SFG2336

REPUBLIC OF IRAQ

Ministry of Construction, Housing, Municipalities and Public Works

ROADS AND BRIDGES DIRECTORATE

Emergency Operation Development Projects (EODP)
(P155732)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
FOR
Rehabilitation and Reconstruction of Al- Sheesheen Bridges (left & right sides) in Salah El-Din Governorate

July 2016

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List of Abbreviations

AIM: Audit and Inspection Manager

ESMP: Environmental and Social Management Plan

GOI: Government of Iraq

GRM: Grievance Redress Mechanism

IEODP: Iraqi Emergency Operation Development Project

MOCHPM: Ministry Of Construction Housing and Public Municipalities

MOE: Ministry of Environment

MSDS: Material Safety Data Sheets

OP: World Bank Operational Policy

PAPs: Project Affected Peoples

PPE: Personal Protective Equipment

RBD: Road and Bridges Directorate

TOR: Terms of Reference

WB: World Bank

EXECUTIVE SUMMARY

1. INTRODUCTION

This executive summary reflects the main issues (project description and activities, baseline conditions, impact analyses, mitigation measures and monitoring arrangements) of the Environmental and Social Management Plan (ESMP) conducted for the rehabilitation of **Al- Sheesheen Bridges (left & right sides)** in Salah El-Din Governorate. The main objective of the ESMP is to examine the environmental and socio-economic impacts of the project (both rehabilitation and operation phases), and to propose mitigation measures. The project is expected to result in significant socio-economic benefits for the local communities and surrounding areas as it will improve and ease of transport for the locals and the bridge users.

2. PROJECT DESCRIPTION

Al-Sheesheen Bridges (left & right sides) are located in the entrance of Tikrit City in Salah Ad- Din Governorate on the main road of Tikrit –Mosul which connects Sammarah City with Tikrit City. The bridges are located in an open area with no adjacent human settlements around or close to the bridge. Both Bridges on the right and on the left consist of 7 spans (16m) in length with total length of = 112m. Each bridge is 12m wide, (7.30m) carriage way with two sided footpaths (2.20m). Sub structure consists of precast piles (0.30 x 0.30 m) under pier and Superstructure consists of 5 precast reinforcement concrete girders (15.95m) long and (1.30m) depth and reinforced concrete deck (20 cm thick) for each span.

Google Earth Image of the damaged sections in Al-Sheesheen Bridges

2.1 Objective of the Maintenance Works

The main objective of the rehabilitation and reconstruction maintenance works of Al- Sheesheen Bridges (Left & Right sides) in Salah- Ad- Din Governorate is to facilitate travel and commerce and access to essential service including health care and education and movement of agricultural products. During maintenance period, the right side of Al-Sheesheen Bridge from Sammarah City will be used for traffic

movement until finishing the reconstruction of the left side and then the traffic will be converted to the left side to reconstruct the right side of Al- Sheesheen Bridge.

2.2 Current Condition of the Bridges

The second span of each Bridge is damaged by the terrorist attack. The left side of the Bridge is not in use, however, the damaged segment of the right side of the Bridge is filled with embankment by the Military Forces to allow traffic to travel.

Beneath the bridge there is a shallow seasonal flooding canal (which is totally dry during the preparation of this ESMP). This semi-dry canal is not currently utilized for any purpose.

2.3 Services lines

There is one type of service lines (telecom) cables passing through Al- Sheesheen bridges left & right sides which faced damage from terrorism attacks and will be repaired to be rehabilitated by the contractor according to the item description of service line.

2.4 Contractor camp

The contractor camp will be constructed nearby and adjacent to bridge area. The camp will be erected over state owned land; no additional land acquisition is needed. The purpose of the camp will be only for the administration and management of site activities. Rest area for workers will also be established in a location which will be agreed upon with the site manager and Resident Engineer. No accommodation of any workers or engineers will be allowed on site.

3. POLICY, LEGAL AND ADMINISTRATIONAL FRAMEWORK

A desk study was carried out to identify and assess the applicable legal and administrative regulations to be applied to project activities. The assessment considered both Iraqi laws and the policies and procedures of the World Bank. A collection of relevant laws and regulations is presented in this section. The objective of this task would be to ensure the project complies with relevant environmental laws and regulations throughout the rehabilitation and operation phases of the bridge. **Table 11** and **Table 2**: below present the relevant and applicable laws and regulations.

Table 1: Applicable Laws and Regulations in Iraq

Applicable Iraqi laws
Law no. 37 of 2008 for Ministry of Environment: Describes institutional arrangements of the Ministry of Environment and Outlines policies and roles and responsibilities toward protecting the environment.
Law no. 27 of 2009 for: Protection and Improvement of Environment
Regulations no. 2 of 2001 for: Preserving water resources.
Laws of the environment protection No.3 issued in 1997
Law of heritage and antiques no. (55) Issued in 2002

Table 2: Applicable World Bank Operational Policy

Applicable WB Policies

OP 4.01 Environmental Assessment
OP 4.12 Involuntary Resettlement
World Bank Group Environmental Health and Safety (EHS)

4. ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

The baseline environmental and social data were collected from research work and published documents. Land in the vicinity of the bridge is an open area. Land being used for bridge construction is all State-owned land. Some scattered houses in the vicinity of the bridge are not close to or adjacent to the bridge. There are no buildings located within 100m of the project site. None of these buildings are sufficiently close to the bridge construction area that they are likely to be adversely affected by either the rehabilitation activities or the operation of the bridge once it is in use.

The bridge is crossing a shallow seasonal over-flooding canal that flowing through spring season only.as this seasonal canal will be just for once in year and for a limited period of time it will have no environmental impact on the project.

The climate of the area is dry with the average annual precipitation below 70mm. The ambient air quality is within normal range. Although no baseline measurements were conducted due to security constraints, it can be assumed that the concentration of pollutants is well below allowable standards since there are no sources for air pollution except from the few vehicles which use the bridge. Similarly, noise levels are expected to be below the national standards.

There are no protected areas or endangered species in the site vicinity. The site adjacent area does not include any historical or cultural sites.

No additional land is needed to proceed with the project.

5. ENVIRONMENTAL AND SOCIAL IMPACT ANALYSIS

Overall, based on the previous visits and surveys, the reconstruction of the bridge may have impacts on the surrounding environment but they are temporary, reversible and not severe which are expected to occur during the rehabilitation and operational phases. And it is anticipated to have significant positive social impacts on the local communities. While a number of minor impacts on the environment may occur during the two phases, these minor impacts will have no significant influence on the environmental parameters and conditions. The main environmental impacts of the project will be associated with activities during the rehabilitation period. These include air emissions, noise, dust, generation and handling of construction and other waste, and health and safety concerns associated with construction workers. Mitigation measures will be implemented to minimize the environmental costs by reducing the identified adverse environmental impacts.

The expected negative environmental impacts include:

a. Noise level and deterioration of air quality resulting from the rehabilitation activities
b. Contamination of soil and water drainage channel by construction and municipal waste generated and stored within the site.

From the socio-economic perspective, both the construction and operational activities are expected to have positive impacts on the communities living in the area. Transportation will be significantly enhanced which will facilitate movement of locally agricultural production to markets. Additionally, the anticipated increase in through-traffic resulting from ease of movement across the bridge, improving livelihood opportunities.

The construction contractor(s) will be responsible for compliance with the ESMP provisions during the rehabilitation phase of the project. The contractor will be also in charge of undertaking work in a manner which complies with all relevant environmental procedures, adheres to all legislative requirements, and ensures that all environmental objectives associated with the contract are achieved. The overall assessment of the key environmental and social impacts are summarized below.

Table 3: Summary of Impact Assessment Matrix – During Construction / Rehabilitation

	Environmental Receptor	**Impact Significance**
1	Air Quality	Low
2	Noise	Low
3	Water Resources	Low
4	Soil	Low
5	Solid and hazardous wastes	Medium
6	Flora & Fauna	Not significant
7	Topography and landforms	Not significant
8	Impacts on local traffic	Low
9	Health and Safety	High
10	Socio-Economic impacts	Low

6. MITIGATION MEASURES

The required mitigation measures for each of the minor environmental impacts and any adverse socio-economic impacts that may arise have been considered. Furthermore, a complete monitoring and auditing system were suggested for each environmental parameter in order to sustain the environmental situation in the area of the projects. These measures should significantly reduce the identified potential minor impacts.

The mitigation measures address the environmental and social impacts of the project. They include:

1. Minimize noisy operations at day time , no constructional activities in the night
2. To avoid noisy environment, modern and well maintained machines will be used. Noisy operations should not be during the day.
3. Maintain vehicles and machinery in good condition in order to minimize exhaust emissions.
4. Application of water spraying (as needed) using a daily water tanker during the construction works.
5. Avoid discharging or leakages of any chemicals in the site or in open spaces. Plans for preventing leakages will be prepared on site. No discharge of chemicals into the environment will be allowed.
6. Ensure that construction preparations are located away from populated areas.
7. Temporary storage of construction and municipal solid waste in locations agreed with the local municipality authority and community.
8. Any hazardous waste (if present) must be collected and stored in sealed containers prior to disposal in a designated area approved by the authorities.

