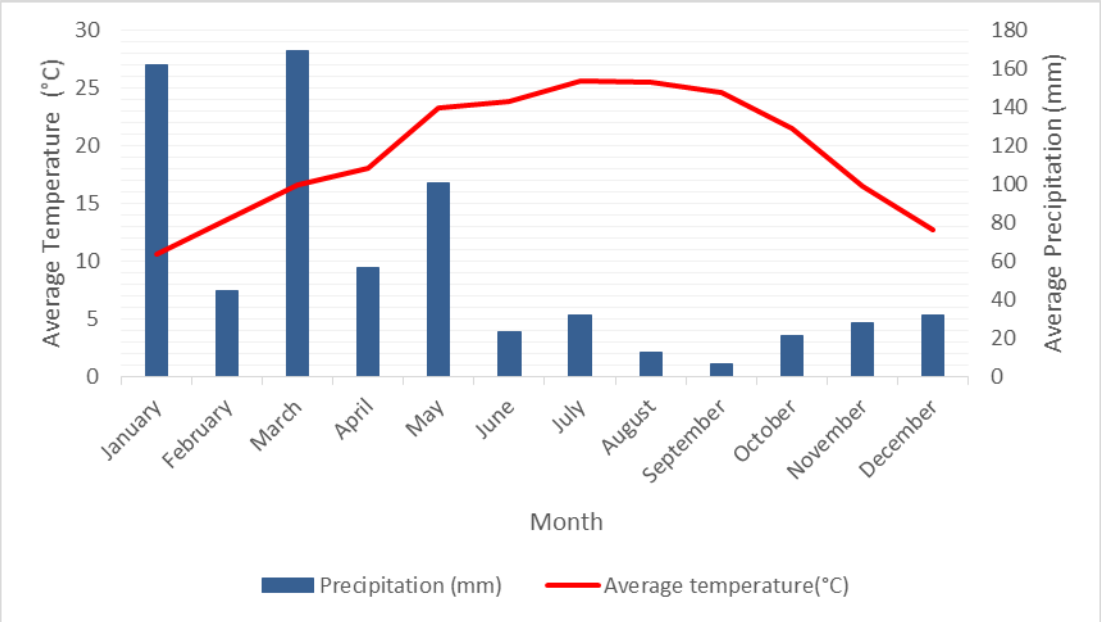
Figure 4-4: Climograph of Nabatiye at an altitude of 433 m



Source: climate-data.org, 2019

Additional data on climate in the area was obtained from the Lebanese Agriculture Research Institute (LARI) from its station in New Nabatiye located at the altitude 530 meters and at around 3 Km away from the village of Habbouch (L3-NA-RD10). This data represents the average temperatures and average precipitation of the year 2018 (Figure 4-5).

Figure 4-5: Climograph of New Nabatiye at 530 m from LARI Station for the Year 2018



Source: LARI, 2018

As for the wind data, wind speed and direction data were also obtained from LARI from its nearest station in New Nabatiye that is around 3 kilometers away from the nearest village of Habbouch (L3-NA-RD10) and located at the altitude 530 meters a.s.l. Table 4-1 represents the average monthly and annual wind speed and direction for the year of 2018.

Table 4-1: Monthly and Yearly Averages of Wind Speed (m/s) and Direction (degrees) registered by New Nabatiye LARI Station in 2013

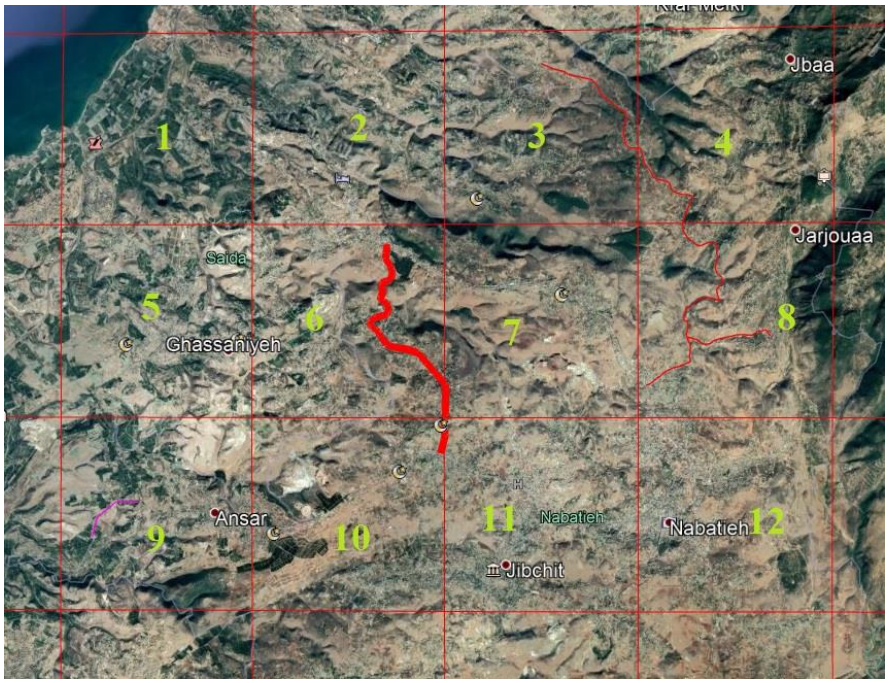
Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Average per year 2017
Monthly Average Wind Speed (m/s)	0.05	0.055	0.18	0.16	0.08	0.09	0.1	0.14	0.15	0.14	0.04	0.12	0.109
Monthly Average Wind Direction (Degrees)	166.8	151.78	181.87	183.1	203.3	218.43	231.48	226.16	201.86	193.81	163.93	150.54	189.42

Source: Data provided by LARI on January 21, 2020

4.1.5 Air Quality and Noise

Ambient air quality of the project area was requested from MOE. Data was available from the UNDP project "Air quality assessment in an East Mediterranean country: the case of Lebanon" which is based at the Ministry of Environment for the year 2010. The available data is for criteria pollutants: Particulate Matter (PM), Ozone (O_3), Carbon monoxide (CO), Nitrogen dioxide (NO_2), Sulfur dioxide (SO_2). The project area was divided into different cells (Figure 4-6) and the data of the annual background average concentrations in µg/m^3 was obtained. Table 4-2 shows the detected annual concentrations, the national limit values dictated in Decision 52/1 dated 1996 and WHO Guidelines. For some parameters, the obtained data on air quality is the annual concentrations while some of the standards are available only for intervals of 8 hours or 24 hours.

Figure 4-6: The Project Area Divided into Different Cells



Source: Data provided by the Ministry of Environment on January 3, 2020

Table 4-2: Annual Ambient Air Quality at the Project Site for the Year of 2010 (The Roads are Located on Cells 3,4, 6, 7, 8, 9, 10 and 11)

Pollutant (µg.m-3)	NO2	O3	PM10	PM2.5	SO2	CO
Concentration in Cell 3	18.737	83.884	20.901	17.997	13.556	406.253
Concentration in Cell 4	14.742	86.763	19.640	16.959	11.416	340.121
Concentration in Cell 6	20.675	80.891	21.308	18.407	14.111	433.687
Concentration in Cell 7	21.319	80.867	21.318	18.505	13.724	471.981
Concentration in Cell 8	17.668	83.719	20.568	17.944	12.281	369.104
Concentration in Cell 9	19.065	82.278	21.283	18.298	13.017	380.294
Concentration in Cell 10	21.671	80.019	22.246	19.386	14.214	407.033
Concentration in Cell 11	23.521	78.693	22.724	19.939	14.777	433.091
Lebanese Standards	100 (Annual)	100 (8 hrs)	80 (24 hrs)	-	-	10,000 (8 hrs)
WHO Guidelines	40 (Annual)	100 (8 hrs)	20 (Annual)	10 (Annual)	20 (24 hrs)	10,000 (8 hrs)

Source: Data provided by the Ministry of Environment on January 3, 2020

The results have shown that the concentrations of NO_2 in all the cells comply with the national standards and the WHO Guidelines. As for the concentrations of PM_{10}, the obtained values were in compliance with the WHO Guidelines while $PM_{2.5}$ in all the cells were not in compliance with the WHO standards for air quality.

The noise levels in the Nabatiye Caza we measured by the team. Two sites have been chosen such as one is near a residential area and another site near a calm area. The location of site 1 and Site 2 are in Zefta of road L3-NA-RD02 and at a relatively calm area in Houmine El Fawqa of road L3-NA-RD8a respectively. In each site, noise was measured for a period of 3 minutes during day time. Table 4-3 below shows the results of the noise measurements. .

Table 4-3: Noise Levels Measurements at Site 1 and Site 2 in Nabatiye Caza

Site	Noise Level in Decibels (dB)		
	Minimum(dB)	Leq(dB)	Maximum(dB)
Site 1: Zefta	33.5	54.9	74.1
Site 2: Calm area in Houmine El Fawqa	27	52.8	70.6

From the results it is shown that the equivalent continuous sound level (Leq) at Site 1 and Site 2 were 54.9 dB and 52.8 dB respectively which is within the national standards for noise limits in residential areas (45-55 dB)

4.1.6 Land Use/Land Cover

In Nabatiye, the most common land use is residential and commercial, as the area is urbanized. The industrial sector is growing in Nabatiye, and many permits have been acquired especially between 2011 and 2016. Food and beverages make up 28% of the industrial sector. (IDAL, 2018). The project team has conducted site visits to all the project roads in the Caza of Nabatiye in order to collect information about the environmental features along the roads including the vegetation cover composed of natural areas, agriculture areas and planted trees. During the site visits, different kind of trees and areas were observed. These are as follows:

- Peach, palm, quercus, cypress, salix, eucalyptus, olive, and pine trees were observed throughout road L3-NA-RD02, along with vine and ornamental shrubs and flowers (at the end of Zefta, and Nmayrieh)
- Eucalyptus, olive, and pine trees were observed throughout road L3-NA-RD10 (at Arab Salim) along with flowers.
- Olive, pine, and eucalyptus trees were observed along road L3-NA-RD08A (Mazraat Arab AL Jal, Houmine el Fawqa).
- Eucalyptus, cypress, and fruitful trees were observed along road L3-NA-RD14 (Abo Al Aswad about 900 m away from Mazraat Khoutaryet Al Rez).

Table 4-4: Visual Classification of Land Use based on Google Maps

Municipality	Land Use
Zefta	Densely populated, natural landscapes, sparse vegetation cover
Nmayriyeh	Moderately populated, terraced landscapes, moderate vegetation cover
Charqiyeh	Densely populated, natural landscapes, sparse vegetation cover
Habbouch	Densely populated, natural landscapes, sparse vegetation cover
Arab Salim	Densely populated, terraced landscapes, moderate vegetation cover
Sarba	Moderately populated, terraced landscapes, moderate vegetation cover
Houmine el Faouqa	Moderately populated, natural landscapes, moderate vegetation cover
Ansar	Densely populated, terraced landscapes, dense vegetation cover
Abou El Aswad	Sparsely populated, natural landscape, dense vegetation cover

Source: Google Maps, 2020

A detailed list of the existing areas along the roads is presented in Annex 1.

4.2 Biological Environment

4.2.1 Flora

The Southern part of Lebanon is covered by Aleppo Pine forests (*Pinus halepensis*). Forests in Nabatiye make up 6% of the total forests in Lebanon (SOER, 2010). As for the floral species, and in reference to the report 'Setting Conservation priorities for Lebanese Flora - Identification of important plant areas', there was no floral and tree species of an ecological importance along the roads of the project area (Dagher-Kharrat et al., 2018).
However, many trees were identified along the surveyed roads, these trees include:

- Peach trees
- Palm trees
- Quercus trees
- Cypress trees
- Salix trees
- Eucalyptus trees
- Olive trees
- Pine trees
- Vine

All the mentioned tree species that were identified along the three roads are located outside the road delimitations or are private to residential buildings and areas.

4.2.2 Fauna

The fauna in the Caza includes mainly animals that are raised for livestock production such as goats and sheep (IDAL, 2018). However, common animals could also be present mainly in the surrounding natural landscapes. During the site visits, wild animals including mammals and birds were not identified. Moreover, the presence of grazing livestock was not noticed along the project roads although the governorate has the third highest share of goats in Lebanon (IDAL, 2018).

4.2.3 Ecologically Sensitive Areas

The District of Nabatiye comprises Ebel Es Saqi area that was declared as an Important Bird Area (IBA) by BirdLife International where different bird species were observed such as the Common Cranes, White Storks, Pallid Harrier, European Honey-buzzard, Egyptian Vulture, Black-headed Bunting and Masked Shrike. However, the nearest road (L3-NA-RD10, Habbouch-Arab Salim) is about 12.7 km away from this IBA (Figure 4-7).

Figure 4-7: Location of Ebel Es Saqi IBA in reference to the nearest road (L3-NA-RD10)

Source: BirdLife International, 2020

Moreover, the MOE has declared in 2006 Ebel Es Saqi a Hima that was among the list of sites of natural and/or ecological importance in need for protection and the word Hima refers to protected area (SPNL, 2020). As mentioned before the Hima of Ebel Es Saqi is around 12.7 Km away from the project area. The Hima is divided into six land use zones of a pine forest, scrubland, Hasbani river Ecotone, Hasbani river, crop fields and olive groves (State of Lebanon's Birds and IBAs, 2014). Moreover, the non-avian fauna of interest are bats, hyrax, wild cat, fox, jackal, river otter, wild boar, freshwater fish, terrestrial turtles, chameleon and lizards, three species of amphibians, and scorpions (BirdLife International, 2020).

4.3 Socio Economic Environment

4.3.1 Demographic Profile

The Nabatiye Governorate has around 330,000 inhabitants (including Syrian and Palestinian refugees) and this is considered the lowest population share among all governorates in Lebanon (IDAL, 2018). The population density in the Caza of Nabaityeh is around 305 people per km2 (IDAL, 2018). The governorate of Nabatiye possesses a poverty rate of 25% lower than the national average 27% (IDAL, 2018). Moreover, the unemployment rate is estimated at 6.0% compared to the national average 11.4% (IDAL, 2018).

According to the Syria Refugee response per district (UNHCR, 2019), the total number of Syrian refugees is around 21,500 in Nabatiye Caza. The number of Syrian refugees registered in each of the villages that area located within the proposed project area are presented in Table 4-5, showing that as of end of 2019, the total number of registered refugees in the project area was 4,177. According to the UNHCR, no informal tented settlements for refugees were established in Nabatiyeh Caza (Reliefweb, 2020). Moreover, there are no Palestinian Refugees in Nabatiye Caza (OCHA, 2016).

Table 4-5: Registered Refugees in Each Municipality along the Proposed Roads

Municipality	Number of Syrian Refugees
Zefta	618
Nmayriyeh	204
Charqiyeh	185

Municipality	Number of Syrian Refugees
Habbouch	916
Arab Salim	679
Sarba	91
Houmine El Faouqa	340
Ansar	1144
Total	4177

Source: UNCHR, 2019

4.3.2 Economic Activities

The economic activities of Nabatiye are concentrated in trade and services and real estate. Nabatiye Municipality is the main center of the Caza, and is considered as the main market for villages of the Caza. Nabatiye is also the administrative town of the Nabatiye governorate.
The following shops were identified during the site visit to road L3-NA-RD02 (Zefta, Nmayriyeh and Cahrqiyeh)):

- Aluminum and metal shop
- Car repair shop
- Pharmacy
- Barbershop
- Restaurant and Café
- Butchery
- Clothing store
- Mini-market
- Bookshop
- Flower shop

The following shops were identified during the site visit to road L3-NA-RD10 (Habbouch and beginning of Arab Salim):

- Mini-market
- Cell phone shop
- Pharmacy
- Gas station
- Construction materials shop

The following shops were identified during the site visit to road L3-NA-RD08a (Mazraat Arab Al Jal, Sabra and at the beginning of Houmine El Fawqa):

- Clothing store
- Bakery
- Gallery
- Gas stations
- Pharmacy
- Restaurant
- Cell phone shops
- Barber shop

Road L3-Na-RD14 was mostly residential.

