EAME
Earth & Marine Environmental Consultants

Project Rios
Sewage and Rainwater Systems in the City of Hillah in the Babylon Governorate of Iraq

Environmental and Social Impact Assessment (ESIA)
Non-Technical Summary (NTS)

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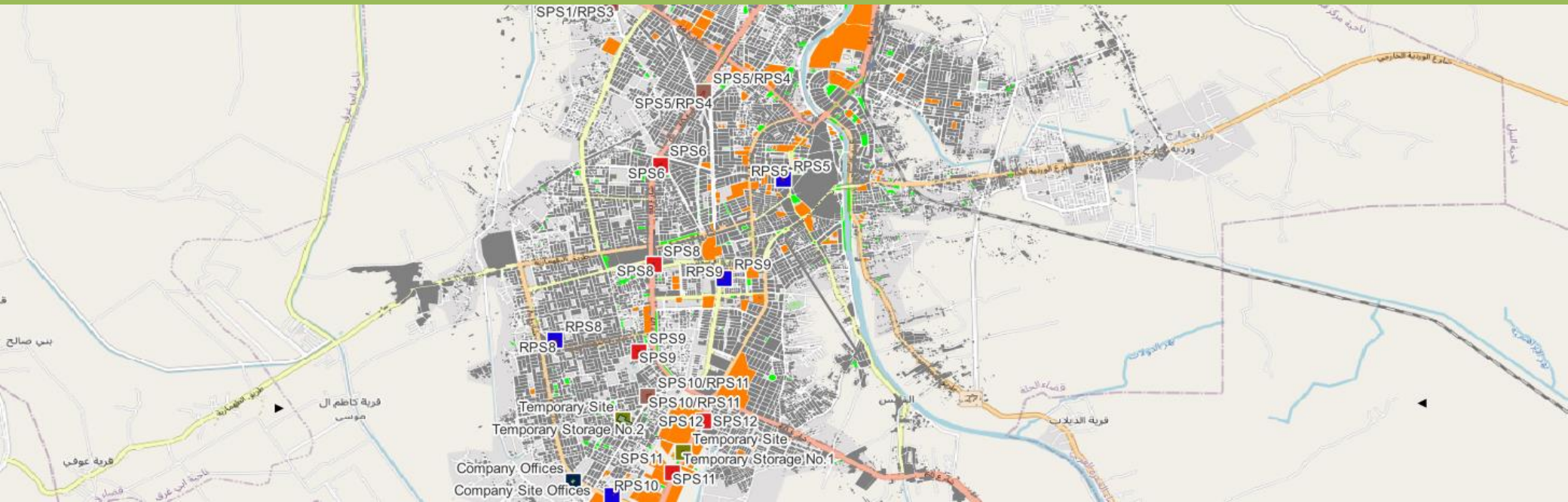