The following tables, table (4), and table (5) are the proposed the mitigation measures that some items may (or may not) be needed to be implemented and the estimated cost break-down during the rehabilitation and operational phase respectively.

Table 4: Mitigation Measures for Al- Sheesheen Bridge (Rehabilitation Phase)

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
1	**Air quality**	• Unpaved roads, e.g. which may be utilized for construction vehicles movement or transportation of construction materials should be prepared in a way to avoid dust emissions. Watering to suppress dust should take place regularly. • Watering or increase of the moisture level of the open materials storage piles to reduce dust levels; • enclosure or covering of inactive piles to reduce wind erosion; • loads in all trucks transporting dust-generating materials have to be sprayed with water to suppress dust, as well as wheels of means moving inside and outside of the construction-site; and • speed reduction for vehicles approaching the site to less than 40 km/hr. On site, speed should not exceed 20 km/ht.	Contractor	Resident engineer	500
		• Engines of vehicles and other machinery are kept turned on only if necessary, avoiding any unnecessary emission; • Machines and equipment are periodically checked and maintained to ensure their good working condition; • All equipment and machines must be maintained and tested for compliance with standards and technical regulations for the protection of the environment and have appropriate certifications; • Activities are carried out using the minimum required number of means at the same time; and • Electric small-scale mechanization and technical tools are used when available and feasible;	Contractor	Resident engineer	Included in contractor cost
		Limit vehicle speed limits to be the minimum (less than 40 km/hour) near residential buildings and farmlands.	Contractor	Resident engineer	Included in contractor cost

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
2	**Noise**	Construction activities are to take place within reasonable hours during the day and early evening. Night-time activates near noise sensitive areas, such as residential buildings, should not be allowed.	Contractor	Resident engineer	Included in contractor cost
		• Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. • Equipment to run only when necessary; and • Positioning of the noise sources in a concealed area with respect to acoustic receptors, consistent with the needs of the construction site.	Contractor	Resident engineer	Included in contractor cost
		Use of personal protection equipment for workers especially those who use jack hammers or near noisy engines or compressors.	Contractor	Resident engineer	2000
3	**Water resources**	Damaged sections of the bridge be carefully removed without blocking water drainage channels.	Contractor	Resident engineer	Included in contractor cost
		Wastewater from the worker rest areas or construction offices should be contained in solid containers and should be removed regularly from site by means of authorized contractors.	Contractor	Resident engineer	8000
		In case of the need to change engine oils or refuel some construction equipment, a proper maintenance workshop or shelter should be installed to ensure containment of any fuel or oil spills.	Contractor	Resident engineer	3000
		• In case of using septic tanks on site, the engineering drawings of these tanks should be presented to the Resident Engineer for approval. • No solid wastes are to be thrown into the drainage channel.	Contractor	Resident engineer	Included in contractor cost
4	**Soil**	• To prevent soil contamination by oil/grease spills, leakages or releases, all manipulations of oil derivatives in the process of construction and provision of the fuel to the machines should be performed with maximum care; leak proof containers should be used for storage and transportation of oil/grease and wash off from the oil/grease handling area shall be drained through drains and treated appropriately before disposal; • Construction waste and debris shall be collected on a regular basis and disposed of at designated landfills;	Contractor	Resident engineer	Included in contractor cost

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
		• Only authorized quarries shall be used for purchasing soil to be used for embankment, padding, bedding, backfilling during construction; and • It must be prohibited to operate equipment and vehicles outside the designated work areas and roads.			
		• No hazardous waste storage to take place directly on soils. Appropriate and enclosed containers should be utilized.	Contractor	Resident engineer	1000
5	**Solid and hazardous wastes**	• Minimize waste generation on site. • Simple waste management plan for specific waste streams must be developed. • General waste must be collected and transported to local council approved disposal sites. • Food wastes must be collected, where practicable, considering health and hygiene issues, for disposal off-site through licensed contractors. • Waste containers must be located at each worksite. • Chemical wastes must be collected in 200 liter drums (or similar sealed container), appropriately labeled, for safe transport to an approved chemical waste depot or collection by a liquid waste treatment service. • Storage, transport and handling of all chemicals must be conducted in accordance with all legislative requirements, through licensed contractors and in coordination with the local authority. • All hazardous wastes must be appropriately stored in bounded areas and should be clearly identified as “hazardous”. • Transportation and disposal of hazardous wastes should be done through licensed contractors and in close coordination with the relevant local authority and in compliance with the legal requirements and instructions of the coordination with the as ministry of science and technology. • Hazardous liquids, such as solvents, rust proofing agents and primer must be managed in accordance with the requirements of relevant legislation and industry standards. • A hazardous materials inventory for the construction period must be prepared. • Material Safety Data Sheets (MSDS) for hazardous materials must be available on-site during construction and made available and explained to workers. • Hydrocarbon wastes, including lube oils, must be collected for safe transport off-site for	Contractor	Resident engineer in coordination with the local authority and ministry of science and technology regarding hazardous wastes	6000

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
		reuse, recycling, transport or disposal at approved locations.			
6	**Flora & Fauna**	Not Applicable	Not Applicable	Not Applicable	Not Applicable
7	**Topography and landforms**	Not Applicable	Not Applicable	Not Applicable	Not Applicable
8	**Traffic**	• Provide information, through appropriate signage, to the bridge users to use the alternative route; • Clear traffic signs and signs signals must be installed on-site to provide for safe traffic • Where practicable, truck deliveries must be restricted to daytime working hours. • Clear traffic signs and signs signals must be installed on-site to provide for safe traffic.	Contractor in coordination with the Local Traffic Department	Resident Engineer	500
9	**Health and Safety**	• Limit speed of construction vehicles and provide road signage for drivers and local community.	Contractor	Local traffic department in coordination with the Resident engineer	1000
		• Qualified personnel must be employed for the construction equipment, and personnel must be trained for health and safety issues. • Personal protection equipment such as eyeglasses, gloves, hard heads and safety belts must be supplied and continuously used by all workers, technicians, engineers and site visitors.	Contractor	Resident engineer	3000
		• compliance with international standards for good construction practices; • adherence to local and international guidance and codes of practice on Environmental Health and Safety (EHS) management during construction; • management, supervision, monitoring and record-keeping; • implementation of EHS procedures as a condition of contract with contractors and their sub-contractors; • clear definition of the EHS roles and responsibilities of the companies involved in construction and to individual staff (including the nomination of EHS supervisors	Contractor	Resident engineer	Included in contractor cost

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
		during construction and an EHS coordinator during operation); • pre-construction assessment of the EHS risks and hazards associated with construction and operation, including consideration of local cultural attitudes, education level of workforce and local work practices; • provision of appropriate training on EHS issues for all construction and operation workers, including initial induction and regular refresher training, taking into account local cultural issues; • provision of health and safety information; • regular inspection, review and recording of EHS performance; • maintenance of a high standard of housekeeping at all times.			
		• Any accidents to be reported and treated within site as a first aid procedure. • Safety training for the workers. • Fuel and oil changing shelters should be equipped with necessary firefighting and safety equipment • First aid items should be available all times onsite and trained staff on emergency aids should be identified.	Contractor	Resident engineer in coordination with health and safety officials.	2500
10	**Handling Complaints**	• A complaints register will be kept on site and this will feed into the GRM. Details of complaints received will be incorporated into the audits as part of the monitoring process.	Resident Engineer	RBD/PMT	Included in contractor cost
Total cost US$ (rehabilitation phase)					**27,500**

Table 5: Mitigation Measures for Al- Sheesheen Bridges Rehabilitation Operation Phase.

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
1	**Air quality**	During the license issuance or renewal process of vehicles, traffic authorities should ensure that all vehicle engines are in good conditions.	Traffic Department	Traffic Department	No cost
2	**Noise**	During the license issuance or renewal process of vehicles, traffic authorities should ensure that all vehicle engines are in good conditions. Speed limits should be reduced especially near residential buildings. Limit trucks movement especially at night in coordination with the local traffic authorities.	Traffic Department	Traffic Department	No cost
3	**Water resources**	Not applicable	Not applicable	Not applicable	Not applicable
4	**Soil**	Not applicable	Not applicable	Not applicable	Not applicable
5	**Solid and hazardous wastes**	During the operational period, some littering and waste generation resulting from the repair activities will occur. Littering may occur due to wind action.	Local Authority (Municipality)	Local Authority (Municipality)	Within municipal budget
6	**Traffic**	Speed limits and road signs should be in place to prevent or minimize the road accidents.	Traffic Department	Traffic Department	No cost
		The bridge must be provided with suitable post lighting at night to reduce the probability of road accidents.	RBD	RBD	Within RBD budget
7	**Flora & Fauna**	Not Applicable	Not Applicable	Not Applicable	Not Applicable
8	**Topography and landforms**	Not Applicable	Not Applicable	Not Applicable	Not Applicable
9	**Traffic**	Improved traffic conditions	Local Traffic Department	Resident Engineer	No Cost
10	**Handling Complains**	The continued operation of a GRM for one year following opening of the bridge for use will ensure that local community members have an accessible, fair and transparent means of reporting any emerging adverse impacts, and a means of obtaining mitigation.	RBD/PMT	Local authorities	No cost
Total cost US$ (Operation phase)					**No Cost**

7. MONITORING & INSTITUTIONAL STRENGTHENING

A complete monitoring, auditing and reporting program will be set forward in order to ensure proper implementation of mitigation measures, and maintain or improve the environmental and the socio-economic characteristics of the area adjacent to the bridge during the rehabilitation and operation phases of the project.