4.3.3 Education Services

Some of the schools in Nabatiye have only primary education level while others have both the intermediate and secondary education level. Others might have secondary level only. As for those who are seeking vocational training and higher education, they attend the schools and universities in Nabatiye, Saida and Beirut. In addition, students who seek higher education can benefit from three private universities along with a branch of the Lebanese University (2 faculties serving the Nabatiye region) (IDAL, 2018). There are 11 educational institutions none of which are close to roads under study. (Google Maps). These institutions are:

- ACT College
- Computer training school
- CIS College Nabatieh
- American University of Culture and Education (AUCE)
- Al Manar Academic Institute
- Amjad College institute
- Alafak Institute
- Lebanese International University, Nabatieh Campus
- Lebanese University Faculty of Sciences V
- Institut Français de Nabatieh
- Collège Saint Charles
- Nabatieh High School

4.3.4 Health Services

Nabatiye includes six hospitals, of which five are private and one is public (listed below). The hospitals are not close to roads under study. (google maps). The health facilities which are limited to some health clinics and hospitals are considered as acceptable to the needs of the Caza and Governorate.

- Nabatieh Governmental Hospital
- Ghossein Hospital
- Hospital Ali Ghandour
- Najdeh Chaabia Hospital-Nabatieh
- Dr. Ali Sabbagh's Hospital
- Al Najda Hospital

4.3.5 Cultural Heritage

During the site visits, sites of archaeological or cultural importance were not identified along the project roads. Moreover, none of the proposed roads led to any archaeological site. However the caza has some ancient rock tombs, Roman and Byzabtine ruins and several old mosques (i.e. Hay el Ancient) as well as old churches such as the central church el-Saydeh is (Sarba). The caza is also known for the presence of several old traditional souks (MoT, 2011).

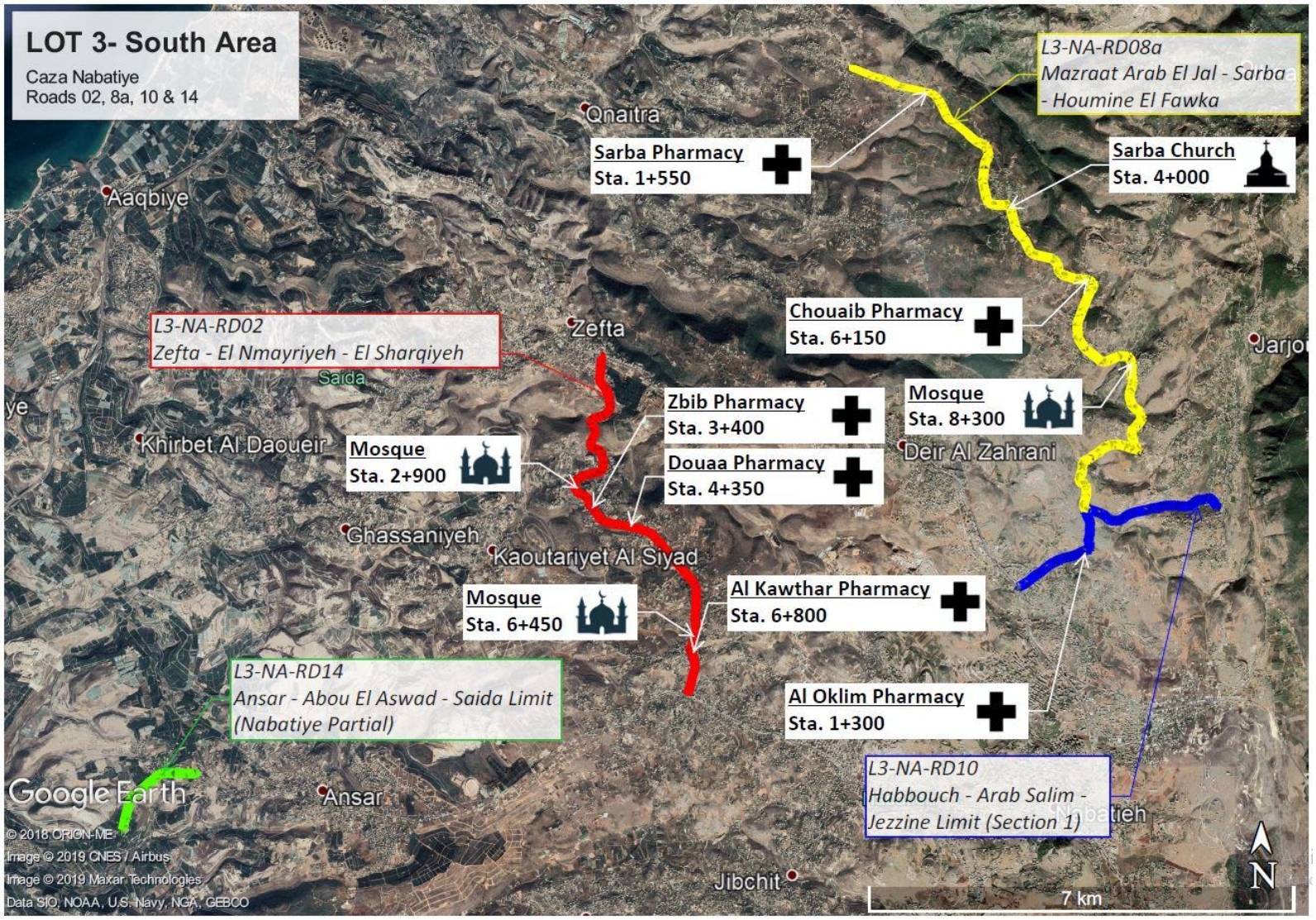
4.4 Summary of Baseline

During the site visit, it was shown that the sensitive areas that might be affected by the proposed project are pharmacies and religious centers. Two pharmacies (Sarba pharmacy and Couaib pharmacy) were observed during the site visits along L3-NA-RD8a at stations 1+550 (Sarba) and 6+150 (Houmieh el Fawqa) respectively. Moreover, one church (Station 4+000-Sarba) was observed along L3- NA-RD8a and a mosque at station 8+300 (Houmine el Fawqa) of the same road. As for road L3-NA-RD10, one pharmacy was identified in Habbouch at stations 1+300 (Al Oklim pharmacy). At road L3-NA-RD02 three pharmacies were identified, Zbib pharmacy (Station 3+400, Nmayrieh), Douaa pharmacy (station 4+350, Nmayrieh) and Al Kawthar pharmacy (station 6+800-Charqyieh). Also two moques were observed at this road at stations 2+900 (Nmayriyeh) and station 6+450 (Charqiyeh).

The trees that were observed in the project area are mainly palm trees, quercus trees, cypress trees, salix trees, eucalyptus trees, olive trees, pine trees, along with fruit trees such as peach trees. In addition, flowers and ornamental bushes were identified along some parts of the roads. However, the mentioned trees above are located outside the project road delimitations. Moreover, the project area does not have an important ecosystem that includes sensitive habitats of animal and plant biodiversity.

The identified pharmacies, churches and mosques within Project Area are presented in the map below (Figure 4-8).

Figure 4-8: Schools, Mosques and Health Care Centers Within Project Area



Source: ACE

5. POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

This section describes the potential anticipated positive and negative environmental and social impacts associated with the rehabilitation of the selected roads and the required networks in Nabatiye Caza.

5.1 Assessment Methodology

The evaluation of potential environmental impacts was based on scientific evidence, literature review and the professional judgment of the Consultant. The impact classification and ranking approach that was applied is as follows:

- Identification of project-related activities (during both rehabilitation/reconstruction and operation phases) and environmental aspects;
- Determination of potential impacts on the natural and man-made environment that might arise from these activities;
- Assessment and evaluation of potential impacts based on the criteria set out in the Environmental and Social Management Framework of the project.

As such, impacts were weighted on the scale of P, 2P, O, N, 2N to signify Positive, strongly Positive, Neutral, Negative, and Strongly Negative impacts respectively.

5.2 Potential Positive Impacts during Rehabilitation

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

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

5.3 Potential Environmental Negative Impacts during Rehabilitation

Most impacts resulting from the project will occur during the road rehabilitation phase. However, most of these impacts are temporary for the duration of the works.

5.3.1 Water and Soil Quality

Contamination of soil, underground and surface water from the rehabilitation of the proposed project might occur as a result of several activities. These include the improper disposal of solid waste and excavated material, inappropriate discharge of liquid waste, wastewater, accidental oil and chemical spillages, and diversion of contaminated rainwater runoff from the project site. One river (Al Zahrani River) is at the right of road L3-NA-RD8a and L3-NA-RD02. As such, if the generated solid waste and liquid waste were not contained properly, surface water pollution might occur

through the transport of pollutants such as debris and suspended solids into the river and water bodies through runoff.

A detailed description of the sources of pollution along with the associated activities is listed below:

Liquid waste from rehabilitation

Major rehabilitation activities that lead to the generation of liquid waste include:

- Concrete mixing for the retaining walls and sidewalks;
- Excavation road sections that are in sever conditions generating runoffs contaminated with suspended solids, especially during rainy days if the rehabilitation work will start in the fall season;
- Storm water runoff that contains high amounts of suspended solids

This liquid waste might pollute nearby water courses, streams and soils if not discharged and managed properly.

Wastewater

Workers will be needed during the rehabilitation of the proposed roads and its associated works. As such workers will generate wastewater during the entire rehabilitation phase. If the generated wastewater was not managed to be discharged in specific tanks or connected to existing sewage network, nearby surface water bodies might be polluted with high organic loads especially where water was identified based on the hydrological map (4.1.3) at the villages of Houmine El Fawka (L3-NA-RD8a) and El Sharqiyeh (L3-NA-RD02).

Accidental Spillage

Water and soil can be polluted as a result of accidental oil spills from the equipment used for rehabilitation of the roads. The spills may occur during re-fueling of oil supplies for machinery generation, as well as using oils and lubricants during operation. Accidental spill of oils may occur and contaminate the underground water resources especially in the case where soil layers are permeable to these materials that could be easily infiltrated. The spills may also affect water quality of the A Zahrani River and its watershed during the rehabilitation of the proposed roads L3-NA-RD8a (Houmine El Fawka) and L3-NA-RD02 (El Sharqiyeh).

Solid Waste Generation

The rehabilitation activities of the roads may generate solid waste from construction materials such cement and their resulting empty bags, electrical wiring, rebar, wood and piles of sand, ruined asphalt and dirt due to excavation. Inappropriate waste handling and improper disposal practices of this type of waste may result in ground and surface water contamination due to leaching and runoffs, hence, reduction in overall water quality. In addition, these materials could be directly discharged into the nearby water courses of road L3-NA-RD8a and L3-NA-RD02 at Houmine El Fawka and El Sharqiyeh villages respectively reaching at the end the Zahrani River. Furthermore, improper disposal of solid waste, inappropriate discharge of wastewater and accidental spills (fuel, oil) can have a negative impact on the soil quality.

As such, the impact on the water and soil quality in the area of the proposed project during construction is evaluated as negative (N).

5.3.2 Air Quality, Noise and Light

The machinery and vehicles used during the rehabilitation phase produce air emissions and gases that can temporarily affect local air quality. In general, air emissions generated from the combustion of diesel used by machinery and vehicles contain particulate matter, Benzene, Toluene, Xylenes, Ozone, Nitrogen Oxides, and Sulfur Oxides, Carbon Dioxide and Carbon Monoxide.

Rehabilitation activities, movement and transportations practiced by heavy machinery unpaved surfaces generate particulate emissions such as dust that can affect the local air quality. Fugitive dust emissions could disturb many receptors including workers and the residents of Nabatiye especially where the proposed roads pass through populated residential areas in Zefta, El Nmayriyeh and El Sharqiyeh (L3-NA-RD02), Sarba and Houmine el Fawka (L3-NA-RD8a), Ansar (L3-NA-RD14), and Habbouch and Arab Salim (L3-NA-RD10). Also, some of the proposed roads are located near fruit trees of peach and other fruitful trees (L4-NA-RD02-Zefta and L4-NA-RD14-Ansar) and near olive and pine trees that dominated the majority of the study area (L4-NA-RD10 and L4-NA-RD8a). As such, this type of vegetation will be disturbed by the different construction and rehabilitation activities and all the resulting emissions. The generated emissions include dust and particulate matter that accumulate at the surface of the leaves thus affecting the photosynthesis process. The significance of dust emissions is highly dependent on the wind conditions during the construction phase. Open burning of solid waste or other material on site could release emissions accompanied by toxins. It is worth to mention that some of the road sections in Nabatiye Caza require new pavement. At these stations identified in Section 3.2, the impact on the air quality will be higher than at sections where only patching and overlay is required.

The road sections in Nabatiye Caza that require new pavement are as follows:

- NA-RD02:
  - From Station 0+000 to 0+900: Zefta
  - From Station 3+700 to 5+400: El Nmayriyeh and El Sharqiyeh
- NA-RD10:
  - From Station 3+200 to 3+700: Arab Salim
- NA-RD08a:
  - From Station 3+900 to 4+600: Sarba
  - From Station 8+900 to 9+600: Houmine El Fawka
  - From Station 9+800 to 11+100: Houmine El Fawka

As such, during rehabilitation, the impact on the air quality in the area of the proposed project is evaluated as negative (N).

As for odor emissions during the rehabilitation phase, the improper storage and disposal of solid wastes and the accidental liquid waste leakages will lead to odor emissions.

Thus the generation of odor emissions during construction is considered a neutral impact (O).
Noise will be generated during the rehabilitation of the proposed roads and its associated works. These activities include transportation or delivery of raw materials, trucks movement, concrete mixing, excavation, and operation of heavy vehicle movement such as excavators, stabilizers, pneumatic drills and stone crushers. All these activities require heavy construction machineries and onsite equipment. A list of major machineries and equipment along with their noise levels decibels (dB) is shown in Table 5-1.

Table 5-1: Noise levels emitted from Construction Machinery and Equipment

Machinery/Equipment	Noise Level at 16 m (50 ft) from source in dB (A)
Loader	80
Concrete Mixer Truck	85
Dump Truck	84
Pile Driver	95
Excavator	80
Pneumatic tyred roller	85

Source: Knauer et al., 2006

Therefore, noise from rehabilitation will likely temporarily disturb the workers and town residents of Zefta (road L4-NA-RD02), Ansar (road L4-NA-RD14), and Arab Salim (road L4-NA-RD8a) villages as these are densely populated. Noise from rehabilitation will also affect the animals and birds that use the area for foraging and breeding. However, noise levels are highly dependent on the extent and duration of the construction activities and are temporary and specific to the rehabilitation phase.

Moreover, during the rehabilitation phase of the project roads, the machinery lights and artificial lights might be used in the periods of insufficient natural lights. This might disturb the passers-by, people living in the residential areas as well as animals that might pass. However, this will likely be temporary as the rehabilitation works won't be extended to the night period.

Thus the generation of nuisances-noise and lights is considered a negative impact (N).

5.3.3 Use of Natural Resources

5.3.3.1 Water Consumption

Water is needed for different processes in the rehabilitation activities. It is needed for concrete mixing, cleaning of tools and the used machinery, dust suppression, and earth works activities. Water consumption in the rehabilitation site may be overused causing overexploitation of water resources. This impact is evaluated as negative (N).

5.3.3.2 Natural Material Sourcing

The proposed project requires the use of borrow material such as aggregates and sand. As such, the excavation of lands for the extraction of borrow material may result in removal of land resource. This leads to a minimal change in the morphology of the land. In some cases, the change might be sever whereby the soil losses its fertile top layer affecting the productivity of the area. Hence this impact is high negative in nature (N). It is worth to mention that illegal quarries will not be used by local contractors to provide the project with the required borrow material.

5.3.4 Land Cover

The rehabilitation of the proposed roads will not change the land use of the area since the roads already exist and the REP aim is to rehabilitate it. However, at certain sections vegetation cover may be removed to be replaced by the rehabilitated sidewalks or retaining walls thus losing some of the vegetation around the proposed roads. It is worth to mention that this vegetation cover is not of significant importance, thus this impact is evaluated as neutral (O).

5.3.5 Biological Environment (Flora and Fauna)

As mentioned in Section 4.2.5, during the site visits, many trees were observed such as olive, pine, oaks, Eucalyptus and Cypress trees along with some fruitful trees that were planted near residencies. However, these trees are not expected to be affected during project rehabilitation. In addition, most of the area is dominated by a natural low vegetation cover. Moreover, some fruit trees such as peach were witnesses along the project road and some ornamental trees near residences. These trees will also not be affected by the rehabilitation activities as none of these trees are located on the roadsides but are planted in lands at proximity but outside the road delimitations. Moreover, none of these trees gender is considered as endangered.

However, trees will not be removed within the area of the proposed project. In addition, the main rehabilitation activities that may have a negative effect on the study area flora are the activities of heavy machinery movement on unpaved roads and removal of deteriorated asphalt layers. However, the tree species mentioned above were observed away from the road alignment. As such the dust generated from these activities will not have a significant impact on the flora in the project area. It is worth to mention that the rehabilitation phase is a short-term phase and the impacts of such activities will disappear as soon as the work is completed.