Introduction

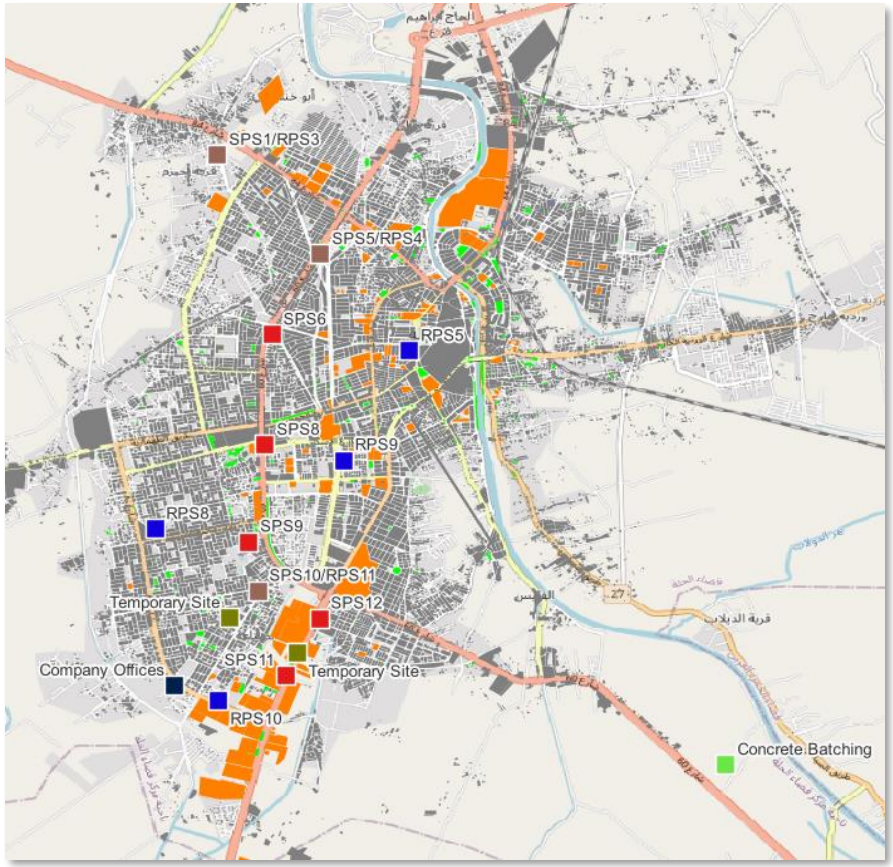
Proposed Development

The Project forms part of a multiphase strategy for the whole of the Governorate intended to substantially improve and upgrade stormwater and wastewater management infrastructure and capacity. This phase of the Project (and the subject of this ESIA) includes:

- Five new sewage pumping stations;
- Four new rainwater pumping stations;
- Three combined sewage/rainwater pumping stations;
- One temporary cement batching plant;
- Two temporary laydown/storage areas;
- One temporary engineering field office; and
- an extensive local sewage and storm water transport (pipeline) network to connect these new pumping stations to the wider network, effluent treatment plant and river outfalls.

Overall, the development sites (footprint) associated with this Project are relatively small and spread throughout the city.

The surface water aspects of the Project will utilize the existing discharge points into the Shatt Al Hillah channel (i.e. there will be no additional discharge points). The sewage collection systems will transfer collected material to the existing Hillah Wastewater Treatment Plant (WWTP).



Project Need

The Need for Development

The existing sewage and rainwater management infrastructure in Al-Hillah District is old and inadequate in terms of capacity, condition, and capability to manage rainwater and wastewater and to meet the demand of the expanding population of the district. As a result, there is a demonstrable need for the installation of a system to support the poorly functioning existing infrastructure.

As such, The Ministry of Construction, Housing, and Municipalities together with the Governorate of Babel have developed a three-phase plan to upgrade the sewage drainage system of the district. This report covers Phase 1 only.

- *11 Sectors* of Sewage Networks with Main Lines
- *19 Sectors* of Rainwater Networks with Main Lines
- *33 Pump Stations* (Sewage & Rainwater)

Phase (1)	Phase (2)	Phase (3)
Sewage Networks Length: 201.92 Km **Covered Sectors: (2) Zones:** (G, H)	**Sewage Networks Length:** 236.5 Km **Covered Sectors: (6) Zones:** (A, B, E, I, J, K)	**Sewage Networks Length:** 111.7 km **Covered Sectors: (3) Zones:** (F,D,C)
Rain Water Network Length: 157.59 Km **Covered Sectors: (5) Zones:** (F, I, J, K, H)	**Rain Water Network Length:** 218.5 Km **Covered Sectors: (6) Zones:** (A, B, D, C, G, E)	**Rain Water Network Length:** 137.5 Km **Covered Sectors: (8) Zones:** (M, L, N, O, P, Q, R, S)
Sewage Pump Stations: SPS**8**, SPS**1**, SPS**5**, SPS**6**, SPS**9**, SPS**10**, SPS**11**, SPS**12**	**Sewage Pump Stations:** SPS**7**	**Sewage Pump Stations:** SPS**2**, SPS**3**, SPS**4**, SPS**13**, SPS**14**
Rain Pump Stations: RPS**3**, RPS**5**, RPS**9**, RPS**11**, RPS**4**, RPS**8**, RPS**10**	**Rain Pump Stations:** RPS**1**, RPS**2**, RPS**6**, RPS**7**, RPS**12**, RPS**13**	**Rain Pump Stations:** RPS**14**, RPS**15**, RPS**16**, RPS**17**, RPS**18**, RPS**19**
Estimated Time for Completing the Works: 2.5 Years (900 Days)	**Estimated Time for Completing the Works:** 2.5 Years	**Estimated Time for Completing the Works:** 1.5 Year