The monitoring program will focus on noise impact, air quality and any emerging socio-economic adverse effects. The monitoring activity will monitor the application of environmental and social mitigation measures and the result of monitoring activities shall be reflected in the monthly reports. An institutional framework and strategy for the involved official institutions were suggested in order to strengthen the capacity buildings in the field of the environmental monitoring and reporting procedures and methodologies. Table (6), and table (7) summarize the proposed environmental and social monitoring programs respectively.

Table 6: Monitoring Activities for Al-Sheesheen Bridges Rehabilitation Phase.

Receptor		Monitoring Activities	Monitoring Indicators	Frequency	Responsibility	Supervision	Total estimated Cost
1	**Air quality**	Investigate dust complaints from workers and residents Visual inspection of vehicles and equipment operating or entering the site Measurements of exhaust emissions (CO, SOx, NOx, PM_{10} , $PM_{2.5}$)	Recorded and documented complaints Recoded the status of equipment and vehicles on site (excessive black or white smoke)	Daily visual inspection Monthly measurements	Engineer	PMT	12,000
2	**Noise**	Investigate noise complaints from workers and neighboring communities in the affected locations Measure ambient noise near sensitive receptors (dBA)	Recorded and documented complaints	Weekly inspection of complaints Monthly noise measurement	Engineer	PMT	6,000
3	**Water resources**	Investigate implementation of mitigation measures and observe any oil or fuel spills. Investigate wastewater disposal measures	Site Investigation report	Daily Investigation	Engineer	PMT	No cost
4	**Soil**	Observe any soil contamination with oil or fuel Observe any accumulation of wastes	Site Investigation report	Monthly	Engineer	PMT	No cost
5	**Solid and hazardous wastes**	Maintain records on waste types and quantities Observe any waste accumulation in un approved locations	Waste management contracts with authorized contractors Waste delivery receipts from local authorities.	Weekly Weekly	Engineer	PMT	No cost
6	**Health and safety**	Ensure compliance of workers to Health and Safety requirements Maintain log on accidents	Accidents report	Weekly	Engineer	PMT	No cost

Receptor		Monitoring Activities	Monitoring Indicators	Frequency	Responsibility	Supervision	Total estimated Cost
7	**Flora & Fauna**	Record any observation about wild animals or plants on site or nearby and report to the Environmental Authority	Observation report	Upon occurrence	Engineer	PMT	No cost
8	**Topography and landforms**	No monitoring required	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
9	**Traffic**	Ensure speed limits and warning signs are installed	Road signs are installed.	Half annual	Engineer	PMT	No cost
10	**Handling Complaints**	Ensure that the GRM is effective and well communicated	Number of complaints received, analyzed and responded to.	Weekly	Engineer	PMT	No cost
	Total cost US$ (Operation/Maintenance phase)						**18,000**

Table 7: Institutional Strengthening and Training

Capacity development topic		Provider(s)	Duration	Estimated Cost (US$)
1	Environmental Impact Assessment Environmental and social Management in Construction Sites	Consultant	3 Days	3,000
2	Iraqi Environmental Legal Requirements	Ministry of Environment	1 Day	2,000
3	World Bank Environmental and Social Safeguards	The World Bank	2 Days	10,000 (international travel and accommodation cost for RBD trainees)
Total Estimated Cost				**$15,000**

8. PUBLIC CONSULTATIONS

According to the World Bank policies, it is required that broad and open public consultations be held with PAPs on the project. These consultations are to ensure that the project affected peoples (PAPs) are provided with the opportunity to engage in the rehabilitation planning process, to raise questions and receive input and responses to their concerns. However, due to difficulties and security constraints, this approach was not achievable.

In order to fulfil the WB requirements, a one on one interviews was adopted to obtain sound information on the possible impacts on the local communities. Accordingly, a questionnaire was formatted to cover the key environmental and social aspects related to the project. The questionnaire was then addressed to a number of the local individuals in the surrounding community randomly to have their opinions and thoughts regarding the rehabilitation activities.

According to the results revealed from these questioners, the local community individuals agreed that, the rehabilitation activities will have a positive impact on their social daily life. None of the locals expressed any reservations against the project and did not specify any negative impact that might affect him or his family. All locals agreed that the bridge will need some additional safety signs and instructions in order to keep the movement on the bridge within safe conditions. The following are the main findings of the consultation process which took place in April 2016. Please refer to annex 3 for more details.

During public consultation, information about a grievance mechanism was introduced to local people and informed them that they can submit their complaint to either site engineer, or to community leader or to PMT during construction. The community leaders' information and PMT contact information will be available before implementation starts. Please refer to annex 3 for more details.

9. GRIEVANCE REDRESS MECHANISM

Bank procedures require that Grievance Redress Mechanisms (GRMs) be established and operational prior to commencement of the project, and that they continue to operate for one year following completion of the works for third party settlement of disputes arising from resettlement. This GRM should take into account the availability of judicial recourse as well as traditional and community dispute resolution mechanisms.

Accordingly, a GRM will be established at the project level to ensure any grievance can be addressed in an amicable manner. Resolving complaints at community level is always encouraged to address the problem that a person may during implementation and/or operational phase.

In any case, the PMT must maintain records of grievances and complaints, including minutes of discussions, recommendations and resolutions made.

MAIN REPORT

1. INTRODUCTION

According to the Environmental and Social Management Framework (ESMF) which has been prepared for the Emergency Operation for Development Project (EODP) and disclosed locally and on the InfoShop, an Environmental and Social Management Plan (ESMP) should be prepared, cleared and publically consulted upon and disclosed prior to the commencement of any construction activities for the roads and bridges component.

This ESMP was developed to cover the activities associated with the rehabilitation and operation of **AL-Sheesheen Bridge (left and right)**. The ESMP identifies key environmental and social impacts of the project activities during both the rehabilitation and the operational phases, and defines the necessary mitigation measures addressing potential negative impacts, as well as monitoring procedures during construction and operation. The ESMP was carried out by an independent consultant according to requirements of the current environmental regulations of the World Bank (OP 4.01), and Iraqi regulations. In this report the WB, and Iraqi environmental and social standards and regulations were followed to ensure the national and international acceptance and compliances of the ESIA. The ESMP should be followed and implemented by all relevant parties.

1.1 OBJECTIVES

The objectives of this ESMP are to provide:

- Practical and achievable actions to ensure that the project's adverse environmental and social impacts are properly mitigated.
- An integrated plan for monitoring, assessing and controlling potential impacts.
- Support to Local and State authorities to enable setting approval conditions for the project based on relevant standards and procedures.
- Focus on positive aspects and benefits, mitigate negative impacts and avoid serious and irreversible damage to the environment and people
- An opportunity for holding consultation with the communities to get their input on the project activities.
- Information to the local community about the revised project activities and the environmental measures, socio-economic measures, information on residents' rights who might be negatively affected by some project activities and bridge operations,
- Information to the local community of the existence of a grievance redress management (GRM) system through which they might lodge complaints and expect prompt and fair consideration.

The ESMP establishes a framework for the identification of environmental protection, mitigation, monitoring measures to be taken during rehabilitation and operational phases of the project. The ESMP includes project description, mitigation measures, monitoring plan, management plans schedule, institutional arrangements, and public consultation. The ESMP will aim to achieve a good environmental and social performance during construction and maintenance. To meet this goal, the following activities, measures and programs must be followed:

(i) Environmental regulations
(ii) Application of all environmental and social mitigation and management measures.
(iii) Environmental and social monitoring plan.
(iv) Emergency and contingency plan.
(v) Institutional plan.
(vi) Environmental and safety measures.
(vii) Effective and open consultations with local communities.

Environmental and social monitoring is an important component of this ESMP. It provides the information for periodic review and refinement modification of the ESMP as necessary, ensuring that environmental and social protection is optimized in all project phases through monitoring and early detection and effective remediation of unwanted environmental and social impacts. Lastly, it will also demonstrate compliance with national and international regulatory requirements.