The impact of the construction and rehabilitation activities is therefore assessed as neutral (O).

As for the fauna, no animals were identified during the site visits. However, the animals that are present in the area and may approach or cross the proposed roads have the tendency to escape due to the noise and vibrations emanating from the undertaken activities and be disturbed. Nevertheless, this phase is temporary, and the disturbance impact will diminish as soon as this phase ends. This impact is considered negative (N).

5.3.6 Visual Intrusion

As mentioned previously this project will not change the landscape of the area since the roads already exist. However, the project contractor will try to the extent possible to prevent visual intrusion for nearby people for nearby people due to the presence of heavy equipment and machinery during the rehabilitation works. This impact is temporary and will diminish as soon as the project is completed and is considered as a neutral impact (O).

5.3.7 Existing Infrastructure

The rehabilitation works may impact existing belowground infrastructure including utility cables (phone, electricity, internet), sewage, and water networks. Unplanned digging and milling of deteriorated road pavement may damage the existing infrastructure that is possibly serving nearby areas and residents. This damage will interrupt the functioning of utility cables and will cut-off the operation of water and sewage networks. Consequently, the supply of water to nearby areas will be affected and residents or passengers may smell bad odors from contaminated water accumulated within the broken sewage network. This impact is temporary and will diminish as soon as the project is completed and is considered as a neutral impact (O).

5.4 Potential Socioeconomic Impacts during Rehabilitation

5.4.1 Labour Influx

Sexual abuse and exploitation (SEA) induced by labor influx and sexual harassment (SH) in the workplace are potential gender-associated impacts that may arise during the project rehabilitation phase. These impacts will most likely occur due to labor mobilization and the unfamiliar cultural and social settings. Moreover, social interactions between workers living in the area (in rented apartments), surrounding communities, local vendors and sellers can cause culturally insensitive behavior and relationships leading to sexual abuse and exploitation incidents (GGITR & GTGDR, 2018). This impact is considered to be negative (N).

5.4.2 Traffic

As a result of the proposed rehabilitation activities, on site traffic management may pose a challenge on the proposed roads. Moreover, the movement of heavy machinery and construction activities may lead to temporary traffic jam or might result in accidents and cause inconvenience to the people using those roads especially at densely populated areas such as the village of Zefta, El Nmayriyeh and El Sharqiyeh (L3-NA-RD02), Sarba and Houmine el Fawka (L3-NA-RD8a), Ansar (L3-NA-RD14), and Habbouch and Arab Salim (L3-NA-RD10). In addition, traffic could be disrupted by the rehabilitation activities throughout traffic diversions, detours or blockage. As mentioned before, the location of these detours will be specified by the contractor during the rehabilitation phase. However, these impacts are temporary and will vanish as soon as the project is completed. As such, this impact is assessed as a negative impact (N).

5.4.3 Social Tension

Social tensions may arise between local and displaced communities should the former perceive that most the job opportunities created are being offered to foreign workers. Social tensions between locals and foreign might also arise if they are not equally compensated as per the scale of market price rates. In addition, discrimination by the local community of foreign workers residing in residential buildings (in rented apartments) may have a negative impact on the wellbeing of these workers. This impact is negative (N).

5.4.4 Child Labour

During construction, it is possible that the contractor may recruit children who are under the legal age as workers on the site, especially in the case of the day laborers. Without proper mitigation and enforcement measures, this impact would be considered as a strongly negative impact (2N).

5.4.5 Cultural Heritage

The project is not expected to result in any impacts on cultural heritage and archaeological sites as the proposed roads are not located near these sites.

5.4.6 Traffic and Accessibility

During the rehabilitation activities, some of the trade and supply flows of goods will be disturbed in the project area and due to the possible detours and diversions. Moreover, women within the project area might be affected from the presence of rehabilitation activities and workers along the proposed roads. Women might not be able to perform their routinely outdoor activities. The

mobility of women working in different fields such as agriculture and livestock may be affected. This impact is therefore considered negative (N).

5.4.7 Economic Activities

As mentioned previously, many shops, gas stations, snacks, health centers and car repairing shops were identified along the way and are in close proximity to some road stations especially in the residential areas. For example, along road L3-NA-RD02 gas stations, many snack shops and minimarkets, aluminum workshops and a center exist on this road (Efta, Nmayriyeh and Charqiyeh). As for L3-NA-RD8a, the observed features were different shops, minimarkets and pharmacies (Sabra pharmacy and Chouiab pharmacy) (Mazraat Arab Al Jal, Sabra and at the beginning of Houmine El Fawqa). During the rehabilitation phase, the existing shops might be affected due to potential road closure, presence of excavation activities and heavy machinery near those shops. Thus, this will impact the livelihood of the shops owners. Moreover, the rehabilitation activities will also impact the visitors of these features. This impact is therefore considered negative (N) and temporal as the livelihood will be enhanced once the road is rehabilitated.

5.5 Potential Health and Safety Impacts

5.5.1 Occupational Health and Safety

During summer, high temperatures could cause heat stress and dehydration to some of the workers. Accident and injuries to workers and the public may be caused by commuting accidents, falls, electric shock from streetlight repairing activities, mishandling of machinery and other rehabilitation related accidents. The high noise generated from the machinery could damage the hearing of the workers and dust generation from the different construction activities, movements and transportations may cause respiratory problems for workers on site if appropriate personal protection equipment is not being used. As such most of the health problems that might affect the workers results from the generated air pollutants at the construction site. The following are potential airborne health risks along with the associated construction activity:

- Acute respiratory disorders, lung and heart diseases due to the generation of particulates from vehicular emissions and constructional machinery that operates on fuel as well as silica in dust from the earth agitated by heavy machinery on unpaved roads.
- Acute irritation of the upper airways resulting in coughs and cold from large particulates.
- Acute manifestations including inflammatory conditions like bronchitis, bronchiolitis and pneumonia which may be rapidly fatal from the inhalation of small size particulates (2.5u to 10u).
- Pollutants such as SO_2, NO_2 and CO emitted from vehicular emissions contribute to respiratory ill health.
- Long term exposure is associated with chronic lung diseases such as lung cancer and silicosis (GoG-MRH, 2017).

Other health related effects that area associated with the generation of dust includes irritation of mucous membranes or allergic reactions that might be harmful to the eyes and skin (GoG-MRH, 2017). Thus, occupational health and safety impacts for the workers and nearby residents are evaluated as a strongly negative impact (2N).

Occupational health risks at construction sites also include:

- Over-exertion and ergonomic injuries from repetitive motion, lifting heavy objects, or working in an awkward position
- Slips and falls on the same elevation due to the presence of loose construction materials, oil or liquid spills, and unorganized electrical cords and ropes on the ground
- Falls from elevation associated with working with ladders (especially when rehabilitating streetlights) causing of fatal or permanent disabling injury
- Direct injuries due to the movement of trucks and lifting equipment in the movement of onsite (WB, 2007).

5.5.2 Community Health and Safety

Residents of villages may be injured as a result of activities associated with the rehabilitation of the proposed roads in the nearby towns. In fact, these activities can lead to car accidents especially when safety and road rerouting signs are not installed properly. Also, accidents are more prominent to occur with the local residents who are not familiar with presence of heavy equipment and machinery. Since this impact will vanish as soon as the project is complete, the impact of public safety is considered temporary and negative (N).

5.6 Potential Positive Impacts during Operation

5.6.1 Socioeconomic Environment

5.6.1.1 Economic Activities

Once the project is completed the improved infrastructure will encourage new business opportunities and marketing activities in project region. Moreover, according to the women session in the public hearing, the rehabilitation of roads will improve the access to education and healthcare facilities especially for women and children and it will benefit from the new business opportunities. It is also expected that the proposed road rehabilitation project will increase the land values in nearby villages thus allowing landowners to sell their land at an increased price and start new businesses.

Tourism is expected to increase in the region since the improvement of the road infrastructure conditions in the region will attract more visitors.

As such, this impact economic activities in the region is considered as a strongly positive impact (2P).

5.6.1.2 Traffic and Road Safety

The rehabilitation of the roads including adding adequate traffic signs for stoppage give ways as warning signs, mirrors at sharp edges, and other regulatory and warning signs will improve road conditions resulting in a smoother vehicular movement providing safer conditions for locals and tourists to commute. Thus, this is evaluated as a positive impact (P). This issue is addressed further in Section 5.7.7.

5.6.2 Cultural Heritage

There is no evidence of any historical vestige in the location of the proposed roads. Thus, the proposed project will not impact the cultural heritage of the region. However, the improvement of

road conditions will enhance touristic activities to historical and archaeological landmarks and the monasteries, churches and Mosques in the region. Thus, it is assessed as a positive impact (P).

5.7 Potential Negative Environmental Impacts during Operation

5.7.1 Water Quality

The rehabilitation of the already existing roads will not have major negative impacts on groundwater and surface water during the operational phase. However, some accidental oil spills might be released from vehicles, oil tankers and infrequent spills in the service areas. Such spills contain high oil and grease content and could be transported through runoff into nearby surface and groundwater bodies during heavy rain events. Although the project will include the rehabilitation of drainage system, these systems could be blocked by sediments and debris leading to storm water overflow. If overflow occurs, this water might be transported into nearby water bodies and soils. This impact is occasional and restricted up to the road surface nature.

As such, the impact on the water quality in the area of the proposed project during operation is evaluated as neutral (O).

5.7.2 Air Quality

The rehabilitation of the proposed roads will improve the road condition thus reducing traffic related emissions by inducing a smoother traffic flow in the project area. Nevertheless, in the long run, as business opportunities will increase and different establishments will be newly constructed along the rehabilitated roads traffic levels might increase leading to increased vehicular pollutant levels (CO, NOx, SOx, PM_{10}) in the area. The increase of such pollutants in the atmosphere may cause public health risks and other impacts on the environment.

As such, during operation, the impact on the air quality in the area of the proposed project is evaluated as negative (N).

5.7.3 Noise

During the operation, noise is expected to arise due to traffic related noise pollution; vibrations from engines and tires and use of pressure horns. Noise pollution might disturb wildlife and nearby residential areas. This impact is permanent and negative in nature (N).

5.7.4 Use of Natural Resources

5.7.4.1 Energy and Water Consumption

Energy will be consumed during the operation phase for lighting purposes thus slightly contributing in the depletion of natural resources if the new lighting infrastructure was not based on renewable energy. Also, in some cases the cleaning of the roads include washing by water thus consuming a significant amount of water. However, this type of cleaning is infrequent and will not cause depletion in the water resources if properly used.

Thus, the impact of energy and water consumption is evaluated as a negative impact (N).

5.7.5 Biological Environment

Improving the conditions of the proposed roads will increase the traffic load in the area. Therefore, if some animals cross the roads they might be exposed to direct mortality or avoidance behavior. The probability of crossing these roads is higher at night and the possible animal hitting accidents will be lower. However, this impact won't affect drastically the situation as the road and this impact already exist.

As for the terrestrial ecosystem, the increase in traffic will lead to increased exhaust emissions from the vehicles passing through the proposed roads thus affecting the life cycle of the trees and vegetation around the roads.

Thus the impact on the biological environment is evaluated as a negative impact (N).

5.7.6 Visual intrusion

As the project is the rehabilitation of existing roads in Nabatiye Caza, the surrounding environment, vegetation, and the aesthetical value of the surrounding areas is not likely to be significantly affected.

5.7.7 Traffic and Road Safety

After the rehabilitation of the proposed roads an increase in traffic rates will occur as people will frequently use the rehabilitated roads. In addition, improving the conditions of the road will lead to enhanced vehicular movement and speed thus increasing the chances of road accidents. However, installing safety walls, safety signs, speed limit signs and speed bumps along the proposed roads will decrease the possibility of such accidents and protect pedestrians. In addition, the law enforcement in Lebanon is not always implemented in the country and limited law enforcement is anticipated in Nabatiye. As such, this impact is evaluated as negative (N).

5.8 Summary of Potential Impacts

After evaluating the potential negative and positive impacts that might arise from the proposed project during both phases (rehabilitation and operation), it was concluded that most of the negative impacts will occur during the rehabilitation phase. These impacts are mainly related to the disruption of nearby residents from the rehabilitation activities along with some impacts on the surrounding environment such as deterioration of soil and water quality if the generated wastewater and solid waste were not managed properly. In addition to the negative impact on the air quality that might arise as a result of heavy rehabilitation activities especially where new pavement is proposed for the roads. On the other hand, job opportunities will be created to the local community during the rehabilitation. It is worth to mention that these impacts are short in term and will diminish as soon as the project is completed. As for the operational phase, the assessed socioeconomic impacts were mostly positive in nature in terms of livelihood improvement within the project area. However, on the long term the proposed project will contribute in increasing vehicular pollutant levels (CO, NOx, SOx, PM_{10}) in the area as well as traffic related noise causing public health problems and other impacts on the environment. Table 5-2 and Table 5-3 summarize the impacts during the rehabilitation and operations phases.

Table 5-2: Summary of Impacts during Rehabilitation Phase

Impact	Media	Nature
Environmental		

Impact	Media	Nature
Air pollution from emissions of machinery, trucks or open burning activities	Air, nearby communities and workers	N
Dust pollution from rehabilitation and excavation activities	Air, nearby communities	N
Noise pollution a result of transportation or delivery of raw materials, trucks movement, concrete mixing, drilling, construction and operation of heavy vehicle movement such as excavators	Nearby communities and workers	N
Disturbance of nearby areas and animal escape from noise and vibrations	Biodiversity and sensitive habitats	N
Contamination of surface water from improper disposal of wastewater from workers, water coming from cleaning of machines and equipment Reduction in overall surface water quality due to improper disposal of construction waste Water pollution due to accidental spill of oils and chemicals	Water resources, soil, nearby communities	N
Contamination of soil from accidental spills of oils and chemicals on the soil from machines and trucks and from transportation of chemicals and oils	Soil, subsoil and land	N
Improper disposal of cut volume may cause contamination of water bodies in rainy weather	Water resources	N
Surface water and soil pollution from improper disposal of solid waste generated from workers and the used materials, construction waste from excavation and drilling activities	Water resources, soil, subsoil and land	N
High consumption rates of electricity, fossil fuel, etc. contributing to overconsumption and depletion of fuel	Energy resources	N
High consumption rates of water for construction related activities	Water resources	N
Over extraction of borrowing material and depletion of natural resources (sand, aggregates, …)	Soil, subsoil and land	N
Tree and floral species disturbance near the site during rehabilitation activities	Biodiversity and sensitive habitats	O
Disturbance of animals in the area	Biodiversity and sensitive habitats	N
Possible damage to the existing infrastructure might occur due to the excavation works	Existing infrastructure and nearby communities	O
Socioeconomic		
Creation of job opportunities for local communities	Socio-economic activities	P
Local garages will benefit from the equipment oil maintenance and residents will benefit from the rent fees of the offices and the equipment parking area.	Nearby communities, socio-economic activities	P
Discrimination from the local community against the foreign workers	Foreign Workers	N
Social tensions as a result of perception that foreign workers being offered a major proportion of the jobs created by the project Social tension resulting from unequal	Local and foreign workers	N

Impact	Media	Nature
wage rates between local and foreign workers		
Child labor for construction activities	Local and foreign children	2N
Traffic congestion in densely populated villages due to transport of construction materials, the material that may fall or due to temporal road closure	Nearby communities, socio-economic activities	N
Potential occurrence of sexual abuse and exploitation incidents	Nearby communities	N
Disruption of local community to access services due to construction activities and temporal road closure	Nearby communities and socio-economic activities	N
Disruption to access to shops as a result of rehabilitation activities and temporary road closure thus affecting livelihood of shop's owners and the recreational site visitors	Shop's owners	N
Material falling from vehicles during transport may cause traffic accidents or congestion	Nearby communities	N
Community and Workers Health and Safety		
Accident and injuries to workers because of construction activities risks and injuries include: respiratory health risks, over-exertion and ergonomic injuries, slips and falls	Workers	2N
Dust generation and noise may cause health related problems to nearby residents	Nearby communities	N
Injuries from car accidents due to the presence of construction sites and closure of some roads	Nearby communities	N

Table 5-3: Summary of Impacts during Operation Phase

Impact	Media	Nature
Environmental		
Increased vehicular pollutant levels in the area causing public health risks and other impacts on the environment	Air, Nearby communities	N
Noise pollution from traffic related noise pollution; vibrations from engines and tires and use of pressure horns disturbing wildlife and nearby residential areas	Nearby communities, biodiversity and sensitive habitats	N
Depletion of natural resources (fuel) used for street lighting purposes	Energy resources	N
Disruption of animals movement leading to direct mortality or avoidance behavior as a result of increased traffic load in the area	Biodiversity and sensitive habitats	N
Possible oil spills events transported through runoff and storm water overflow polluting nearby surface and groundwater bodies	Water resources, soil, subsoil and land, nearby communities	O
Accident occurrence due to the enhancement of vehicular movement resulted from the improvement of road conditions	Socio-economic activities, nearby communities	N

Socioeconomic		
Encouragement of new business opportunities, and marketing activities in project region, the increase in land values and facilitate the access to services and improve the living standards	Socio-economic activities, nearby communities	2P
Improvement in road conditions due to installation of proper safety signs	Socio-economic activities, nearby communities	P
Enhancement of tourism	Socio-economic activities, nearby communities	P
Community and Occupational Health and Safety		
Increased traffic, accidents rates and risk on pedestrians,	Socio-economic activities, nearby communities	N

6. MITIGATION OF ENVIRONMENTAL AND SOCIAL IMPACTS

This section outlines the measures required in order to mitigate all impacts identified in Section 5 as well as ensure proper monitoring. These measures have been included in an Environmental and Social Management Plan (ESMP).