2. PROJECT DESCRIPTION

Al-Sheesheen Bridges (left & right sides) are located at the entrance of Tikrit City in Salah Ad-Din Governorate on the main road between Tikrit and Mosul to the north of Iraq which connects the cities of Sammarah and Tikrit. The bridges are located in an open area with no surrounding residence. Both Bridges, on the right and on the left sides of the main road, consist of 7 spans (16 meters) in length with total length of = 112 m. Each bridge is 12m wide, (7.30m) carriage way with two sided footpaths (2.20m). Sub structure consists of precast piles (0.30 x 0.30 m) under pier and Superstructure consists of 5 precast reinforcement concrete girders (15.95m) long and (1.30m) depth and reinforced concrete deck (20 cm thick) for each span.

2.1 Objective of the Maintenance Works

The main objective of the rehabilitation and reconstruction maintenance works of Al- Sheesheen Bridges (Left & Right sides) in Salah- Ad- Din Governorate is to facilitate travel and commerce and access to essential service including health care and education and movement of agricultural products. During the maintenance period, the right side of Al-Sheesheen Bridge from Sammarah City will be used for traffic movement in both directions (with proper traffic management measures) until finishing the reconstruction of the left side and then the traffic will be shifted to the left side to reconstruct the right side of Al-Sheesheen Bridges.

2.2 Current Condition of the Bridges

Al-Sheesheen Bridges were built in 1982. There was no repair or rehabilitation for these bridges since the date they were built. The second span of each Bridge is damaged by the terrorist attack. The left side of the Bridge is totally damaged and no traffic is allowed to pass. However, the damaged segment of the right side of the Bridge is filled with embankment by the Military Forces to allow temporary passage of the traffic. Beneath the bridge there is a shallow seasonal flooding canal (now is totally dry). This semi-dry canal is not under usage for any purpose.

2.3 Services lines

There is one type of service lines (telecom) cables passing through Al-Sheesheen Bridges which have been damaged from the terrorism activities and will be repaired by the contractor according to the item description of service line.

2.4 Contractor Camp

The contractor camp can be constructed nearby and adjacent to bridge area. The camp will be erected in a state owned land; no additional land acquisition is needed.

2.5 Scope of Work

Works for Al-Sheesheen Bridges left & right sides in Salah Ad-Din Governorate include:

a. Removal of demolished the left & right sides damaged second spans.
b. Supporting system for another sound spans and treatment of damaged 40 m² deck slab.
c. Installation of 20 new Rubber Bearing.
d. Casting and installation of 5 precast reinforced concrete girders.
e. Casting the deck slab (0.20m depth) and side walk.
f. Spreading asphalt surface course.
g. Set the expansion joint.
h. Installation of (guard rail and lighting pole).
i. Maintenance of the existing lighting poles for bridge.

2.6 Design Data

Bridge design has been prepared and works will be executed according to the standard specifications for Roads and Bridges (1983), (B.S) 5400, AASHTO (ASD 2002) and Iraqi standard specification for axial loadings.

3. BASELINE CONDITIONS

3.1 The Project Area

Tikrit city and its suburban area have a long historic background of several years as part of the Mesopotamia civilization. The principle agricultural activity in the area is different crops. Farming, some industrial activities are the major economic activity in Tikrit. Tikrit is a major core city and has satellite towns and villages located within the administrational border line. On the left bank of the bridge there are open areas. On the right bank, houses are located far from the project location. There are few houses in the area surrounding the bridge and on the distance more than 400 m of the project location.

Figure 1: Google Earth Image of the damaged sections in Al-Sheesheen Bridges

3.2 Environmental and Social Baseline Conditions

The environmental baseline section is presented to give clear overview of the environmental and social conditions in the vicinity of the project location prior to commencement of works. The elements of the environment include: climate and meteorology, air quality, surface and groundwater quality, sediment and soil, topography, noise levels, traffic, rivers and waterways, biodiversity including flora, fauna, rare or endangered species, and sensitive habitats. It also includes consideration of socio-economic characteristics (such as population, land-use, planned development activities, community structure, employment, distribution of income, goods and services, recreation, cultural properties, customs, and attitudes. The following sections present such information.

3.2.1 Climate

Salah Ad-Din governorate is located in the northern mid-west part of Iraq, and has a diverse climate. The major rain fall during November, December, January, February, with a spread showering in March. Highest temperatures in July and August reach over 48 degrees centigrade. Rainfall is normally recorded during the months of December to January.

3.2.2 Rainfall, wind velocity and temperature

According to the Iraqi national meteorological commission, the average seasonal annual rainfall is less than 85mm. According to the (environmental survey statistics/ Ministry of planning 2012) records, in 2012 the annual precipitation in Salah Ad-Din governorate was 67mm.Monthly wind velocity record in recent years is shown in the table 7.

Table 8: Monthly Mean Wind Speed

Observation station: Salah Ad-Din station Monthly mean wind velocity (m/Sec)

YEAR	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
2004	1.8	1.3	2.4	1.7	2.2	3.2	3.2	2.5	3.2	1.9	4.8	2.9
2005	1.6	4.5	2.6	2.2	3.1	3.3	2.9	22	2.1	2.8	2.6	2.9
2006	1.4	2.4	3.7	1.9	2.7	23	2.5	2.6	3.1	2.8	1.9	32.0
2007	2.1	2.1	3.2	2.9	2.9	2.9	2.7	3.0	2.2	1.9	2.3	2.3
2008	2.1	2.0	2.8	2.3	2.9	3.3	2.2	3.2	2.1	1.6	2.8	3.0
2009	2.1	2.1	2.8	3.8	3.6	3.3	3.2	3.2	3.0	1.9	2.2	2.4
2010	1.7	1.7	3.0	3.2	3.1	3.4	3.7	3.2	1.7	2.1	2.3	2.6
2011	1.8	2.1	2.6	3.3	2.9	2.8	4.1	2.0	2.1	2.8		
2012	3.2	1.6	4.2	4.2	4.1	3.2	4.2	3.1	3.3	3.2		

The Recent years observation records of air temperature are shown in the following table (8).

Table 9: Monthly Mean Temperature

Observation station: Salah Ad-Din station monthly means Max. Temperature (oC)

YEAR	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
2007	12.9	13.4	20.1	30.1	32.4	40.1	41.7	42.1	40.1	32.3	26.2	19.4
2008	13.2	14.1	22.1	30.0	32.2	40.9	42.1	42.6	41.1	33.1	25.7	20.3
2009	13.8	14.2	23.1	30.1	33.2	40.8	41.2	42.3	41.2	32.3	25.8	17.5
2010	14.1	16.1	22.2	31.1	32.1	41.6	41.0	42.6	40.0	32.1	24.4	15.6
2011	12.7	13.5	22.6	30.1	41.0	40.4	41.0	43.1	40.0	32.1	24.3	20.3
2012	13.3	13.4	23.1	30.0	40.0	41.4	42.1	45.2	41.3	33.0	23.2	19.3

3.2.3 Air Quality

The nearest air quality monitoring station is located in kirkuk 130km east of the site. Due to security constraints, no baseline measurements were conducted. However, due to the limited traffic volume and absence of air polluting activities nearby and being in an open area.it can be assumed that the air quality parameters within the project site is within permissible limits.

Table 10: Maximum permissible concentrations for SO_2, NO_2 and CO

Time	SO_2[ppm]	NO_2[ppm]	CO[ppm]
TLV*	2	3	25
8:00:00 AM	0.0023	0.011	0.548
12:00:00 AM	0.0036	0.038	1.211

*Threshold limits values. Source the American Conference of Governmental Industrial Hygienists (ACGIH).

3.2.4 Site Topography

The project sites area represents an extension of the flat areas that starting from the middle of Iraq till the mid-southern parts of the country. No natural land obstacles are presented in the project area. The area is free of mountains, cliffs, and valleys.

3.2.5 Land use

The land use of area surrounding the project is not in use, although, a number of a scattered houses were noticed within a distance more than 400m from the project.

3.2.6 Seismic Activities

No Seismic activities had been recorded for more than 40 years.

3.2.7 Flooding

As in the some spring season the shallow canal beneath the bridge will work as a drain channel (with a low water flow), no hazards of flooding were recorded previously or expected in the future. However due to the rehabilitation activities, debris will be expected and continuous removal of this debris is necessary to restore seasonal hydrologic flow in the canal.

3.2.8 Noise

As the result of no traffic congestion on both sides of the bridge, no high levels of noise currently exist.

3.2.9 Heritage Environment

The rehabilitation of the bridge does not pass through any historical, cultural sites. There are no sites of historical or cultural importance in the area, and therefore the rehabilitation and operation of the plant will have no impact on archaeology or cultural heritage. No cemeteries, historical-cultural monuments, churches, mosques near the project need to be removed in order to rehabilitate the bridge.

3.2.10 Traffic Level

No traffic problem or traffic congestion will be expected during the rehabilitation phase or in the operation phase, as the bridge is accessible.

3.2.11 Land Acquisition

The rehabilitation activities of Al-Sheesheen Bridges will be within the existing footprint. The bridges were built on state-owned lands. There are no livelihoods in the project vicinity that are likely to be adversely affected by the project, hence neither involuntary nor voluntarily relocation of people is necessary or expected.