6.1 Environmental Mitigation Measures during Rehabilitation

6.1.1 Soils and Water Quality

The contractor should install temporary structures (i.e. barriers) to prevent runoff from reaching nearby water courses and avoid working in rainy weather. Also, the contractor should ensure that the volume of the removed deteriorated asphalt will be disposed properly during the rehabilitation phase in controlled disposal sites to be identified by the contractor in coordination with the relevant municipality. As for the wastewater generated from the workers on site, it is important to ensure the installation of the porta cabin toilets. These toilets should be connected to the existing network or to the polyethylene tank if sewerage network is not available within the project site. The collected wastewater in the polyethylene tank should be discharged into nearby operational wastewater treatment plants if any. In addition, the discharge of wastewater into nearby water courses should be prohibited under any condition.

In addition, the contractor should present and abide by a spill prevention and management plan that includes the following:

- Proper handling of chemical and oil on a paved ground;
- Used oil or chemical must be stored in an appropriate area until it's collected and disposed in licensed sites;
- A spill response plan including a spill clean-up procedure should be present at the construction site and all workers should be trained in order to implement it in case of accidental spillage;
- The reduction in use of chemicals and the regular maintenance of the used vehicles and machines;
- A spill collection tank must be installed under generators and specific equipment
- Used oil from occasional maintenance of machinery should be collected in specific containers and stored on concrete ground

6.1.2 Air Quality

In order to reduce the project's impact on air quality, the following mitigation measures must be implemented:

- Vehicles, equipment and machinery used during rehabilitation should be regularly maintained;
- Mix material in an enclosed space
- Open burning of solid waste must be prohibited;
- Vehicles must move at a low speed on unpaved (20-30km/h);
- Loading of raw material should be done under dust preventive measures (i.e. water sprinkling);
- Raw material storage areas should be covered;

- Water should be sprinkled in order to suppress dust. During windy weathers, dust generating activities should be stopped;
- Transported material should be covered.

6.1.3 Noise

In order to reduce and control the noise generated during the rehabilitation phase especially in residential areas (Zefta of road L4-NA-RD02, Ansar of road L4-NA-RD14), and Arab Salim of road L4-NA-RD8a), the following mitigation measures must be implemented:

- Regular maintenance of all noisy equipment and machinery. This includes changing lubricants, replacing damaged parts, and installing mufflers;
- Drilling and excavation activities should be executed only during working hours;
- Heavy machinery such as percussion hammers and pneumatic drills should not be used during the night without prior approval of the municipality or client.

6.1.4 Use of Natural Resources

Several mitigation measures can be implemented in an effort to reduce natural resource depletion and consumption. These measures include:

- Reduce water wastage whenever possible;
- Whenever possible, use dry-cleaning instead wet cleaning;
- Training and awareness should be raised to workers concerning water usage best practices and water conservation as well as efficient energy use;
- Water use for construction activities should be obtained in such a way that doesn't disturb the water availability and supply to the existing communities;
- The light in the offices must be shut down during the night when offices are not in use;
- Machinery and equipment must be turned off when not in use;
- Avoid agriculture land for borrow materials;
- Ensure that the borrow material are extracted from legal quarrying sites.

6.1.5 Land Resources and Biological Environment

As mentioned earlier, the flora within the project site will not be affected significantly, however, landscape areas within the project site must be preserved as much as possible. This can be done by following a guideline developed for that purpose.

As for the fauna, the following mitigation measures must be implemented:

- Maintenance of vehicles and machinery;
- Minimize noise by insulating machinery through installation of mufflers;
- Drilling, excavation and any other noisy activity only during working hours.

6.1.6 Visual Intrusion

Although visual intrusion during the rehabilitation phase is temporary and will diminish at project completion, some mitigation measures must be implemented during this phase to minimize the impact of visual intrusion on nearby residents. These measures include:

- All sources of light must be shut down during nighttime to avoid disturbance from light pollution at night;
- Green landscape areas must be preserved whenever possible.

6.1.7 Existing Infrastructure

The impacts on the existing infrastructure were assessed as temporary and were considered as neutral. Following are the mitigation measures:

- Regular coordination with relevant municipalities and authorities should be done in order not to affect existing infrastructures (water, wastewater networks, phone cables...)
- Splitting works into the road segments will be done to ensure quick progression through roads while causing minimal disruption to traffic.

6.2 Environmental Mitigation Measures during Operation

6.2.1 Water and Soil Quality

The rehabilitation of the already existing roads will have minimal negative impacts on groundwater and surface water during the operational phase. Although the project will include the improvement rehabilitation of drainage system, however, local authorities are responsible for maintaining the drainage system in order to prevent the storm water runoff carrying pollutants, deposits and residues from road surfaces and reaching at the end surface and groundwater water resources and soil and to prevent their blockage and storm water overflow. It is recommended to maintain this system especially before the start of the rainy season and continually collect solid waste in order to prevent the blockage of the drainage system.

6.2.2 Air Quality

The following mitigation measures must be implemented in order to reduce traffic related pollutant emissions:

- Ensure that the road is regularly maintained to ensure good surface conditions;
- Fixing speed limit along then roads.

6.2.3 Noise

Mitigation measures that should be implemented in order to minimize the traffic related noise sound signs should be placed near sensitive areas to prevent people from using the pressure horns.

6.2.4 Use of Natural Resources

The following mitigation measures must be implemented in order to reduce the impact on natural resources:

- Use of eco-friendly light bulbs as during the operation phase of the project this will reduce the consumption of energy;
- Cleaning activities that requires a lot of water must be replaced by dry cleaning techniques.

6.2.5 Biological Environment and Land Resources

In order to minimize the impact on the existing biological environment the following must be implemented:

- Install signs such as speed limit signs and animal crossing signs at areas where animals (i.e. cats, sheep, goats, dogs) cross from one side of the road to another.
- Prohibit solid waste disposal into undesignated areas

6.2.6 Visual Intrusion

As the project is the rehabilitation of existing roads in Nabatiye Caza, the surrounding environment, vegetation, and the aesthetical value of the surrounding areas is not likely to be significantly affected. Hence no mitigation measures are proposed.

6.3 Social Mitigation Measures during Rehabilitation

6.3.1 Socioeconomic

6.3.1.1 Economic Activities

The proposed project is considered to have a positive impact on the economical profile of the local community. In order to enhance this impact, priority of hiring should be giving to qualified residents, especially for skilled and professional jobs. In addition, the contractor must abide by the following mitigation measures to prevent any disturbance to the local community:

- Warn the staff strictly not to involve in any unethical activities and to obey the local standards and cultural norms
- Select specific timings for the construction activities especially near residential areas in accordance with MOE Decision 52/1 for 1996 (National Environmental Quality Standards).
- Ensure that the generated solid waste and liquid waste is disposed or discharged of in an environmentally friendly way and in selected areas.

Moreover, as mentioned earlier, the owners of the identified shops and the visitors of the recreational site, the medical center, the school, pharmacies and the Mosques within the project site will be affected during the rehabilitation phase. Some mitigation measures must be implemented during this phase to minimize this impact such as:

- Install temporary structures (wooden boards) from the road to the shops and the visited places such as Mosques, medical center and the school in case access to them was blocked
- Proper installation of sign boards
- Timely completion of the rehabilitation phase
- Proper communication and coordination with affected shop owners and robust GRM

6.3.1.2 Labor Influx

Furthermore, in order to reduce the risk of sexual abuse and exploitation induced by labor influx and sexual harassment as much as possible, the contractor should implement the following prior to project rehabilitation:

- Draft Codes of Conduct and the guidelines for a Gender Based Violence (GBV) and Violence Against Children (VAC) Action Plan;

- Ensure that workers at the rehabilitation site understand and sign the Code of Conduct, presented in annex 2 that targets GBV risks, specifically Sexual Exploitation and Abuse and/or Sexual Harassment induced by labor influx, and penalizes the perpetrators of GBV
- All workers including contractor, foreign workers and international consultants should sign codes of conduct written in a language that is appropriate;
- All workers are committed to prevent and report sexual abuse and exploitation incidents within the work site and in its immediate surrounding communities;
  Respond to the reported incidents as a matter of priority. The contractor should coordinate with a service provider in this regard;
- Inform workers that a GRM form is available (see more details in Section 8.2.2)

6.3.1.3 Social Tensions

The following mitigation measures must be implemented in order to minimize the social tension between local and foreign workers during the rehabilitation works:

- Conduct awareness campaigns for the local community regarding foreign workers influx and how their engagement can affect the local economic sector in a positive way. Also, these campaigns must inform the local community that these workers will sign code of conduct before stating the work and thus their behavior will be controlled.
- Ensure that all workers (locals and foreign, skilled and unskilled) will be compensated equally as per the scale of market price rates and have equal contractual benefits and working conditions.
- Ensure GRM is accessible to local communities including all relevant stakeholders who can use this mechanism to send their suggestions, concerns and complaints.

6.3.1.4 Child Labor

The following mitigation measure must be implemented in order to ensure that the contractor will not recruit children who are under the legal age as workers on the site, especially in the case of the day laborers:

- Daily registrations of workers and verification of their age to prevent child labor;
- Abide by the Labor Law and ensure that workers below 18 years are not engaged in construction works;
- Ensure the contractor is aware of the penalties that Labor Law is imposing in the case of child labor;
- Oblige the contractor to strictly abide by the Labor Law through the CDR tender documents that should include prohibition of child labor;
- The contractor should follow a code of labor practice that details the policy for hiring individuals and that prevents child labor.

6.3.1.5 Traffic and Accessibility

The following mitigation measures must be implemented in order to minimize the traffic congestion and resident's inconvenience and ensure road safety during the rehabilitation of the roads:

- Inform the local community about the location of detours, road blockages or diversions through public announcements and proper diversion signage;

- In case the works imply the temporary closure of some of the busy roads within the project site, traffic shall be secured via alternative routes to reach relevant destinations
- Inform public about schedule of rehabilitation
- Take into consideration to restrict the period of rehabilitation works during summer as suggested by the women during the public hearing session
- Prepare and abide by a Spill Prevention & Management Plan
- Abide by traffic regulationsInstall proper warning;
- A flagman should be positioned on the proposed roads to warn the passing cars and ensure the traffic is not blocked;
- Coordinate with the municipality police to help in traffic management;
- Vehicles carrying construction materials will be restricted during the daytime;
- The contractor should also ensure that the transported material by the trucks is well covered.

6.3.2 Cultural Heritage

The proposed project is located within an area that does not include cultural heritage and archaeological site. However, unknown artefacts may be uncovered during drilling activities. If any archaeological finding was therefore suspected during this phase, work should be halted immediately, and the Directorate General of Antiquities must be informed.

6.4 Community and Workers Health and Safety

6.4.1 Occupational Health Safety

6.4.1.1 Personal Protective Equipment and Worker Safety

The contractor should ensure workers safety from any possible accident. Workers should wear personal protective equipment (PPE) and the contractor should supplement the working site by a first aid kit:

- Workers should wear hard hats to avoid any potential objects fall or accidental head contact with electrical hazards.
- Safety glasses should be worn during construction phase in order to avoid the exposure to flying particles or harmful chemicals.
- Workers should wear the right gloves to protect their hands. Different type of gloves could be used according to the undertaken construction activity.
- Boots with slip-resistant and puncture-resistant soles should be worn by the workers on construction site Contractors should submit an Occupational Health and Safety plan to be reviewed and approved by the Supervision Engineer
- The contractor should abide by the assigned work schedule (OSHA, 2011)

Also in order to minimize the occupational health risks the following mitigation measures must be implanted at the construction site:

- Training of workers in lifting and materials handling techniques
- Planning work site layout to minimize the need for manual transfer of heavy loads

- Implementing administrative controls into work processes, such as job rotations and rest or stretch breaks
- Sorting and placing loose construction materials or demolition debris in established areas away from foot paths
- Cleaning up excessive waste debris and liquid spills regularly
- Training and use of temporary fall prevention devices, such as rails or other barriers able to support a weight
- Planning and segregating the location of vehicle traffic, machine operation, and walking areas, and controlling vehicle traffic through the use of one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic
- Ensuring moving equipment is outfitted with audible back-up alarms (WB-IFC, 2007)

In addition, effective Occupational Health and Safety Plan for construction should include at least the following components:

- Proper signage in and around the site in local languages;
- Fire-fighting measures;
- Guard rails and toe boards on all openings and edges;
- Proper storage and signage of materials including Material Safety Data Sheets;
- Safety measures during demolition works;
- Safety measures according to type of equipment;
- Personal safety equipment;
- Medical services which includes medical examination for all workers, first aid kit and personnel, and keeping logs of all medical records;
- Fencing around the construction site at all times;
- Sanitary facilities (toilet with shower, washing basin, urinal);
- Sanitary facilities to be covered, easily accessible, ventilated, well lit, maintained, and sanitized;
- Safe drinking water in accordance with regulations

6.4.1.2 Electrical Safety

The following mitigation measures must be implemented in order to minimize electrical hazards and accidents:

- The electrical activities and working on new and existing hot electrical circuits should be prohibited if all power is still turned on.
- All frayed, damaged or worn electrical cords or cables should be replaced, and flexible cords and cables should be protected from damage.
- All electrical tools and equipment should be maintained and checked regularly for any defect.

6.4.2 Community Health and Safety

Residents' safety and passers-by should be ensured as well. For this purpose, the following mitigation measures must be implemented:

- Proper safety and diversion signs must be installed at sensitive areas within the project area (i.e. near schools and hospitals) as well as physical obstacles such as bumps and rumble strips
- Secure the site and restrict access to it
- Access to hospitals should not be impeded at no time
- Training of heavy machinery drivers about road safety
- Inform the local community about the construction schedule and abide by assigned timing
- Install pedestrian and vehicular passages near residential areas
- Accidental oil spillage shall be well controlled
- Develop a site-specific Public Health and Safety Plan and Occupational Health and Safety
- Apply Best Applicable Practices on Road Safety

6.5 Social Mitigation Measures during Operation

The socioeconomic conditions of the area where the proposed roads are rehabilitated will be improved positively. However, public health and safety should always be ensured through applying the best practices on road safety along the rehabilitated roads.

7. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANS

7.1 Institutional Setup and Capacity Building

7.1.1 National Institutions

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

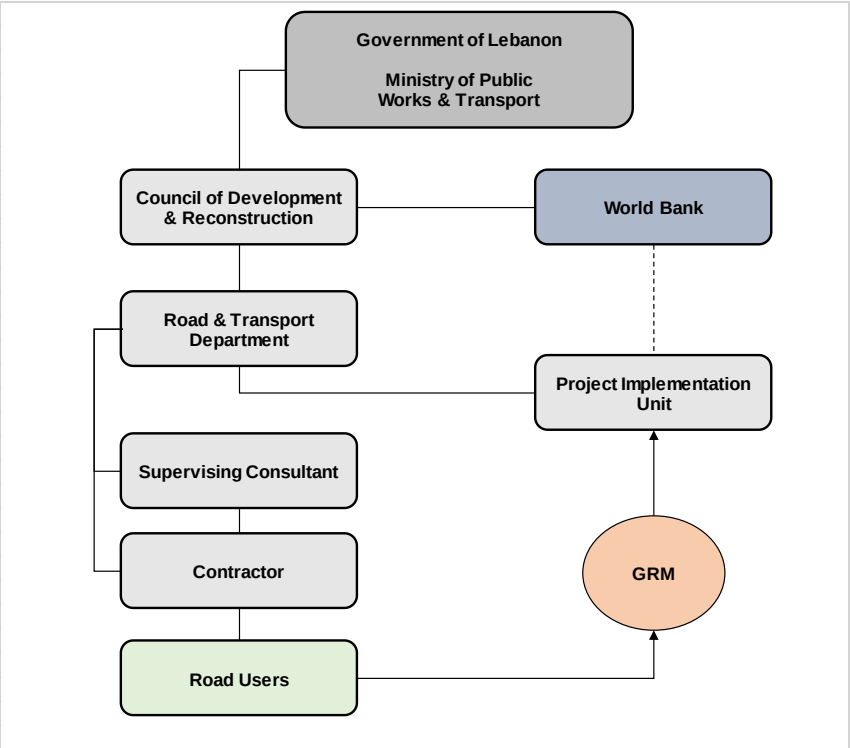
In order to achieve proper environmental management and monitoring, a clear, functional institutional structure was defined (refer to Figure 7-1). During the rehabilitation phase, the contractor would be the primary actor; ensuring compliance of works with the different items specified in the environmental and social management plan. Accordingly, the contractor will be supervised by several entities appointed by CDR. CDR will be responsible for constant monitoring of the rehabilitation works through weekly and/or monthly reports (sent by the contractor) and site visits, ensuring and enforcing mitigation measures.

More specifically, the CDR will develop a Project Implementation Unit (PIU) dedicated to the project, which includes social and environmental specialists to monitor and evaluate the project. Moreover, it will engage a supervising consultant to directly monitor the contractor. In this context, planning, implementation and supervision of environmental safeguards will thus take place at different stages (a) PIU, (b) Supervising Consultant, and (c) Contractor.

PIU will be responsible for providing the plan direction, technical support, appraisal and validation of environmental and social management plans, and monitoring of environmental compliance and progress reporting to the World Bank. The responsibility of implementation and management of environmental/social safeguards by the PIU will be coupled with the assignment of supervising consultant (focal point(s) for environmental and social safeguards) who will oversee ensuring sound application of the ESMP. Finally, implementation of the ESMPs will mainly be the Supervising Engineer duty and consequently the Supervising Engineer will have to appoint qualified environmental, health and safety consultant and a social development consultant in order to ensure that the Contractor is compliant with the ESMPs during the rehabilitation phase of the project.

The main concerned municipalities will be involved in managing and communicating local community's potential complaints to the CDR (PIU) through the Grievance Readiness Mechanism (GRM) process.

Figure 7-1: Roads and Employment Project Management Structure



7.1.2 Training

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

The main objective of the training is to:

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

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

- Environmental laws, regulations, and standards;
- Traffic and Road Management System;
- Occupational hazard and personal protective equipment;

- Emergency response and chemical spills;
- Sampling techniques and environmental monitoring guidelines;
- Risks associated with road conditions, lack of safety measures and signage;
- Pollution health impacts and prevention measures;
- Operating procedures on the rehabilitated roads (Incident Reporting and Investigation);
- Grievance Redress Mechanism (GRM)
- Codes of Conduct

7.2 Environmental and Social Mitigation Plan

Table 7-1 presents the Environmental Mitigation Plan for road rehabilitation project during the construction and operation phases respectively. The plan for the construction phase should be included in the contractor's tender documents to ensure that all requirements have been taken into consideration by them and will be implemented during the construction phase.

Table 7-1: Environmental Mitigation Plan during Rehabilitation and Operation Phases

Project Activity	Potential Impact	Proposed Mitigation	Responsibility of Mitigation	Responsibility of Direct Supervision	Estimated Cost
Rehabilitation	**Environmental Impacts**				
	Air pollution from emissions of machinery, trucks or open burning activities Dust pollution from rehabilitation and excavation activities	Use properly maintained equipment Abide by a dust management plan Water the ground when extremely windy Mix material in an enclosed space Cover material when transporting	Contractor	Supervision Engineer	4,000 $
	Noise pollution a result of transportation or delivery of raw materials, trucks movement, concrete mixing, drilling, construction and operation of heavy vehicle movement such as excavators Disturbance of nearby areas and animal escape through noise and vibrations	Maintenance of vehicles and machinery Excavation and any other noisy activity only during working hours Prohibit solid waste disposal into undesignated sites	Contractor	Supervision Engineer	3,000 $
	Contamination of surface water and pollution of ground water from improper disposal of wastewater from workers and of wash water coming from cleaning of machines and equipment	Install temporary structures to prevent runoff from reaching nearby water bodies Avoid working in rainy weather Connect the generated wastewater from workers to the sewage network or to polyethylene tank Discharge the pumped wastewater from the polyethylene tank into nearby operational wastewater treatment plants Prohibit the discharge of wastewater into nearby water bodies under any condition	Contractor	Supervision Engineer	5,000 $
	Water pollution due to accidental spill of oils and chemicals from trucks and from	Prepare and abide by a Spill Prevention & Management Plan Used oil from occasional maintenance of	Contractor	Supervision Engineer	5,000 $

Project Activity	Potential Impact	Proposed Mitigation	Responsibility of Mitigation	Responsibility of Direct Supervision	Estimated Cost
	transportation of chemicals and oils Improper disposal of cut volume may cause contamination of water bodies in rainy weather	machinery or chemicals must be stored in an appropriate area until it's collected and disposed in a controlled disposal site Minimize soil exposure time Proper storage of raw material including chemicals and fuel and handling must be on a paved and sealed floor Regular maintenance of vehicles Minimize the use of chemicals Reuse of excavated material whenever possible Disposal of excavated material in controlled disposal site			
	Contamination of soil and surface water bodies from the improper disposal of solid waste generated from workers and the used materials, construction waste from excavation and drilling activities	Proper disposal of construction waste in controlled disposal site to be identified by the contractor in coordination with the relevant municipality Proper waste management practices Reuse or recycle the generated waste whenever possible Reuse of excavated material whenever possible Disposal of excavated material in controlled disposal site to be identified by the contractor in coordination with the relevant municipality Train workers on waste reduction procedures	Contractor	Supervision Engineer	1,500 $
	High consumption rates of electricity, fossil fuel, etc. contributing to overconsumption and depletion of fuel	Maintenance of the generators and trucks Light in the site offices shut down during the night Construction workers must be trained and provided with awareness sheets on efficient energy use Machinery and equipment must be turned off when not in use	Contractor	Supervision Engineer	5,000 $

Project Activity	Potential Impact	Proposed Mitigation	Responsibility of Mitigation	Responsibility of Direct Supervision	Estimated Cost
	High consumption rates of water for construction related activities Reduction in overall ground and surface water quality due to improper disposal of construction waste	Use water in the most efficient way and reduce wastage Regular site inspection to detect water leakages Whenever possible, use dry-cleaning instead wet cleaning Training and awareness should be raised to workers concerning water usage best practices and water conservation Proper disposal of construction waste	Contractor	Supervision Engineer	5,000 $
	Depletion of natural resources due to the unsustainable extraction of borrowing material (sand, ,aggregates, …)	Ensure that the borrow material are extracted from legal sites Avoid agricultural lands to extract borrowing material In case extraction was done from agricultural sites, store the top soil layer for future rehabilitation Rehabilitate the site where excavation was done	Contractor of the quarry site	Supervision Engineer	
	Socioeconomic Impacts				
	Temporary Labour Influx	Priority hiring to qualified local community GRM for local communities	Contractor	Supervision Engineer	-
	Economic Activities and its effect on the livelihood of the shops owners	Install overpass structures from the road to the shops Proper installation of sign boards Timely completion of the rehabilitation phase	Contractor	Supervision Engineer	-
	Discrimination from the local community against the foreign workers	Conduct awareness campaigns for the local community regarding foreign workers influx Inform the local community that worker will sign code of conduct before starting the work GRM for local communities and all relevant	Contractor	Supervision Engineer	

Project Activity	Potential Impact	Proposed Mitigation	Responsibility of Mitigation	Responsibility of Direct Supervision	Estimated Cost
		stakeholders			
	Possible unequal wage benefits between local and foreign workers	Ensure that all workers (locals and foreign, skilled and unskilled) shall be compensated and are contracted equally as per the scale of market price rates, have equal contractual benefits and working conditions, and have access to GRM	Contractor	Supervision Engineer	-
	Possible recruitment of children who are under the legal age as workers on the site, especially in the case of the day laborers	Daily registrations of workers and verification of their age to prevent child labor Abide by the Labor Law Ensure the contractor is aware of the penalties that Labor Law imposes in the case of child labor Oblige the contractor to strictly abide by the Labor Law through the CDR tender documents that should include prohibition of child labor	Contractor	Supervision Engineer	-
	Disruption of local community to access services due to construction activities and temporal road closures	Traffic shall be secured via alternative routes to reach relevant destinations in case the works imply the temporary closure of this road Inform the local community about the location of detours, road blockages or diversions through public announcements and proper diversion signage GRM for surrounding communities	Contractor	Supervision Engineer	-
	Damage of existing infrastructure	Regular coordination with relevant municipalities	Contractor	Supervision Engineer	-
	Potential occurrence of sexual abuse and exploitation incidents	Draft Codes of Conduct and the guidelines for a GBV and VAC Action Plan All workers should understand, and sign codes of conduct written in their native language	Contractor	Supervision Engineer	-

Project Activity	Potential Impact	Proposed Mitigation	Responsibility of Mitigation	Responsibility of Direct Supervision	Estimated Cost
		Respond to the reported incidents of sexual abuse exploitation as a matter of priority Training on gender-based aspects, internal and external GRM			
	Slight increase in traffic due to the transport of construction materials or due to the material that may fall Traffic congestion in the town due to temporal road closure Material falling from vehicles during transport may cause traffic accidents or congestion	Ensure traffic is not blocked during transportation Inform residents and place signs near the working areas Ensure communities have access to GRM Cover transported material Abide by traffic regulations Operate well maintained vehicles	Contractor	Supervision Engineer	1,500$
	Economic Activities and its effect on the livelihood of the shops owners,the visitors of the recreational site and other visited places	Install overpass structures from the road to the shops and the recreational site entrance Proper installation of sign boards Timely completion of the rehabilitation phase Ensure access to external GRM	Contractor	Supervision Engineer	-
	Accident and injuries to workers and public because of rehabilitation activities Dust generation and noise may cause health related problems for workers and disturbance to residents	Workers to wear proper safety gear (PPE) Presence of first aid kits (at least three) on the construction site Inform residents and place signs near the working areas Proper management of trucks and heavy machinery entering and exiting the construction site Develop a site-specific Public Health and Safety Plan and Occupational Health and Safety Apply Best Applicable Practices on Road Safety	Contractor	Supervision Engineer	3,000 $
	Community and Occupational Health and Safety				

Project Activity	Potential Impact	Proposed Mitigation	Responsibility of Mitigation	Responsibility of Direct Supervision	Estimated Cost
	Accident and injuries to workers and public because of rehabilitation activities	Develop and implement a site-specific Public Health and Safety Plan and Occupational Health and Safety Plan Workers to wear proper safety gear (PPE) Presence of first aid kits (at least three) on the construction site Inform residents and place signs near the working areas Proper management of trucks and heavy machinery entering and exiting the construction site Apply Best Applicable Practices on Road Safety	Contractor	Supervision Engineer	3,000 $
	Dust generation and noise may cause health related problems for workers and disturbance to residents				
Operation	**Environmental Impacts**				
	Increased vehicular pollutant levels (CO, NOx, SOx, PM_{10}) in the area causing public health risks and other impacts on the environment.	Ensure that the road is regularly maintained to ensure good surface conditions Frequent air quality monitoring must be done along the roads area to ensure that ambient air quality parameters are within the standards	Local authorities	-	3,000 $
	Blockage of drainage systems and overflow of storm water transporting residues and pollutants to nearby water bodies and soils	Ensure that the drainage system is regularly maintained especially before the start of the rainy season and that solid waste is continually collected	Local authorities	-	-
	Noise pollution from traffic related noise pollution; vibrations from engines and tires and use of pressure horns disturbing wildlife and nearby residential areas	Installation of signs near sensitive areas to prevent people from using the pressure horns	Local authorities	-	4,500 $
	Depletion of natural resources	Install eco-friendly light fixtures for the	Local authorities	-	Quotation to be

Project Activity	Potential Impact	Proposed Mitigation	Responsibility of Mitigation	Responsibility of Direct Supervision	Estimated Cost
	(fuel) used for street lighting purposes	street light infrastructure to reduce the consumption of non-renewable sources of energy			provided from local or international suppliers
	Disruption of animals movement leading to direct mortality or avoidance behavior as a result of increased traffic load in the area	Install speed limit and animal crossing signs at areas were animals cross the roads	Local authorities	-	2,500
	Community and Occupational Health and Safety				
	Increased traffic, accidents rates and risk on pedestrians	Apply Best Applicable Practices on Road Safety	Local authorities	-	1,500

7.3 Monitoring Plan

Continuous monitoring during both rehabilitation and operation of the project will be required to ensure the effectiveness of the proposed mitigation measures. Through sound environmental management and implementation of a monitoring plan, the rehabilitation of the roads in Nabatiye Caza will avoid incurring the major adverse impacts. The aims of the monitoring plan are:

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

For additional information, refer to Section 7.3.2 for Reporting and Section 7.1 for Institutional setup and capacity building. Table 7-2 shows the Environmental Monitoring Plan for the rehabilitation and operation phases.

7.3.1 Monitoring Plan Implementation

To ensure implementation of the plan during construction a Health, Safety and Environmental Officer should be appointed on site by the Supervision Engineer at all times and at all the locations of the sensitive receptors that were presented in Annex 1.

In order to properly implement the monitoring plan during operation, suitable equipment and technical skills are required. These are necessary to ensure the proper implementation of all proposed mitigations activities that this report recommends. The monitoring plan should be implemented in collaboration with CDR and local authorities.

7.3.2 Documentation and Reporting

7.3.2.1 During Rehabilitation

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

- Type of the activity monitored;
- Date of monitoring and weather conditions;
- Photographic documentation;
- Name of the person that is conducting the monitoring;
- Method of monitoring (sampling, visual inspection, …);
- Number and type of samples;
- Results of the monitoring (concentrations, accidents, frequency, etc.);
- Number of internal and external grievances as per the log

- Code of conduct trainings and number of signed forms, attendance sheets to GBV trainings, worker's age, GRM log, etc…
-
- Dates of trainings
- Mitigation measures undertaken.
- Title and dates of training programs

After documenting, the supervision engineer must submit the reports to the CDR and the WB on a quarterly basis. In addition, there should be immediate reporting of severe incidents (such as fatal accidents)

7.3.2.2 During Operation

Quarterly environmental monitoring reports should be prepared to analyze the collected data, assess monitoring activities and provide recommendations to ensure the effectiveness of the overall environmental monitoring and management plan during the project life span.

An independent monitoring and evaluation consultant will be responsible for submission of an annual report concerning the different updates of the project status during post-completion phase.

Table 7-2: Environmental and Social Monitoring Plan shows the Environmental Monitoring Plan for the rehabilitation and operation phases.