In addition, a construction camps will be established near the bridge on vacant state owned land for storage of equipment and construction materials. The construction will need about 30-40 workers. These workers will need to stay there during the construction phase for about 240 days. The contractor will sign employment agreement with all construction workers by following labor law of Iraq.

3.2.12 Social Aspects

There are no villages, residential complexes or community structures in close proximity to the bridge. The bridge is being constructed on state land, and no land or property expropriation will be necessary. In addition, no roadside vendors, either licensed or non-licensed will be displaced. The approaches areas on either side of the bridge are not settled on or utilized by any of the local population. All the areas around and within the site remain clear of any settlement or economic use and are ready for rehabilitation works, no interference were registered from the local community which is eager for the works to be completed. No agriculture activities of any kind were initiated the project area.

4. LEGAL ASPECTS

4.1 Iraqi environmental legislations

The work during rehabilitation and operation must follow the Iraqi laws and regulations for the environmental standards. These are:

1. Laws of the environment protection No.3 issued in 1997 and the published regulations. No environmental regulations for gaseous emissions, noise and other air pollution standards are in force and legally binding. However, limits for water disposal in any surface waters and main sewers are regulated according to the regulations no. (25)/1967 and their update modifications released from the ministry of health and the ministry of the environment.
2. Law of heritage and antiques no. (55) Issued in 2002 (this law defines all movable and immovable antiquities, archaeological properties and artifacts in Iraq. It regulates communication channels between the public and the authorities for each type of Contact between the public and the revealed and non-revealed archaeological sites.
3. New environmental framework Law No. 27 of 2009 for the Iraqi national government, have been introduced but the executive decrees remain to be prepared. There are as yet no formally adopted requirements for environmental assessment.
4. Regulations governing contact with archaeological sites extend also to encompass developmental activities like road construction and rehabilitation wherever these developmental activities lie within archaeological vicinity.
5. Regulations of the MOE on sanitary waste must be followed, and for the rubbles (construction &demolition waste) the regulations, legislations and instruction of both MOHE and MOCHPM.

Table (4) represents the applicable Iraqi's laws applicable to such activity.

Table 11: Applicable Laws and Regulations in Iraq

Applicable Iraqi laws
Law no. 37 of 2008 for Ministry of Environment: Describes institutional arrangements of the Ministry of Environment and Outlines policies and roles and responsibilities toward protecting the environment.
Law no. 27 of 2009 for: Protection and Improvement of Environment
Environmental protection from pollution resulted from petrol and natural gas extraction
Regulations no. 2 of 2001 for: Preserving water resources.

For legal aspects, the work during rehabilitation and operation must follow the Iraqi laws and regulations for the Environmental Standards. These are laws of the environment protection No.3 issued in 1997 and the published regulations. No environmental regulations for gaseous emissions, noise and other air pollution standards are in force and legally binding. However, limits for water disposal in any surface waters and main sewers are regulated according to the regulations no. (25)/1967 and their update modifications released from the ministry of health and the ministry of the environment. Law of heritage and antiques no. (55) Issued in 2002, while for a sanitary waste (municipal) the regulations of the MOE must be followed, and for the rubbles (construction

&demolition waste) the regulations, legislations and instruction of both MOHE and MOCHPM must be followed.

It should be noted that legislation relating to social safeguards issued in Iraq since 2003 has focused primarily on the ratification of international conventions and protocols on issues such as cultural heritage. As yet there are no formally adopted requirements for social assessments relating to road works. Hence, social safeguards issues remain very largely uncovered except to the extent they are referred to under environmental laws.

4.2 The World Bank Safeguards Policies

In addition to the Iraqi laws and regulation the ESMP follows key policies and procedures of the World Bank; table (5) represents the needed World Bank operational policies for the project.

Table 12: World Bank Operational Policy

Applicable WB Policies
OP 4.01 Environmental Assessment
OP 4.12 Involuntary Resettlement
WBG EHS 101-IFC

1. OP/BP 4.01 - the key Operational Policy describing the environmental assessment procedure. The Bank requires environmental assessment of projects proposed for Bank financing. The objectives of the EA are to:

   a. Ensure that projects proposed for Bank financing are environmentally and socially sound and sustainable.

   b. Inform decision makers of the nature of environmental and social risks.

   c. Increase transparency and participation of stakeholders in the decision-making process.

2. OP/BP4.12 the key Operational Policy describing the involuntary resettlement which focuses on the following principles:

   a. Involuntary resettlement is avoided wherever feasible, or minimized, exploring all viable alternative project designs;
   b. Where it is not feasible to avoid involuntary resettlement, activities are conceived and executed as sustainable development programs. Displaced persons are to be meaningfully consulted and have opportunities to participate in the planning and implementing of resettlement programs affecting them; and
   c. Displaced persons are assisted in their efforts to improve their livelihoods and standards of living, or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher. The mechanism of assisting displaced persons is based on full and prior mitigation and compensation for loss of assets or livelihoods.
   d. OP 4.12 applies whenever, in a Bank-financed project, land is acquired involuntarily or access is restricted in legally designated parks or protected areas.

e. However, in this specific project, OP 4.12 will not be applied for the repair and rehabilitation of this bridge as all repair and rehabilitation activities will be within the existing footprint and no additional land acquisition is needed either permanently or temporarily.

3. WBG EHS 101-IFC: The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP)1.
Construction activities along a road alignment may adversely affect wildlife habitats, depending on the characteristics of existing vegetation, topographic features, and waterways. Examples of habitat alteration from these activities include fragmentation of forested habitat; loss of nesting sites of listed rare, threatened, or endangered species and / or high biodiversity / sensitive habitat; disruption of watercourses; creation of barriers to wildlife movement; and visual and auditory disturbance due to the presence of machinery, construction workers, and associated equipment. Management practices to prevent and control impacts to terrestrial and aquatic habitats (IF AFFECTED) include:

- Siting roads and support facilities to avoid critical terrestrial and aquatic habitat (e.g. old-growth forests, wetlands, and fish spawning habitat) utilizing existing transport corridors whenever possible.
- Design and construction of wildlife access to avoid or minimize habitat fragmentation, taking into account motorist safety and the behavior and prevalence of existing species. Possible techniques for terrestrial species may include wildlife underpasses, overpasses, bridge extensions, viaducts, enlarged culverts, and fencing.
- Avoidance or modification of construction activities during the breeding season and other sensitive seasons or times of day to account for potentially negative effects.
- Minimizing removal of native plant species, and replanting of native plant species in disturbed areas

4.3 Grievance Redress Mechanism

Bank procedures require that Grievance Redress Mechanisms (GRMs) be established and operational prior to commencement of the project, and that they continue to operate for one year following completion of the works for third party settlement of disputes arising from resettlement. This GRM should take into account the availability of judicial recourse as well as traditional and community dispute resolution mechanisms.

Accordingly, a GRM will be established at the project level to ensure any grievance can be addressed in an amicable manner. Resolving complaints at community level is always encouraged to address the problem that a person may during implementation and/or operational phase.

The project grievance redressed system should be developed in consultation with communities, which might include the following for written complaints:

1. First, the affected person sends his/her grievance in writing to the communities/community leaders. The grievance note should be signed and dated by the aggrieved person. Where the affected person is unable to write, s/he should obtain assistance from the community to write the note and mark the letter with his/her thumbprint. The community should respond within 14 days.
2. Second, if the aggrieved person does not receive a response or is not satisfied with the solution provided by the community, s/he lodges her or his grievance to PMT which should respond within 14 days.
3. Third, if the aggrieved person does not satisfied with the solution of PMT, s/he can go to the court.

In any case, the PMT must maintain records of grievances and complaints, including minutes of discussions, recommendations and resolutions made.

A checklist of issues to be considered in the design of the GRMs includes the following:

An inventory of any reliable conflict mediation organizations or procedures in the project area is undertaken and an assessment made to determine if any of these entities or procedures might be used, ensuring that complaints were received and addressed in an effective, timely and transparent manner.

Good practice is to ensure that PAPs can apply orally and in the local language and to impose explicit time limits for responding to grievances received. Appeal procedures need to be specified, and this information is made publicly available therefore, allow for both verbal and written grievances to be lodged with the local project authorities, who will transmit these to the local level committee for review, consideration and response.

5. IMPACT ASSESSMENT AND MITIGATION MEASURES

5.1 Rehabilitation Phase

This section of the report describes the environmental and social impacts that are likely to result from the construction and rehabilitation of Al Sheesheen bridges, and the mitigation measures addressing them. The Environmental actions, procedures and responsibilities as required during the construction phase must comply with the available specifications, legislation, laws issued by the MOHE.

The construction contractor(s) will be responsible for compliance with the ESIA provisions during the rehabilitation phase of the project. The contractor will be also in charge of undertaking work in a manner which complies with all relevant environmental procedures, adheres to all legislative requirements, and ensures that all environmental objectives associated with the contract are achieved. The overall assessment of the key environmental and social impacts are summarized below.