Table 7-2: Environmental and Social Monitoring Plan during Rehabilitation and Operation Phases

Project Activity	Impact	Monitoring Indicators	Responsibility	Frequency / Duration	Location	Methods	Estimated Cost
Rehabilitation	**Environmental Impacts**						
	Air pollution (Dust /GHG Emissions)	• Volume of dust generated • Plume color •	Supervision Engineer	Weekly and during activities that generates significant amount of air pollutants	Throughout the project area near sensitive receptors	Visual observation and photographic documentation of dust dispersion (scale and direction) and 1-hr and 24-hr measurements when significant amount of air pollutants are generated	$1,500/event
	Noise and Light Pollution	• Leq, Lmin and Lmax	Supervision Engineer	Weekly and during activities generating significant noise levels or upon receiving complaint	Throughout the project area near sensitive receptors	Single sample per location (average 1hr reading-15minintervals) during morning (7-8am), evening (1-2pm) and night (4-5pm)	$300 (cost of noise monitoring machine)
	Contamination of surface water bodies and soil from the generated	• Check for leakages in the connections between the porta cabin toilets and the existing network or	Supervision Engineer	Weekly	Throughout the project area and at the porta cabin toilet sites	Visual inspection	-No Cost

Project Activity	Impact	Monitoring Indicators	Responsibility	Frequency / Duration	Location	Methods	Estimated Cost
	domestic wastewater from workers and liquid waste from rehabilitation activities	polyethylene tank • Check the discharge endpoint of the pumped wastewater from the polyethylene tank • Effluent from construction activities (Concrete mixing, dust minimizing, washing of equipment…)					
	Contamination of surface water bodies and soil from the generated solid waste	• Ensure active solid waste management plan • Construction and demolition waste • Waste of the workers on site	Supervision Engineer	Weekly	Collection points present on sites	Visual inspection	-
	Reduction in overall surface water and soil quality Accidental Releases	• Ensure active spill prevention and management plan • Chemicals, oils and fuel spill incidents	Supervision Engineer	Weekly	Active construction sites	Visual inspection	-
	Depletion of non-renewable energy resources	• Inspection of the quantities and types of the used fuel and oils	Supervision Engineer	Weekly	Fuel and oils purchase bills	Visual inspection	-
	Depletion of water resources	• Inspection of water quantities • Monitoring the different drilling and construction activities • Ensure active spill and	Supervision Engineer	Weekly	Water purchase bills	Visual inspection	-

Project Activity	Impact	Monitoring Indicators	Responsibility	Frequency / Duration	Location	Methods	Estimated Cost
		accident prevention plan					
	Destruction of existing Land Resources	• Check the infrastructure locations and that excavation works do not interfere with it	Supervision Engineer	Weekly	In location where excavation and drilling is planned (mainly where new pavement is assigned)	Visual inspection	-
	Tree and floral species disturbance near the site during rehabilitation activities	• Site observation	Supervision Engineer	Weekly	Around proposed roads		-
	Socioeconomic Impacts						
	Traffic congestion	• Check traffic conditions during transportation of materials • Ensure traffic is not blocked Ensure traffic is relocated properly • Ensure all safety precautions are abided by	Supervision Engineer	Daily	Throughout the project area	Visual inspection	-
	Labor conditions	• Proportion of Lebanese vs Syrian workers • Worker's age • GRM log • Attendance sheets to GBV trainings • Number of workers trained	Supervision Engineer	Monthly			

Project Activity	Impact	Monitoring Indicators	Responsibility	Frequency / Duration	Location	Methods	Estimated Cost
		to SEA • Number of workers who signed Code of Conduct					
	Labor Influx	• Number of report Sexual abuse and exploitation (SEA) incidents	Supervision Engineer	Monthly			
		• Number of inappropriate communication and language among the workers	Supervision Engineer	Monthly			
	Community and Workers Health and Safety						
	Accident and injuries to workers	• OHS plan approved by the Owner and implemented by Contractor. • Worker training records • Permit to Work for high risk activities • OHS supervisor notes • Ensure signs are in place before works begin • Visual inspections to ensure that all workers are wearing their PPEs • Accident log recording injuries and accidents within the workers	Supervision Engineer	Daily	Along the proposed roads	Visual inspection Accidents records	-
	Accident and injuries to the public	• Ensure the installation of pedestrian and vehicular passages near residential areas	Supervision Engineer	Daily	Along the proposed roads	Visual inspection Accidents records	-

Project Activity	Impact	Monitoring Indicators	Responsibility	Frequency / Duration	Location	Methods	Estimated Cost
		• Ensure road diversion and construction attention signs are in place before works begin • Record injuries and accidents within passers-by • Site-specific Public Health and Safety Plan approved by Engineer and implemented by contractor best practices are applied • Community complains					
Operation	**Environmental Impacts**						
	Water and soil pollution (Storm water overflow due to drainage systems blockage)	• Clean water drainage systems • Visual inspection of water over flows on the roads	Local authorities	Before the beginning of the winter season	Along the drainage systems and culverts	Visual inspection	-
	Air pollution (dust emissions)	• Total Suspended • Particles (TSP), PM10, • PM2.5 (wherever feasible), SOx, NOx and CO	Ministry of Environment	As nationally or locally planned or upon community complain	At main receptors along the proposed roads	1-hr and 24-hrmeasurements ,and visual observation of dust dispersion(scale and direction)	Within MoE budget
	Noise pollution	• Leq, Lmin and Lmax	Ministry of Environment	As nationally or locally planned or	At main receptors along the proposed roads	Single sample per location	Within MoE budget

Project Activity	Impact	Monitoring Indicators	Responsibility	Frequency / Duration	Location	Methods	Estimated Cost
				upon community complain		(average1hr reading-15minintervals) during morning (7-8am),evening (1-2pm) and night (4-5pm)	
	Community and Workers Health and Safety						
	Car accidents	• Number of car accidents • Cause of accidents • Location of accidents	Trafffic Authorities	Annually	Along the proposed roads	Records of car accidents, cause of accidents and location of accidents	-

7.3.3 Guidelines for Health and Safety Plan during Rehabilitation

An effective Occupational Health and Safety Plan for construction should include at least the following components:

- Proper signage in and around the site in local languages and access to an internal GRM; Internal GRM Comment addressed
- Fire-fighting measures;
- Guard rails and toe boards on all openings and edges;
- Proper storage and signage of materials including Material Safety Data Sheets;
- Safety measures during demolition works;
- Safety measures according to type of equipment;
- Personal safety equipment;
- Medical services which includes medical examination for all workers, first aid kit and personnel, and keeping logs of all medical records;
- Fencing around the construction site at all times;
- Sanitary facilities (toilet with shower, washing basin, urinal);
- Sanitary facilities to be covered, easily accessible, ventilated, well lit, maintained, and sanitized;
- Safe drinking water in accordance with regulations;
- Access to an internal GRM

All construction staff should be trained on the Health & Safety Plan and the specific safety measures related to their own activities.

8. CONSULTATION, DISCLOSURE AND GRM

8.1 Public Consultation

A public hearing was held at the union of Ekleem Al Toufah Municipalities on Tuesday, 7 January 2020. The purpose of the hearing was to inform the stakeholders about the proposed project that will rehabilitate 4 roads in Nabatiye Caza and their accompanying infrastructural works and to consider their concerns and feedback. The hearing was organized in coordination with CDR and the union of Ekleem Al Toufah Municipalities to ensure proper representation of various communities. Moreover, different NGOs were invited to the public hearing. Table 8-1 represents the name of the invited NGOs and their work.

During the hearing, the Consultant presented the Project design and activities, preliminary findings of the study and obtained feedback of the participants in order to include in the report.

Over 19 people participated in the meeting including 6 women, one working in the Union of Ekleem Al Toufah Municipalities, two are social activists one from an NGO (Nedaa Al Ard) and the others were housewives from the caza. Participants were informed that a GRM procedure is developed for the project and were given contact information of the Project Consultant in order to inquire about it.

During the session, different concerns were raised by the attendees especially those related to the safety measures including widening on the roads and installing sildewalks. Moreover, all participants were noting that CDR and the Consultant must stress on the contractor to hire local workers and to coordinate with the concerned municipalities. As for the impacts that might result from the rehabilitation of roads, the public does not see any major environmental, health and safety concerns. Employment opportunities were discussed for both Lebanese and Syrian workers. The latter contributes significantly in the construction sector throughout Lebanon including Akkar Caza. Besides private entities, the municipalities are resorting to Syrian labor in this sector. There appears to be a clear split in job types between the two communities. The delineation line is between skilled jobs (mainly taken by the Lebanese workforce) and unskilled labor (filled primarily by Syrian workers). This split has resulted in a control of potential tensions or conflict between the communities.

Moreover, the women that participated in the women's session stated the following:

- None of the women expressed any concerns about restriction of movement during the construction works due to the influx of workers to the area. However, the women felt that it is important to hire local workers in such projects.
- All women participants stressed on the need of clear coordination mechanism with municipalities before the implementation of the project not to duplicate the road rehabilitation work.
- All women felt that it is important to install warning signs during the rehabilitation phase to inform the commuters about road rerouting directions.
- The female participants felt that during operation, the project will contribute positively to improving the economy in a direct and indirect way.

The list of attendees, in addition to the proceedings of the hearing, along with the presentation made to the public hearing participants can be found in Annex 3.

As for NGOs Consultation, this ESMP has targeted them according to their position in Lebanon. They consist of two levels as follows:

a) Local NGOs: they are specific to each Caza. Their mission is to address different concerns and issues among the local society including social, economic, gender equality, environment, poverty, women empowerment, etc.

Local NGOs were invited to the public hearing that was held at the union of Ekleem Al Toufah Municipalities on Tuesday, 7 January 2020. Table 8-1 represents the name of the invited NGOs and their field of activity. Those local NGOs may serve as advocates to reduce projects' social and environmental risks and promote good practice.

Table 8-1: Invited Local NGOs to the Public Hearing and their Activities

Name of the NGOs	Activity
Environment and Man Association - Habbouch	Protecting the environment and its resources from all sources of pollution
Lebanese Development Association - Nmeireh	Improving education, economic empowerment, provision of social and health care, and the promotion of democratic values
Environmental Protection and Heritage Preservation Commission - Nabatieh	Protecting the environment and its resources from all sources of pollution. Protecting and preserving cultural heritages
Nedaa Al Ared Association	Protecting the environment and its resources from all sources of pollution

b) 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) 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 rstephan@cdr.gov.lb or register by hand an official letter at the CDR.

In Nabatiye Caza, the total number of registered Syrian is 7,839 individuals (UNHCR, 2019). They were contacted through the International NGOs to seek their feedback about the Project. Accordingly, this ESMP did not receive any concern about the Project.

Table 8-2: Consulted International NGOs and their Activities

NGO Name	Contacts	Intervention Sector(s)	Comments
ANERA Lebanon	Mrs. Dima Zayat Deputy Country Director T: 01382590 (ext: 105) M: 70051813 E: dzayat@aneralebanon.org	• Children & Youth • Development • Education • Relief Services • Water sanitation and hygiene	Mrs. Zayat received the Project information sheet and explained that recently Anera operations in Lebanon have grown substantially to cope

NGO Name	Contacts	Intervention Sector(s)	Comments
			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	Mr. Jack French Deputy Country Director T: 01324331 M: 79160375 E: jack.french@acted.org	• Development • Infrastructure & Services Rehabilitation • Labor & Livelihoods • Shelter • Water sanitation and hygiene	Mr. French 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), as well as in Akkar District. He welcomed the idea of the Project and will disseminate it across his organization.
Danish Refugee Council (DRC)	Mr. Rickard Hartmann Country Director T: 01339052 (ext: 201) E: rickard.hartmann@drc.ngo	• Direct Assistance • Protection • Shelter • Community Empowerment and Livelihoods	Mr. Hartmann 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 Zahle. He welcomed the idea of the Project and will disseminate it across his organization.

8.2 Grievance Redress Mechanism (GRM)

The purpose of a grievance mechanism is to ensure that all feedback and complaints received from stakeholders, customers, employees, contractor staff and the public in general are documented, considered and addressed in an acceptable and timely manner. It is important to note that this mechanism was shared with the participants and that there are two mechanisms for filing a grievance, one for the surrounding communities and one for the workers. Anonymous grievances will be addressed in both levels and the maximum anticipated time needed to close a GRM case is

45 days. Also the GRM will be disseminated to the affected municipalities prior to construction works.

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 project. The complaints, suggestions and concerns can be sent by email, mail, phone (through a hotline), in person and other means such as a grievance compliant logging sheet where grievances are registered in writing and maintained as a database. The phone number, e-mail address, and address for receiving complaints will be disclosed among the population and will be posted at the rehabilitation sites in Nabatiye Caza, before commencement of project implementation. Moreover, the information on how to access the GRM should be available through billboards, CDR website, etc.

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

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

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

Moreover, reporting of the complaints to the PMU should be done on a monthly basis except for urgent cases. The designated person at each level should report to the PMU 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 PMU of complaints that could not be resolved at the lower levels and are being elevated to the PMU Director's attention. The PMU 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 way they have been resolved. This information will be shared with the Bank.

The Complaints Register form (refer to Annex 4) includes the following:

i) details and nature of the complaint

ii) the complainant name and their contact details
iii) date
iv) Corrective actions taken in response to the complaint
v) Length of time needed to close the complaint case

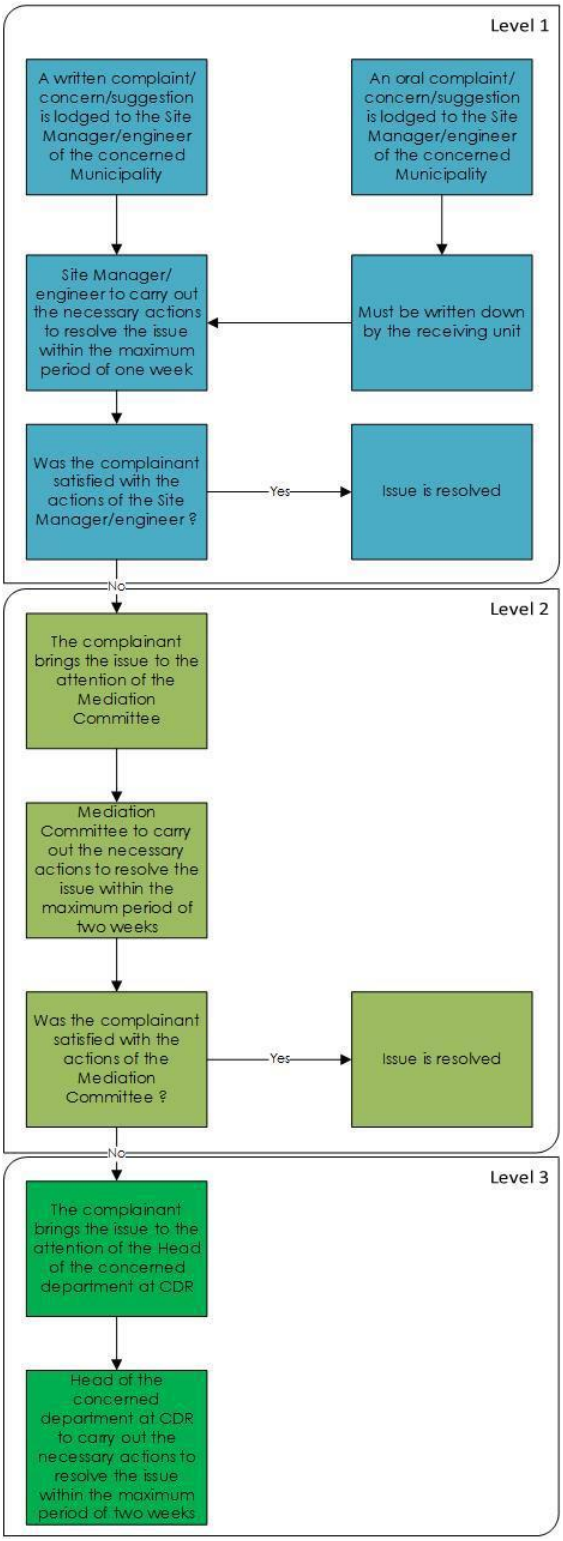
The GRM does not exclude the formal legal process of the national law. If a grievance remains unresolved following application of the project GRM process, the affected person can initiate legal proceedings in accordance with national law and may have recourse to the Appeals Court as warranted.

Figure 8-1 (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 weeks. It also follows the Complaints Register form (refer to Annex 4).

Figure 8-1: Grievance Mechanism Process



Source: CDR, 2018

9. CONCLUSION

After evaluating the potential negative and positive impacts that might arise from the proposed project during both phases (rehabilitation and operation), it was concluded that most of the negative impacts will occur during the rehabilitation phase. These impacts are mainly related to the disruption of nearby residents from the rehabilitation activities along with some impacts on the surrounding environment such as deterioration of soil and water quality if the generated liquid waste and solid waste were not managed properly. In addition to the negative impact on the air quality that might arise as a result of rehabilitation activities especially where new pavement is proposed for the roads.

On the other hand, job opportunities will be created to the local community during the rehabilitation phase. It is worth to mention that these impacts are short in term and will diminish as soon as the project is completed. As for the operational phase, the assessed socioeconomic impacts were mostly positive in nature in terms of traffic and road safety and livelihood improvement within the project area. However, on the long term the proposed project will contribute in increasing vehicular pollutant levels (CO, NO_x, SO_x, PM_{10}) in the area as well as traffic related noise causing public health problems and other impacts on the environment.

However, the negative environmental impacts that might arise from the rehabilitation of the proposed roads in Nabatiye Caza can be minimized and even eliminated through proper management and mitigation practices. The proponents of the proposed project are committed to putting in place several measures to mitigate the negative environmental and social impacts associated with the rehabilitation and operation of the proposed project. It is recommended that in addition to this commitment, the proponents shall focus on implementing the measures stated in the ESMP as well as abiding with all relevant national and international policies, standards and regulations.

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ANNEX 1: ENVIRONMNETAL COMPONENTS ALONG THE ROADS

Road Code	CAZA	Name	Natural Environment (Trees, land use, surface water …)	Infrastructure (Lighting, Phone/Electricity lines, culverts, water canals, …)	Socio-Economic (Shops, Residential areas, traffic, …)
Road 2	Nabatiye	Zefta – Nmayriyeh – Charqiyeh	S0: Peach trees on the left, palm trees to the right S300: Miscellaneous vegetation cover along the road, trees on the left (Quercus), Cypress S515: Quercus trees (right and left), residential building on the right with Cypress trees, green areas along the road with a slope including Quercus and Pistacia palaestina trees, a pine tree on the right S1400: Salix trees on the left S1500: Eucalyptus trees (right), Salix trees (left) S1850: Olive trees (along the right side of the road), Eucalyptus along the road (right and left), shrubs on the left (Pistacia, Melia) S2200: Cypress tree (right), pine trees along the road, Eucalyptus tree, olive trees (right), S2650: Peach tree, vine, olive tree, pine tree, S2800: Palm trees, cypress and other trees S2900: Ornamental shrubs and flowers, Ailanthus trees, pine tree, cherry tree S3400: Ornamental small cypress, Quercus on the left S3800: Pine trees, cypress, Eucalyptus trees (both sides along the road), palm tree S5100: Pine trees (both road sides), cypress S5700: Eucalyptus tree and many varieties of shrubs and trees along the road S5800: Willow trees along the road's sides (Salix) S6450: Willow trees S6800: pine trees, cypress S7200: Eucalyptus trees, diverse tree species	S0: Water channel on the left, a power generator on the road side (right), waste bins, electricity lines but no sufficient lightening S300: No lightening S515: No lightening, infrastructure along the right side of the road S1750: Box culvert crossing a road of ~ 6m S2200: Waste bins S2650: Available lightening, waste bins S2900: Electric pole on the road edge S3400: Waste bins, pavement on both sides of the road S3800: Waste bins S5800: Road in bad condition, waste bins S6450: Concrete wall fence S7550: End of Zefta road (in Nmeyriyeh)	S0: Aluminum and metal shops (right), a car maintenance shop, residential buildings (2 and 3 stories) S1850: plastic water containers on the left side of the road, newly constructed residential building with shops on the ground floor S2200: Plastic water container (left), building being constructed (left, lower that the road level), residential buildings on the right (3-4 stories), concrete wall fence (right) S2650: Residential (2 stories), concrete wall fence S2900: Residential, narrow road, Scout center, an association for blind people, a snack kiosk, a mosque, minimarkets, cellular shop. S3400: Residential, pharmacy, shops, barbershop, restaurant, café S3800: Residential, car maintenance shop, bakery, pharmacy, gas station on the left, clothes shops, butchery S5100: Residential, trade company, shops, car maintenance shops S5700: Gas station on left S5800: Residential, minimarket, car maintenance shop, steel shop S6450: Residential area, car maintenance shop, minimarket, steel shop, café, western union shop, electric shop, Mosque (right), butchery, clothes shop, food kiosk S6800: Bookshop, flower shop, residential, clothes shop, sweet shop S7150: Football playground S7200: Residential, clothes shops, restaurants, fish restaurant, market, IPT Gas station, nursery
Road 10	Nabatiye	Habbouch – Arab Salim – Jezzine Limit (Section 1)	S400: eucalyptus S400-s500: green trees to the left side of the road S1000: olive trees to the left S1600: end of an urban area S1700: olive trees to the right S2400: eucalyptus S2900: olive yards to the right S3500: pine trees on the right S3700: eucalyptus to the right S4500: flowers planted on the side of the road	Electricity lines and lightening networks all along the road S400-S900: good asphalt conditions S1900: overpass S2000-S2200: sidewalks	S0-S100: buildings with small shops, minimarkets and cell phone shops S800: buildings S1200: pharmacy S1450: gas station S2100: kiosk S3000: two story buildings S3400: construction material facility

Road 8a	Nabatiye	Mazraat Arab Al Jal – Sarba – Houmine El Fawka	S400: green areas to the left S800-S900: gardens near houses S1000: beginning of a non-urbanized area S1400-S1600: olive yards to the left S1600-S2000: olive yards on both sides S1700: pine trees on the side on the road S2200: pine trees on the side of the road S2700-S3300: cypress and pine trees S3900: pine trees on the right of the road S4100: eucalyptus S4200: pine trees on the left S4400: pine trees on the right S5400: small pine trees to the left S5600: green vegetation S6100: eucalyptus trees on the right S6200: olive trees on the left S7000: pine tree S7300: eucalyptus S7700: trees planted on the left side of the road S8400-S9000: olive yards with eucalyptus and cypress on the side of the road S9400: pine tree S:10000: natural area with low vegetation cover S10250: olive yards to the left S10900: Al Zahrani river to the right of the road	Electricity lines and lightening networks all along the road S4100-S4400: sidewalks S5200: valley to the lest, need safety measures S9600: no street lights S9700: sharp curve S11100: good ashalt conditions	S0-S70: urban area, with small shops (clothes, bakery, gallery) S70: gas station S3550: gas station S3550-S3600: some houses S4000: church on the left S4600: army barrack on the right S5300: gas station S5700: start of an urban area S5800: pharmacy S5900: snack shop S6000: small shops (cell phone, barber shops, snacks) S6600: two story buildings S7200: houses and mini markets S7500: gas station S7900-S8200: urban area S8300: mosque to the right S8350: health center
Road 14	Nabatiye	Ansar – Abou El Aswad – Sida limit (Nabatiye Partial)	S0-S100: green fruitful trees to the left and right of the road S600-S750: eucalyptus and other trees planted to the right S800: cypress trees on the left of the road S2000: gardens next to houses	Electricity lines and lightening networks all along the road S2500: good asphalt condition	S200-s400: some houses S1500: villas S1100: shops to the left

ANNEX 2: CODE OF CONDUCT

1. Background

The purpose of these *Codes of Conduct and Action Plan to Prevent Gender-based Violence (GBV) and Child Abuse/Exploitation (CAE)* is to introduce a set of key definitions, core Codes of Conduct and guidelines that establish mechanisms for reporting, addressing, monitoring and sanctioning GBV and CAE within the work site and in its immediate surrounding communities.

The Codes of Conduct aim to prevent and/or mitigate the risks of GBV and CAE within the context of Roads and Employment Project for the Government of Lebanon to be funded under the World Bank financed Roads and Employment Project (REP). These Codes of Conduct are to be adopted by the civil works contractors, as well as supervision consultants.

Mutual respect and fair treatment by all parties, that include an understanding on the impact their presence has on the communities living in the areas targeted by the project, are deemed of utmost importance to create a respectful, pleasant and productive work environment. This will help prevent issues with GBV and CAE, thereby guaranteeing a safe environment to work in and around. The Codes also present clear guidelines for sanctions of staff should they be warranted. By ensuring that the project's staff respects the project environment and its communities, a successful attainment of the project objectives will be achieved.

2. Definitions

The following definitions apply:

- **Gender-Based Violence (GBV)** – is defined as any conduct, comment, gesture, or contact perpetrated by an individual (the perpetrator) on the work site or in its surroundings, or in any place that results in, or is likely to result in, physical, sexual or psychological harm or suffering to another individual (the survivor) without his/her consent, including threats of such acts, coercion, or arbitrary deprivations of liberty.

- **Child Abuse and Exploitation** (CAE)- is defined as physical, sexual or psychological harm of minor children (i.e. under the age of 18) including using for profit, labor, sexual gratification, or some other personal or financial advantage. This also includes other activities such as using computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any mediums

- **Child Protection (CP)** - An activity or initiative designed to protect children from any form of harm, particularly arising from CAE.

- **Child-** is used interchangeably with the term 'minor' and, in accordance with the United Nations
  United Nations Glossary on Sexual Exploitation and Abuse, refers to a person under the age of 18

- **Grooming** – is defined as behaviors that make it easier for a perpetrator to procure a child for sexual activity. For example, an offender might build a relationship of trust with the child, and then seek to sexualize that relationship (for example by encouraging romantic feelings or exposing the child to sexual concepts through pornography).

- **Online Grooming-** is the act of sending an electronic message with indecent content to a recipient who the sender believes to be a minor, with the intention of procuring the recipient to engage in or submit to sexual activity with another person, including but not necessarily the sender. For further details, refer to the *Criminal Code Act 1995,* Division 474 (telecommunications offences, subdivision C).

- **Survivor/Survivors-** is defined as the person(s) adversely affected by GBV or CAE. Women, men and children can be survivors ofGBV; children of CAE.

- **Perpetrator-** is defined as the person(s) who commit(s) or threaten(s) to commit an act or acts of GBVorCAE.

- **Work site-** is defined its the area in which Roads Rehabilitation works are being conducted, as ·part of interventions planned under the World-Bank-funded Roads and Employment Project (REP).

- **Work site surroundings-** are defined as the' Project Area of Influence' which are any area, urban or rural, directly affected by the project, or located within the distance of three kilometers radius from the work site and/or worker's camps, including all human settlements found on it.

- **Consent** – is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. Any use of a threat to withhold a benefit, or of a promise to provide a benefit, or actual provision of that benefit (monetary and non-monetary), aimed at obtaining an individual's agreement to do something, constitutes an abuse of power; any agreement obtained in presence of an abuse of power shall be considered non-consensual. In accordance with the United Nations, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the code of conduct is introduced has a lower age Mistaken belief regarding the age of the child and consent from the child is not a defense.

- **Contractor** – is defined as any fim1, company, organization or other institution that has been awarded a contract to conduct Roads Rehabilitation works in the context of the Roads and Employment Project (REP) and has hired managers and/or employees to conduct this work.

- **Consultant** – is defined as .any firm, company, organization or other institution that has been awarded a contract to provide consulting services in the context of the REP, and has hired managers and/or employees to conduct this work.
- **Manager-** is defined as any individual offering labor to the contractor or consultant, on or off the work site, under a formal employment contract and in exchange for a salary, with responsibility to control or direct the activities of a contractor's team, unit, division or similar, and to supervise and manage a pre-defined number of employees.

- **Employee-** is defined as any individual offering labor to the contractor or consultant on or off the work site, under a formal or informal employment contract or arrangement, typically but not necessarily in exchange for a salary (e.g. including unpaid interns and volunteers), with no responsibility to manage or supervise other employees.

- **Grievance Response Mechanism (GRM) -** the process established by the REP project to receive and address complaints.

- **Standard Reporting Procedure** – is defined as the prescribed procedure to be followed when reporting cases of GBV or CAE.

- **Accountability Measures-** is defined as the measures put in place to ensure the confidentiality of survivors and to hold contractors, consultants and the client responsible for instituting a fair system of addressing cases of GBV and CAE.

- **Response Protocol** – is defined as the mechanisms set in place to respond to cases of GBV and CAE.

- **GBV and CAE Compliance Team:** A team established by the Contractor and/or Consultant to address GBV and CAE issues with the work force.

3. Codes of Conduct

This chapter presents three Codes of Conduct for use:

- **Company Code of Conduct:** Commits the company to addressing GBV and CAE issues;

- **Manager's Code of Conduct:** Commits managers to implementing the Company Code of Conduct, as well as those signed by individuals; and,

- **Individual Code of Conduct:** Code of Conduct for each individual working on REP.

Company Gender Based Violence and Child Abuse/Exploitation Code of Conduct

Contractors and consultants are obliged to create and maintain an environment which prevents gender based violence (GBV) and child abuse/exploitation (CAE) issues, and where the unacceptability of GBV and actions against children are clearly communicated to all those engaged on the project. In order to prevent GBV and CAE, the following core principles and minimum standards of behavior will apply to all employees without exception:

1. GBV or CAE constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment. All fonns of GBV and CAE including grooming are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who c01mnit GBV or CAE will be pursued.
2. Treat women and children (persons under the age of 1·8) with respect regardless of race, color, language, religion, political or other opinion, national, etlmic or social origin, property, disability, birth or other status.
3. Do not use language or behavior towards women or children that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
4. Sexual activity with children under 18-including through digital media-is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defense.
5. Exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading or exploitative behavior is prohibited.
6. Sexual interactions between contractor's and consultant's employees at any level and member of the communities surrounding the work place that are not agreed to with full consent by all parties involved in the sexual act are prohibited (see definition of consent above). This includes relationships involving the withholding, promise of actual provision of benefit (monetary or nonmonetary) to community members in exchange for sex- such sexual activity is considered "nonconsensual" within the scope of this Code.
7. Where an employee develops concems or suspicions regarding acts of GBV or CAE by a fellow worker, whether in the same contracting finn or not, he or she must report such concerns in accordance with Standard Reporting Procedures.
8. All employees are required to attend an induction training course prior to commencing work on site to ensure they are familiar with the GBV and CAE Code of Conduct.
9. 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 and CAE Code of Conduct.
l 0. All employees will be required to sign an individual Code of Conduct confirming their agreement to support GBV and CAE activities.

Company Gender Based Violence and Child Abuse/Exploitation Code of Conduct

Contractors and consultants are obliged to create and maintain an environment which prevents gender based violence (GBV) and child abuse/exploitation (CAE) issues, and where the unacceptability of GBV and actions against children are clearly communicated to all those engaged on the project. In order to prevent GBV and CAE, the following core principles and minimum standards of behavior will apply to all employees without exception:

1. GBV or CAE constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment. All forms of GBV and CAE including grooming are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit GBV or CAE will be pursued.
2. Treat women and children (persons under the age of 18) with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
3. Do not use language or behavior towards women or children that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
4. Sexual activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defense.
5. Exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading or exploitative behavior is prohibited.
6. Sexual interactions between contractor's and consultant's employees at any level and member of the communities surrounding the work place that are not agreed to with full consent by all parties involved in the sexual act are prohibited (see definition of consent above). This includes relationships involving the withholding, promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex – such sexual activity is considered "non-consensual" within the scope of this Code.
7. Where an employee develops concerns or suspicions regarding acts of GBV or CAE by a fellow worker, whether in the same contracting firm or not, he or she must report such concerns in accordance with Standard Reporting Procedures.
8. All employees are required to attend an induction training course prior to commencing work on site to ensure they are familiar with the GBV and CAE Code of Conduct.
9. 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 and CAE Code of Conduct.
10. All employees will be required to sign an individual Code of Conduct confirming their agreement to support GBV and CAE activities.

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 and CAE. 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.

FOR THE COMPANY

Signed by _____

Title: _____

Date: _____

Manager's Gender Based Violence and Child Protection Code of Conduct

Managers at all levels play an important role in creating and maintaining an environment which prevents GBV and prevents CAE. They need to support and promote the implementation of the Company and Individual Codes of Conduct. To that end, they must adhere to the Manager's Codes of Conduct. This commits them to support and developing systems which maintain a GBV-free and child safe work environment. These responsibilities include but are not limited to:

1. Mobilization

1. Establish a GBV and CAE Compliance Team (GCCT) from the contractor's and consultant's staff to write an Action Plan that will implement the GBV and CAE Codes of Conduct.
2. The Action Plan shall, as a minimum, include the
    a. **Standard Reporting Procedure** to report GBV and CAE issues through the project Grievance Response Mechanism (GRM);
    b. **Accountability Measures** which will be taken against perpetrators; and,
    c. **Response Protocol** applicable to GBV survivors/survivors and perpetrators.
3. Coordinate and monitor the development of the Action Plan and submit for review to the CDR and the PIU safeguards specialist , as well as the World Bank prior to mobilization.
4. Update the Action Plan to reflect feedback and ensure the Action Plan is carried out in its entirety.
5. Provide appropriate resources and training opportunities for capacity building so members of the GCCT feel confident in performing their duties. Participation in the GCCT will be recognized in employee's scope of work and performance evaluations.
6. Ensure that contractor, consultant and client staff are familiar with the REP GRM and that they can use it to anonymously report concerns over GPV and CAE (See Section 4.2 in the Action Plan).
7. Hold quarterly update meetings with the GCCT to discuss ways to strengthen resources and GBV and CAE support for employees and community members.

2. Training

1. All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the GBV and CAE Codes of Conduct. This training will be separate from the induction training course required of all employees and will provide managers with the necessary understanding and technical support needed to begin to develop the Action Plan for addressing GBV and CAE issues.
2. Provide time during work hours to ensure that direct reports attend the mandatory REP facilitated induction GBV and CAE training required of all employees prior to commencing work on site.
3. Ensure that direct reports attend the monthly mandatory training course required of all employees to combat increased risk of GBV and CAE during civil works.
4. Managers are required to attend and assist with the REP facilitated monthly training courses for all employees. Managers will be required to introduce the trainings and announce the self- evaluations.
5. Collect satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.