Table 13: Summary of Impact Assessment Matrix – During Construction / Rehabilitation

	Environmental Receptor	**Impact Significance**
1	Air Quality	Low
2	Noise	Low
3	Water Resources	Low
4	Soil	Low
5	Solid and hazardous wastes	Medium
6	Flora & Fauna	Not significant
7	Topography and landforms	Not significant
8	Impacts on local traffic	Low
9	Health and Safety	High
10	Socio-Economic impacts	Low

5.2 Operational Phase

No significant negative environmental or social impacts are anticipated during the operation phase.

Socio-Economic impacts

During the operational period, the project is expected to result a positive socio-economic outcomes for the local communities. Socially harmful consequences of bridge operation are not anticipated. However, the continued operation of a GRM for one year following opening of the bridge for use will ensure that local community members have an accessible, fair and transparent means of reporting any emerging adverse impacts, and a means of obtaining mitigation.

6. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

6.1 Mitigation measures, responsibilities and estimated associated costs

In this section, the identified mitigation measures will be summarized. The responsibility for implementation of the mitigation measures will be mostly upon the contractor. However, the supervision and assurance that the mitigation measures are implemented will be the responsibility of the Resident Engineer who represents the RBD as the Project Owner.

The Resident Engineer will be assisted by a team of environmental and social officers who will be responsible for supervising the daily activities of the contractor and will report non-compliances to the Resident Engineer in order to take necessary actions towards the contractor. Regular supervision site visits will also be conducted by the RBD PMT environmental/social officer in association with a qualified environmental and social consultant who will provide technical advice in case there is a need to modify or add new mitigation measures as work necessitates.

The costs of mitigation measures are estimated based on the average market rates for similar activities in Iraq and can be used as indicative costs. It is the sole responsibility of the contractor to estimate the costs associated with the recommended mitigation measures based on his work experience.

The following tables summarize the mitigation measures which are required to be undertaken to avoid any negative impacts on the environment. Responsibilities and estimated costs are also presented.

Table 14: Mitigation Measures for Al- Sheesheen Bridge Rehabilitation Phase.

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
1	**Air quality**	• Unpaved roads, e.g. which may be utilized for construction vehicles movement or transportation of construction materials should be prepared in a way to avoid dust emissions. Watering to suppress dust should take place regularly. • Watering or increase of the moisture level of the open materials storage piles to reduce dust levels; • enclosure or covering of inactive piles to reduce wind erosion; • loads in all trucks transporting dust-generating materials have to be sprayed with water to suppress dust, as well as wheels of means moving inside and outside of the construction-site; and • speed reduction for vehicles approaching the site to less than 40 km/hr. On site, speed should not exceed 20 km/ht.	Contractor	Resident engineer	500
		• Engines of vehicles and other machinery are kept turned on only if necessary, avoiding any unnecessary emission; • Machines and equipment are periodically checked and maintained to ensure their good working condition; • All equipment and machines must be maintained and tested for compliance with standards and technical regulations for the protection of the environment and have appropriate certifications; • Activities are carried out using the minimum required number of means at the same time; and • Electric small-scale mechanization and technical tools are used when available and feasible;	Contractor	Resident engineer	Included in contractor cost
		Limit vehicle speed limits to be the minimum (less than 40 km/hour) near residential buildings and farmlands.	Contractor	Resident engineer	Included in contractor cost
2	**Noise**	Construction activities are to take place within reasonable hours during the day and early evening. Night-time activates near noise sensitive areas, such as residential buildings, should not be allowed.	Contractor	Resident engineer	Included in contractor cost

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
		• Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. • Equipment to run only when necessary; and • Positioning of the noise sources in a concealed area with respect to acoustic receptors, consistent with the needs of the construction site.	Contractor	Resident engineer	Included in contractor cost
		Use of personal protection equipment for workers especially those who use jack hammers or near noisy engines or compressors.	Contractor	Resident engineer	2000
3	**Water resources**	Damaged sections of the bridge be carefully removed without blocking water drainage channels.	Contractor	Resident engineer	Included in contractor cost
		Wastewater from the worker rest areas or construction offices should be contained in solid containers and should be removed regularly from site by means of authorized contractors.	Contractor	Resident engineer	8000
		In case of the need to change engine oils or refuel some construction equipment, a proper maintenance workshop or shelter should be installed to ensure containment of any fuel or oil spills.	Contractor	Resident engineer	3000
		• In case of using septic tanks on site, the engineering drawings of these tanks should be presented to the Resident Engineer for approval. • No solid wastes are to be thrown into the drainage channel.	Contractor	Resident engineer	Included in contractor cost
4	**Soil**	• To prevent soil contamination by oil/grease spills, leakages or releases, all manipulations of oil derivatives in the process of construction and provision of the fuel to the machines should be performed with maximum care; leak proof containers should be used for storage and transportation of oil/grease and wash off from the oil/grease handling area shall be drained through drains and treated appropriately before disposal; • Construction waste and debris shall be collected on a regular basis and disposed of at designated landfills; • Only authorized quarries shall be used for purchasing soil to be used for embankment, padding, bedding, backfilling during construction; and • It must be prohibited to operate equipment and vehicles outside the designated work	Contractor	Resident engineer	Included in contractor cost

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
		areas and roads.			
		• No hazardous waste storage to take place directly on soils. Appropriate and enclosed containers should be utilized.	Contractor	Resident engineer	1000
5	**Solid and hazardous wastes**	• Minimize waste generation on site. • Simple waste management plan for specific waste streams must be developed. • General waste must be collected and transported to local council approved disposal sites. • Food wastes must be collected, where practicable, considering health and hygiene issues, for disposal off-site through licensed contractors. • Waste containers must be located at each worksite. • Chemical wastes must be collected in 200 liter drums (or similar sealed container), appropriately labeled, for safe transport to an approved chemical waste depot or collection by a liquid waste treatment service. • Storage, transport and handling of all chemicals must be conducted in accordance with all legislative requirements, through licensed contractors and in coordination with the local authority. • All hazardous wastes must be appropriately stored in bounded areas and should be clearly identified as "hazardous". • Transportation and disposal of hazardous wastes should be done through licensed contractors and in close coordination with the relevant local authority and in compliance with the legal requirements and instructions of the coordination with the as ministry of science and technology. • Hazardous liquids, such as solvents, rust proofing agents and primer must be managed in accordance with the requirements of relevant legislation and industry standards. • A hazardous materials inventory for the construction period must be prepared. • Material Safety Data Sheets (MSDS) for hazardous materials must be available on-site during construction and made available and explained to workers. • Hydrocarbon wastes, including lube oils, must be collected for safe transport off-site for	Contractor	Resident engineer in coordination with the local authority and ministry of science and technology regarding hazardous wastes	6000

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
		reuse, recycling, transport or disposal at approved locations.			
6	**Flora & Fauna**	Not Applicable	Not Applicable	Not Applicable	Not Applicable
7	**Topography and landforms**	Not Applicable	Not Applicable	Not Applicable	Not Applicable
8	**Traffic**	• Provide information, through appropriate signage, to the bridge users to use the alternative route; • Clear traffic signs and signs signals must be installed on-site to provide for safe traffic • Where practicable, truck deliveries must be restricted to daytime working hours. • Clear traffic signs and signs signals must be installed on-site to provide for safe traffic.	Contractor in coordination with the Local Traffic Department	Resident Engineer	500
9	**Health and Safety**	• Limit speed of construction vehicles and provide road signage for drivers and local community.	Contractor	Local traffic department in coordination with the Resident engineer	1000
		• Qualified personnel must be employed for the construction equipment, and personnel must be trained for health and safety issues. • Personal protection equipment such as eyeglasses, gloves, hard heads and safety belts must be supplied and continuously used by all workers, technicians, engineers and site visitors.	Contractor	Resident engineer	3000
		• compliance with international standards for good construction practices; • adherence to local and international guidance and codes of practice on Environmental Health and Safety (EHS) management during construction; • management, supervision, monitoring and record-keeping; • implementation of EHS procedures as a condition of contract with contractors and their sub-contractors; • clear definition of the EHS roles and responsibilities of the companies involved in	Contractor	Resident engineer	Included in contractor cost

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
		construction and to individual staff (including the nomination of EHS supervisors during construction and an EHS coordinator during operation); • pre-construction assessment of the EHS risks and hazards associated with construction and operation, including consideration of local cultural attitudes, education level of workforce and local work practices; • provision of appropriate training on EHS issues for all construction and operation workers, including initial induction and regular refresher training, taking into account local cultural issues; • provision of health and safety information; • regular inspection, review and recording of EHS performance; • maintenance of a high standard of housekeeping at all times.			
		• Any accidents to be reported and treated within site as a first aid procedure. • Safety training for the workers. • Fuel and oil changing shelters should be equipped with necessary firefighting and safety equipment • First aid items should be available all times onsite and trained staff on emergency aids should be identified.	Contractor	Resident engineer in coordination with health and safety officials.	2500
10	**Handling Complaints**	• A complaints register will be kept on site and this will feed into the GRM. Details of complaints received will be incorporated into the audits as part of the monitoring process.	Resident Engineer	RBD/PMT	Included in contractor cost
Total cost US$ (rehabilitation phase)					**27,500**

Table 15: Mitigation Measures for Al- Sheesheen Bridges Operation Phase.

Receptor		Mitigation Measures	Responsibility	Supervision	Total estimated Cost in US$
1	**Air quality**	During the license issuance or renewal process of vehicles, traffic authorities should ensure that all vehicle engines are in good conditions.	Traffic Department	Traffic Department	No cost
2	**Noise**	During the license issuance or renewal process of vehicles, traffic authorities should ensure that all vehicle engines are in good conditions. Speed limits should be reduced especially near residential buildings. Limit trucks movement especially at night in coordination with the local traffic authorities.	Traffic Department	Traffic Department	No cost
3	**Water resources**	Not applicable	Not applicable	Not applicable	Not applicable
4	**Soil**	Not applicable	Not applicable	Not applicable	Not applicable
5	**Solid and hazardous wastes**	During the operational period, some littering and waste generation resulting from the repair activities will occur. Littering may occur due to wind action.	Local Authority (Municipality)	Local Authority (Municipality)	Within municipal budget
6	**Traffic**	Speed limits and road signs should be in place to prevent or minimize the road accidents.	Traffic Department	Traffic Department	No cost
		The bridge must be provided with suitable post lighting at night to reduce the probability of road accidents.	RBD	RBD	Within RBD budget
7	**Flora & Fauna**	Not Applicable	Not Applicable	Not Applicable	Not Applicable
8	**Topography and landforms**	Not Applicable	Not Applicable	Not Applicable	Not Applicable
9	**Traffic**	Improved traffic conditions	Local Traffic Department	Resident Engineer	No Cost
10	**Handling Complains**	The continued operation of a GRM for one year following opening of the bridge for use will ensure that local community members have an accessible, fair and transparent means of reporting any emerging adverse impacts, and a means of obtaining mitigation.	RBD/PMT	Local authorities	No cost
Total cost US$ (Operation phase)					**No Cost**

7. ENVIRONMENTAL AND SOCIAL MONITORING PLAN

7.1 Environmental and Social Monitoring

In order to ensure full compliance of the performed activities to the environmental and social requirements, regular monitoring should be performed. To ensure the proper implementation of the environmental and social mitigation measures, an environmental and social monitoring program has been established for the construction phase.

Table 16: Monitoring Activities for Al- Sheesheen Bridges Rehabilitation Phase.

Receptor		Monitoring Activities	Monitoring Indicators	Frequency	Responsibility	Supervision	Total estimated
1	**Air quality**	Investigate dust complaints from workers and residents Visual inspection of vehicles and equipment operating or entering the site Measurements of exhaust emissions (CO, SOx, NOx, PM_{10} , $PM_{2.5}$)	Recorded and documented complaints Recoded the status of equipment and vehicles on site (excessive black or white smoke)	Daily visual inspection Monthly measurements	Engineer	PMT	12,000
2	**Noise**	Investigate noise complaints from workers and neighboring communities in the affected locations Measure ambient noise near sensitive receptors (dBA)	Recorded and documented complaints	Weekly inspection of complaints Monthly noise measurement	Engineer	PMT	6,000
3	**Water resources**	Investigate implementation of mitigation measures and observe any oil or fuel spills. Investigate wastewater disposal measures	Site Investigation report	Daily Investigation	Engineer	PMT	No cost
4	**Soil**	Observe any soil contamination with oil or fuel Observe any accumulation of wastes	Site Investigation report	Monthly	Engineer	PMT	No cost
5	**Solid and hazardous wastes**	Maintain records on waste types and quantities Observe any waste accumulation in un approved locations	Waste management contracts with authorized contractors Waste delivery receipts from local authorities.	Weekly Weekly	Engineer	PMT	No cost
6	**Health and safety**	Ensure compliance of workers to Health and Safety requirements Maintain log on accidents	Accidents report	Weekly	Engineer	PMT	No cost
7	**Flora & Fauna**	Record any observation about wild animals or plants on site or nearby and report to the Environmental Authority	Observation report	Upon occurrence	Engineer	PMT	No cost

Receptor		Monitoring Activities	Monitoring Indicators	Frequency	Responsibility	Supervision	Total estimated
8	**Topography and landforms**	No monitoring required	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
9	**Traffic**	Ensure speed limits and warning signs are installed	Road signs are installed.	Half annual	Engineer	PMT	No cost
10	**Handling Complaints**	Ensure that the GRM is effective and well communicated	Number of complaints received, analyzed and responded to.	Weekly	Engineer	PMT	No cost
Total cost US$ (Operation phase)							**US$ 18,000**

7.2 ESMP Institutional Arrangements

In order to ensure full compliance with the environmental and social requirements which are described above, RBD PMT nominated a qualified engineer to act as the focal point for environmental and social affairs at the central level. On the field level, RBD PMT nominated two engineers in Salah Al-Din to act as environmental and social officers. Those engineers will be trained on monitoring and reporting of environmental and social impacts and how to fill the checklist to be used during field visits before implementation starts.

RBD Resident Engineer will be the officially responsible staff member for ensuring environmental and social compliance. S/He will be assisted by the designated environmental and social field officers.

In addition, a qualified consultant is recruited by the PMT to provide technical assistance and capacity building to the environmental and social team both at the central level and at the field level.

7.3 Reporting requirements

To ensure that the mitigation and monitoring measures are being carried out effectively with the required frequency, a clearly defined and regular reporting and response system must be established. The needed frequency of report generation for inspection is to be four times annually, and for auditing twice a year, environmental monitoring is once per year.

All inspection and audit reports of environmental performance should be stored in the Audit and Inspection Manager (AIM) system. The AIM is an electronic database that is used to enable corrective actions identified during the inspection \ auditing process to be recorded, tracked and closed out. The information will be made available to the relevant regulatory authorities as required. In addition to the monitoring and reporting requirements documented in the relevant sections of the ESMP, the following reporting regime will be implemented:

- All incidents or accidents during the bridge rehabilitation should be reported immediately to relevant authorities.
- All corrective measures must be discussed to ensure compliance with laws and regulations.
- Reports for personnel training on environmental issues or emergency practices must be produced.
- Progress reports, environmental monitoring report and other inspections reports must be produced periodically.

The RBD PMT engineers will provide the Resident Engineer with a weekly report briefing their observations and recommendations for action. Whereas the Resident Engineer shall prepare an environmental and social management report on monthly basis to RBD PMT in Baghdad.

The environmental and social consultant will prepare a monthly environmental and social supervision report after conducting site supervision visits.

RBD PMT shall prepare a quarter environmental and social progress report which will be submitted to the international financial institution (World Bank) for review and disclosure.

7.4 Capacity Development and Resources Requirements

7.4.1 Capacity Development

RBD PMT dedicated sufficient human resources to undertake the environmental and social management requirements as explained above. The assigned RBD staff at the central and field levels are competent in the field of engineering and have variable practical experience. For RBD staff who will be responsible for undertaking the environmental and social tasks, they will require some capacity development.

All construction personnel and contractors are required to undertake appropriate environmental training and induction programs including, importantly, on GRM procedures.

All managers and supervisors will be responsible for ensuring that personnel under their control have the requisite competencies, skill and training to carry out their assigned tasks in accordance with the requirements of the ESMP. They will also be responsible for identifying additional training and competency requirements.

All project supervisors and managers will receive additional detailed training on the use and implementation of the ESMP. The following Table presents the proposed institutional strengthening program and capacity development requirements.

Table 17: Capacity Development Requirements for RBD

Capacity development topic		**Provider(s)**	**Duration**	**Estimated Cost (US$)**
1	Environmental Impact Assessment Environmental and social Management in Construction Sites	Private sector consultant	3 Days	$3000
2	Iraqi Environmental Legal Requirements	Ministry of Environment	1 Day	$2000
3	World Bank Environmental and Social Safeguards	The World Bank	2 Days	$10,000 (international travel and accommodation cost for RBD trainees)
Total Estimated Cost				**$15,000**

7.4.2 Required Resources

In order to ensure full compliance of the environmental and social requirements, regular site visits should be conducted. Dedicated office spaces, office equipment and supplies in addition to adequate means of transportation should be made available for the environmental and social management team at the central level and most importantly on the field level. RBD PMT should ensure the allocation of sufficient budget resources to ensure availing the required resources to achieve the required tasks,

8. PUBLIC CONSULTATION RESULTS

According to the World Bank policies, it is required that broad and open public consultations be held with PAPs on the project. These consultations are to ensure that the project affected peoples (PAPs) are provided with the opportunity to engage in the rehabilitation planning process, to raise questions and receive input and responses to their concerns. However, due to difficulties and security constraints, this approach was not achievable.

In order to fulfil the WB requirements, a one on one interviews was adopted to obtain sound information on the possible impacts on the local communities. Accordingly, a questionnaire was formatted to cover the key environmental and social aspects related to the project. The questionnaire was then addressed to a number of the local individuals in the surrounding community randomly to have their opinions and thoughts regarding the rehabilitation activities.