3. Prevention

1. All managers and employees shall receive a clear written statement of the company's requirements with regards to preventing GBV and CAE in addition to the training.

2. Managers must verbally and in writing explain the company and individual codes of conduct to all direct reports.
3. All managers and employees are to sign the individual 'Code of Conduct for GBV and CAE', including acknowledgment that they have read and agree with the code of conduct.
4. To ensure maximum effectiveness of the Codes of Conduct, managers are required to prominently display the Company and Individual Codes of Conduct in clear view in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
5. All posted and distributed copies of the Company and Individual Codes of Conduct should be translated into the appropriate language of use in the work site areas (ex. Arabic, French, English).
6. Managers will encourage employees to notify the GRM of any acts of threats or violence to women or children they have witnessed or received, or have been told that another person has witnessed or received, or any breaches of this code of conduct.
7. Mangers should also promote internal sensitization initiatives (e.g. workshops, campaigns, on-site demonstrations etc.) throughout the entire duration of their appointment in collaboration with the GCCT and in accordance to the Action Plan.
8. Managers must provide support and resources to the GCCT to create and disseminate the internal sensitization initiatives through the Awareness-raising strategy under the Action Plan.

4. Response

1. Managers will be required to provide input, final decisions and sign off on the **Standard Reporting Procedures** and **Response Protocol** developed by the GCCT as part of the Action Plan.
2. Once signed off, managers will uphold the **Accountability Measures** set forth in the Action Plan to maintain the confidentiality of all employees who report or (allegedly) perpetrate incidences of GBV and CAE (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).
3. If a manager develops concerns or suspicions regarding any form of GBV or CAE by one of his/her direct reports, or by an employee working for another contractor on the same work site, s/he shall immediately refer the case to the competent authorities (Police) and, at the same time, report the case to the GRM and the GCCT for internal processing according to the established reporting and accountability measures. Always respecting the survivor's choices if a survivor has been identified.
4. Once a sanction has been determined, the relevant manager(s) is/are expected to be personally responsible for ensuring that the measure is effectively enforced, within a maximum timeframe of 14 days from the date on which the decision was made.
5. Managers failing to comply with such provision can be in turn subject to disciplinary measures, to be determined and enacted by the company's CEO, Managing Director or equivalent highest-ranking manager. Those measures may include:
    a. Informal warning
    b. Formal warning
    c. Additional Training
    d. Loss of up to one week's salary.
    e. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
    f. Termination of employment.
6. Ultimately, failure to effectively respond to GBV and CAE cases on the work site by the contractor's managers or CEO may provide grounds for legal actions by authorities.

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 and CAE. 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.

FOR THE EMPLOYER

Signed by _____

Title: _____

Date: _____

ANNEX 3: PUBLIC DISCLOSURE HEARING

Roads and Employment Project
Public Hearing Session
ESMP for the rehabilitation of Selected Roads in Nabatiye Caza

Location: Union of Ekleem Al Toufah Municipalities
Date & Time: 07/01/2020 from 10:00 am to 11:00 am
Attendees: List below

Proceedings:

1. Welcome Remarks

The public hearing opened with a word from ACE representative who introduced the overall project and its objectives and relevant organizations including CDR and the World Bank.

2. Presentation

The Environmental Expert from ACE provided a detailed description of the roads and proposed rehabilitation works, purpose of the hearing, EIA process, World Bank requirements, and listed the potential environmental issues associated with construction and operation of the project.

3. Discussion

The floor was then opened for discussion and questions. The main issues that were raised are as follows:

- CDR representative starts the discussion by informing the participants that they can raise their concerns regarding the proposed project to the consultant or CDR. In fact CDR representative mentioned that there is a GRM form whereby any one can mention their concern regarding the proposed project.
- The Consultant mentioned that the proposed road will only include the rehabilitation of existing sidewalks. No new sidewalks will be installed.
- The head of Union of Ekleem Al Toufah municipalities noted that widening of the roads must be included in the proposed rehabilitation project. He mentioned that the roads were designed back then when the population was not as dense as today. As such he was saying it is important to take this into consideration. The consultant responded to this comment by stating that the road widening will only be done for safety reasons, such as at sharp curves. Also if the budget was enough for the road widening work, the consultant will ensure to include it in the proposed project.
- The head of Union of Ekleem Al Toufah municipalities stressed on the fact that the proposed project must include other infrastructure installations such as safety walls and rain water collection network.

- The head of Union of Ekleem Al Toufah municipalities also stated that there must be proper coordination with the municipalities, Ogero and water establishment before starting the rehabilitation work not to re-excavate the road when installing new infrastructure. The Consultant responded to this concern by mentioning that they will coordinate with the municipalities in an effort to know the exact location of the planned infrastructure projects and determine whether it will interfere with the rehabilitation of the proposed roads or not. A member of Houmeeen municipality also stated the same concern.
- One of the women participants suggested to rehabilitate other roads since in her opinion there is other roads of touristic importance such as the road that lead to Mleeta Resistance Tourist Landmark.
- A member of Houmeen El Tahta municipality mentioned that at Arab-Sarba road car accidents occur frequently. He was suggesting to put warning signs at this road. The Consultant ensured that this issue will be taken into consideration when designing the road.

4. Women's Session

Following the main discussion, a separate session was held with the female participants (7 women). The purpose of the session was to obtain women's feedback on the project and focus on their concerns and suggestions. The main issues raised during this session are as follows:

- None of the women expressed any concerns about restriction of movement during the construction works due to the influx of workers to the area. However the women felt that it is important to hire local workers in such projects.
- All women participants stressed on the need of clear coordination mechanism with municipalities before the implementation of the project not to duplicate the road rehabilitation work.
- All women felt that it is important to install warning signs during the rehabilitation phase to inform the commuters about road closure or rerouting directions.
- The female participants felt that during operation, the project will contribute positively to improving the economy in a direct and indirect way.

List of Attendees

جلسة مشاركة عامة - الحضور

PUBLIC HEARING - ATTENDANCE SHEET

مشروع الطرق والعمالة في لبنان

3.4 - Nabatyieh

Date: 7-Jan-20

الامضاء Signature	الهاتف Telephone	الصفة Position	البلدة Town	المؤسسة Institution	الاسم Name	
[illegible]	03-929296	Senior Environmental Consultant	Beirut	Ecocentra/ACE	Sara El Natib	1
				ACE	Firas	2
[illegible]	03-208215	Project Coordinator		ACE	Ali El-Mir	3
[illegible]	76763006	رئيس بلدية حومين الفوقا	حومين الفوقا	بلدية حومين الفوقا	Fadi Nohme نادي نعمة	4
[illegible]	٧٠/١٨٥٨٧٠٩	رئيس بلدية زفتا	زفتا	بلدية زفتا	علي حمزة	5
[illegible]	03/666034	رئيس البلدية	النميرية	بلدية النميرية	علي زبيب	6
[illegible]	03/243843	نائب رئيس	حبوش	نائب رئيس بلدية حبوش	رحاب روماني	7
[illegible]	03723778	عضو بلدية حبوش	حبوش	عضو بلدية حبوش	غسان حيدر	8
[illegible]	03/760281		صربا	مختار صربا	جان فارس	9
[illegible]	03-253641	عضو بلدية [illegible]	[illegible]	عضو مجلس بلدية [illegible]	أحمد [illegible]	10
[illegible]	76-717414	رئيس البلدية	حومين التحتا	بلدية حومين التحتا	[illegible]	11
[illegible]	71-359076		جباع		لينا ملاح	12
[illegible]	07/910290		جباع		سلام محمد كركي	13
[illegible]	76-634513	معاونة [redacted] رئيسة الجمعية التعاونية [illegible]	عربصاليم		زهراء [illegible] قاسم	14
[illegible]	70940268		عربصاليم	جمعية نداء الدروب	[illegible]	15
H. Ob	70/885436	ناشطة اجتماعية مدربة	جباع / عربصاليم	التدريب في مجال التنمية البشرية وناشطة اجتماعية	[illegible]	16
						17
[illegible]	71-270524	ناشطة اجتماعية	جباع	ناشطة اجتماعية	[illegible] أمين غملوش	18
[illegible]	٧٠/٤٥٨٥٩٧	مختار البلدة	بلدة عرب الجل	بلدة عرب الجل	عفيف علي طاهر	19
						20
						21
						22

Presentation during Public Hearing

2/21/2020


مشروع الطرق والعمالة
في لبنان

THE WORLD BANK

خطة الإدارة البيئية والاجتماعية

LOT 3
3.4 - قضاء نبطية

جلسة مشاركة العامة

07/01/2020
نبطية

ACE


نقاط حوار الجلسة

- مقدمة
- أهداف اللقاء
- الجهات المعنية بالمشروع
- مراحل إعداد الخطّة البيئية والاجتماعية
- وصف المشروع وأبرز مكوّناته
- الآثار البيئية والاجتماعية الايجابية المحتملة للمشروع
- الآثار البيئية والاجتماعية السلبية المحتملة للمشروع
- أسئلة ومناقشة عامّة


مقدمة

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


مقدمة

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


1. أهداف اللقاء

- إعلام الرأي العام بالمشروع لإبداء ملاحظاتهم وفقاً لسياسة ضمانات البنك الدولي (سياسة تشغيلية رقم 4.01)
- عرض لأهم الآثار البيئية والاجتماعية والتدابير التخفيفية المرتبطة بتنفيذ المشروع
- مشاركة الحضور بمناقشة القضايا المطروحة وطرحهم لقضايا جديدة لم تذكر
- مناقشة خطة الإدارة البيئية والإجتماعية للمشروع


2. الجهات المعنية بالمشروع

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

2/21/2020

4. وصف المشروع

4.1 الطرق التي سيتم إعادة تأهيلها في قضاء نبطية

- زفتا - النميرية - الشرقية (Road 2)
- مزرعة عرب الجل - صربا - حومين الفوقا (Road 8a)
- حبوش - عرب صليم - حدود جزين (قسم 1) (Road 10)
- أنصار - أبو الأسود - حدود صيدا (قسم النبطية) (Road 14)

مجموع طول الطرق المذكورة أعلاه: 25.66 كيلومتر

3. مراحل إعداد الخطة البيئية والإجتماعية

دراسة إطار السياسات والأطر القانونية

دراسة البيئة الطبيعية والاجتماعية في موقع المشروع

تقدير وتقييم الآثار البيئية المحتملة الناتجة عن المشروع

الاستشارة العامة مع المعنيين والمهتمين بالمشروع

تحديد الإجراءات التخفيفية للآثار السلبية

تحديد وسائل الرصد والمراقبة

4.2 موقع المشروع في قضاء نبطية

4.3 الطرق المقترح تأهيلها في قضاء نبطية

2

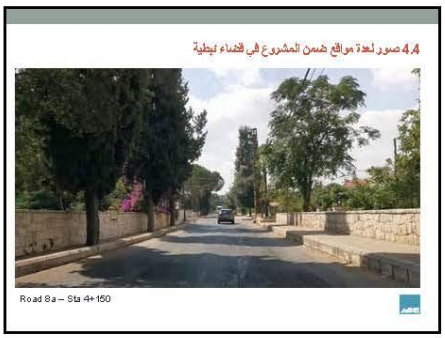
2/21/2020

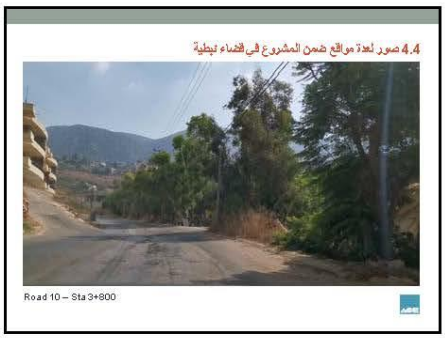

LOT 3- South Area
حبوش - عرب صليم - حدود جزين (قسم 1)
حبوش - عرب صليم - حدود جزين (قسم 1)
Google Earth


LOT 3- South Area
أنصار - أبو الأسود - حدود صيدا (قسم النبطية)
أنصار- أبو الأسود - حدود صيدا (قسم النبطية)
Google Earth


4.4 صور لعدة مواقع ضمن المشروع في قضاء نبطية
Road 2 – Sta 1+100


4.4 صور لعدة مواقع ضمن المشروع في قضاء نبطية
Road 2 – Sta 2+955


4.4 صور لعدة مواقع ضمن المشروع في قضاء نبطية
Road 8a – Sta 4+150


4.4 صور لعدة مواقع ضمن المشروع في قضاء نبطية
Road 10 – Sta 3+800

3

2/21/2020

5. ماذا يتضمن المشروع خلال مرحلة التنفيذ؟

بناءً على الدراسات الهندسيّة، إن أعمال التأهيل المقترحة خلال مرحلة التنفيذ تضمّ التّالي حسب المتطلبات الفنية والسلامة العامة:

- تأمين/تأهيل الطبقات الإسفلتية والاسس
- تأمين/تأهيل إشارات سير و تخطيط الطرقات
- تأمين/تأهيل جدران دعم إستنادية
- تأمين/تأهيل حواجز سلامة جانبية

4.4 صور لعدة مواقع ضمن المشروع في قضاء نبطية

Road 14 – Sta 0+750

6. الآثار البيئية والاجتماعية الإيجابية للمشروع

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

5. ماذا يتضمن المشروع خلال مرحلة التنفيذ؟

بناءً على الدراسات الهندسيّة، إن أعمال التأهيل المقترحة خلال مرحلة التنفيذ تضمّ التّالي حسب المتطلبات الفنية والسلامة العامة:

- تأمين/تأهيل أقنية، عبارات لتصريف مياه الأمطار
- تأهيل شبكات إنارة
- تأهيل أرصفة

7. الآثار البيئية والاجتماعية السلبية المحتملة للمشروع خلال مرحلة التنفيذ

النشاط	الأثر المحتمل
حركة الآليات والمركبات	زيادة احتمال حوادث السير
انبعاثات الغبار وزيادة نسبة الضجيج	ضرر على السلامة العامة وسلامة العمال
التدابير التخفيفية	
• إدارة حركة المرور أثناء تنفيذ المشروع وتعيين موظف لهذه الغاية	
• التأكد من أن الإشارات التحذيرية وأنظمة الإضاءة ظاهرة وموجودة في الأماكن المكتظة وخاصة قرب المدارس والمستشفيات والمناطق التجارية	
• حصر أعمال الحفر خلال فترة النهار	

7. الآثار البيئية والاجتماعية السلبية المحتملة للمشروع خلال مرحلة التنفيذ

النشاط	الأثر المحتمل
أعمال جلاء أو اصلاح مجاري مياه الأمطار	أضرار على البيئة المحيطة
فتح الأحفار والحفائر	ضرر على التنوع الحيوي
التخلص غير السليم من النفايات الصلبة	تلوث التربة والمياه
احتمال لحالة حوادث تسرب	تلوث التربة والمياه
التدابير التخفيفية	
• التخلص السليم من النفايات الصلبة الناتجة عن أعمال التنفيذ	
• صيانة كافة الآليات بشكل دوري لمنع حوادث التسرب	

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8. الآثار البيئية والاجتماعية السلبية المحتملة للمشروع خلال مرحلة التشغيل
النشاط
الأثر المحتمل
زيادة حركة المرور
زيادة احتمال حوادث السير
زيادة حركة النقل على الطرق
زيادة انبعاث ملوّثات الهواء والضجيج والارتجاجات
زيادة الانسكابات والتسربات الناتجة عن المركبات المتنقلة
تلوّث التربة والمياه
التدابير التخفيفية
• الصيانة الدورية للطرق
• صيانة الشبكة التحتية مع تفادي تأثيرها على الطرق
• تقليل حركة مرور الشاحنات الثقيلة بهدف المحافظة على الطريق


أسئلة ومناقشة عامة
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المكتب الهندسي الإستشاري
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شكـــــراً لحضوركم
ومشاركتكم

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ANNEX 4: GRIEVANCE REDRESS MECHANISM (GRM) FORM

Reference No:	
Contact Information **Please mark how you wish to be contacted (mail, telephone, e-mail).**	☐ **By Post: Please provide mailing address:** _____ _____ _____ ☐ **By Telephone:** _____ ☐ **By E-mail** _____
Preferred Language for communication	☐ **Arabic** ☐ **English**

Description of Incident or Grievance:	What happened? Where did it happen? Who did it happen to? What is the result of the problem?
Date of Incident/Grievance	
	☐ **One time incident/grievance (date _____)** ☐ **Happened more than once (how many times? _____)** ☐ **On-going (currently experiencing problem)**
What would you like to see happen to resolve the problem?	

Signature: _____

Date: _____

GRM Log Book

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