According to the results revealed from these questioners, the local community individuals agreed that, the rehabilitation activities will have a positive impact on their social daily life. None of the locals expressed any reservations against the project and did not specify any negative impact that might affect him or his family. All locals agreed that the bridge will need some additional safety signs and instructions in order to keep the movement on the bridge within safe conditions. The following are the main findings of the consultation process which took place in April 2016.

1. All questioned locals agreed that the reconstruction activities will have a strong positive impact from the social perspectives on the locals.

2. No claims from any locals were recorded or alleged regarding the ownership of the land were the bridge in constructed; all agreed that is governmental land property.

3. No vegetation covers, crops, plants, trees…etc. will be removed in order to execute the rehabilitation activities of the bridge.

4. The interests of the locals had not affected by anyhow by the reconstruction activities.

5. No infrastructure within the bridge area will be affected negatively due the reconstruction activities.

6. No deportation, dislocation of any of the local community will be needed due to these activities.

7. The reconstruction of the bridge will enhance the social relationship among the locals, improve their transport.

8. All locals agreed that the bridge will need more traffic and instructional signs for the bridge users' safety. Please refer to annex 3 for more details.

During public consultation, information about a grievance mechanism was introduced to local people and informed them that they can submit their complaint to either site engineer, or to community leader or to PMT during construction. The community leaders' information and PMT contact information will be available before implementation starts.

9. GRIEVANCE REDRESS MECHANISM

Bank procedures require that Grievance Redress Mechanisms (GRMs) be established and operational prior to commencement of the project, and that they continue to operate for one year following completion of the works for third party settlement of disputes arising from resettlement. This GRM should take into account the availability of judicial recourse as well as traditional and community dispute resolution mechanisms.

Accordingly, a GRM will be established at the project level to ensure any grievance can be addressed in an amicable manner. Resolving complaints at community level is always encouraged to address the problem that a person may during implementation and/or operational phase.

The GRM will be set up by the bridge owner state, and it must be initiated prior to construction activities. Local communities must be aware and notified about the existence of such GRM by the local media, tribes, local council…etc.

The project grievance redressed system should be developed in consultation with communities, which might include the following for written complaints:

1. First, the affected person sends his/her grievance in writing to the communities/community leaders. The grievance note should be signed and dated by the aggrieved person. Where the affected person is unable to write, s/he should obtain assistance from the community to write the note and mark the letter with his/her thumbprint. The community should respond within 14 days.
2. Second, if the aggrieved person does not receive a response or is not satisfied with the solution provided by the community, s/he lodges her or his grievance to PMT which should respond within 14 days.
3. Third, if the aggrieved person does not satisfied with the solution of PMT, s/he can go to the court.

In any case, the PMT must maintain records of grievances and complaints, including minutes of discussions, recommendations and resolutions made.

10. ANNEXES

Annex (1): Grievance Form

Reference No:

Full Name

Note: *you can remain anonymous if you prefer or request not to disclose your identity to the third parties without your consent*

My first name_____

My last name_____

I wish to raise my grievance anonymously

I request not to disclose my identity without my consent

Contact information

By Post: Please provide mailing address:

Please mark how you wish to be contacted (mail, telephone, e-mail).

By Telephone: _____

By E-mail _____

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: _____

Please return this form to: [name], _____[company name] _____

Address_____: Tel.:_____ or E-mail: _____

Annex (2): Site photos

Figure 2: View of the damage from interior

Figure 3: View of the damage span

Figure 3: View of both left and right Bridges

Figure 4: View of the Right Side Bridge with temporary embankment on damaged span

Annex (3): Consultation photos

هيئة شيشين الكونكريتية

الاسم: سعيد فاضل ابراهيم

المهنة: معرطف

تاريخ الزيارة: ٢٠١٦/٤/٢٠

س١:هل تعتقد ان عملية اعادة بناء الجسر / الطريق له اثار ايجابية من الناحية الاجتماعية على السكان القاطنين في المناطق المحيطة بالجسر / الطريق؟

نعم ✓ كلا

س٢:هل هنالك ادعاءات او مطالبات من قبل السكان المحليين بعائدية الارض المقام عليها الجسر / الطريق؟

نعم كلا ✓

س٣:بسبب اعمال اعادة البناء للجسر / الطريق هل تمت عملية ازالة لمحاصيل زراعية او اشجار او اي غطاء نباتي تعود عائديته لمواطنين او السكان المحليين؟

نعم كلا ✓

س٤: هل تضررت مصالح المواطنين القاطنين بالقرب من الجسر / الطريق بسبب اعمال اعادة البناء؟

نعم كلا ✓

س٥:هل هنالك اي بنى تحتية مؤقتة او دائمية تلعب دورا اساسيا في النشاطات الحياتية اليومية للسكان ستتأثر بعملية تاهيل الجسر / الطريق؟

نعم كلا ✓

س٦:هل ان اعمال اعادة اعمار الجسر / الطريق ستتسبب باجراءات اعادة لتوطين لشخص(والو) لاشخاص الى مناطق جديدة؟

نعم كلا ✓

س٧:هل تمت عملية استخدام منطقة بناء الجسر / الطريق بطريقة ما من قبل السكان المحليين ،علما ان الارض تابعة للدولة؟

نعم كلا ✓

س٨:هل تتوقع وجود تأثيرات اجتماعية سلبية بالمنطقة نتيجة اعمال اعادة التأهيل؟ماهي؟

نعم كلا ✓

س٩:هل هنالك تغييرات ديموغرافية او ضرر في النسيجالاجتماعي من جراء اعمال اعادة التأهيل؟

نعم ✓ كلا

س١٠:ماهي المجاميع الاكثر ضعفا و هشاشة التي من المحتمل ان تتأثر باعمال اعادة الاعمار؟

نعم كلا لا توجد

س١١:هل سيعزز المشروع من عمليات النقل و يقلل من انعزالية المجتمعات الموجودة بالقرب من منطقة الجسر / الطريق؟

نعم ✓ كلا

س١٢:هل يحتاج المواطنون المقيمون بالقرب من الجسر / الطريق الى وضع اعلامات تحذيرية او استدلالية لزيادة معدلات الامن و الامان لمستخدمي الجسر / الطريق

نعم ✓ كلا

سيف فاضل ابراهيم

مديرية شرطة الكفل

الاسم: محمد احمد كظوم

المهنة: موظف

تاريخ الزيارة: ٢٠١٦/٤/٢٠

س١:هل تعتقد ان عملية اعادة بناء الجسر / الطريق له اثار ايجابية من الناحية الاجتماعية على السكان القاطنين في المناطق المحيطة بالجسر / الطريق؟

نعم ✓ كلا

س٢:هل هنالك ادعاءات او مطالبات من قبل السكان المحليين بعائدية الارض المقام عليها الجسر / الطريق؟

نعم كلا ✓

س٣:بسبب اعمال اعادة البناء للجسر / الطريق هل تمت عملية ازالة لمحاصيل زراعية او اشجار او اي غطاء نباتي تعود عائديته لمواطنين او السكان المحليين؟

نعم كلا ✓

س٤: هل تضررت مصالح المواطنين القاطنين بالقرب من الجسر / الطريق بسبب اعمال اعادة البناء؟

نعم كلا ✓

س٥:هل هنالك اي بنى تحتية مؤقتة او دائمية تلعب دورا اساسيا في النشاطات الحياتية اليومية للسكان ستتأثر بعملية تاهيل الجسر / الطريق؟

نعم كلا ✓

س٦:هل ان اعمال اعادة اعمار الجسر / الطريق ستتسبب باجراءات اعادة لتوطين لشخص(و\او) لاشخاص الى مناطق جديدة؟

نعم كلا ✓

س٧:هل تمت عملية استخدام منطقة بناء الجسر / الطريق بطريقة ما من قبل السكان المحليين ،علما ان الارض تابعة للدولة؟

نعم كلا ✓

س٨:هل تتوقع وجود تأثيرات اجتماعية سلبية بالمنطقة نتيجة اعمال اعادة التأهيل؟ماهي؟

نعم كلا ✓

س٩:هل هنالك تغييرات ديموغرافية او ضرر في النسيجالاجتماعي من جراء اعمال اعادة التأهيل؟

نعم كلا ✓

س١٠:ماهي المجاميع الاكثر ضعفا و هشاشة التي من المحتمل ان تتأثر باعمال اعادة الاعمار؟

نعم كلا لا توجد

س١١:هل سيعزز المشروع من عمليات النقل و يقلل من انعزالية المجتمعات الموجودة بالقرب من منطقة الجسر / الطريق؟

نعم ✓ كلا

س١٢:هل يحتاج المواطنون المقيمون بالقرب من الجسر / الطريق الى وضع اعلامات تحذيرية او استدلالية لزيادة معدلات الامن و الامان لمستخدمي الجسر / الطريق

نعم ✓ كلا

محمد أمين كاظم