This Project is essential to the Governorate of Babel as it aims to ensure the following is achieved:

- create a healthy environment for the individuals and community and preventing the spread of infectious diseases.
- Improve the environmental sanitation facilities and building enclosed drainage pipe networks for both sewage water and rainwater.
- Allow Al-Hillah District to expand and build effective treatment systems in the future for sewage, solid waste, and industrial waste.
- Remove waste from the urban residential area before it begins to discompose, decay, and release hazardous substance.

Completing this Project will allow more than 3,000,000 citizens to benefit from a proper sewage and rainwater infrastructure.

Environmental and Social Impact Assessment (ESIA)

Purpose

The purpose of the ESIA Report is to set out the objectives of the assessment process, define the scope of work, describe the baseline environmental and social conditions and methodologies for assessing the impact of the Project on the baseline environmental conditions and the proposed mitigation methods for ameliorating significant impacts.

The ESIA is needed to evaluate the environmental and social impacts of Project-related activities during the construction, operational and decommissioning phases. EAME has prepared the ESIA as a documentary record of the environmental and socioeconomic impacts of the Project.

Earth & Marine Environmental Consultants Ltd

EAME is a multi-disciplinary Environmental, Social and Governance (ESG) consulting practice, specializing in environmental and social impact assessment, monitoring and due diligence in emerging markets. The company has been active in ESIA projects since its formation in 2010 and has provided such reports for numerous International Finance Institutions and Export Credit Agencies over that period. The company's principals have over 25 years' experience in this arena and have been active on a wide range of environmental and social projects in Iraq since 2010.

The company employs environmental and social specialists in the UK and Iraq and is competent and experienced in the technical work areas involved with this ESIA.

Stakeholder Engagement

Introduction

A Stakeholder Engagement Plan (SEP) has been developed which will apply throughout the Project lifecycle. The document sets out how potential stakeholders (parties whose activities may be affected by the Project or who may have an interest in it) will be communicated with, informed, and responded to throughout the full Project lifetime (i.e., construction, operation and decommissioning). The SEP outlines a plan for stakeholder engagement which will:

- provide timely information about the Project and its potential impacts on affected communities and other stakeholders;
- provide opportunities to those groups to voice their opinions and concerns in a way which is most appropriate to their circumstances; and
- provide an opportunity for feedback to, and discussion with, those communities concerning measures proposed.

The SEP is a live document that will form part of the Principal Contractors project management system.

Engagement

As part of the Scoping Phase and for this ESIA, the following stakeholders were provided with project information, ESIA methodology and anticipated impacts.

Stakeholder	Status	Response Received	Assessment
Babylon Water Directorate	Contacted	No	N/A
Babylon Municipality	Contacted	No	N/A
Ministry of Environment	Contacted	No	N/A
Ministry of Health	Contacted	No	N/A
Ministry of Water Resources	Contacted	Yes	Positive
Ministry of Housing and Reconstruction	Contacted	No	N/A
Ministry of Public Work	Contacted	No	N/A
General Directorate of Roads & Bridges	Contacted	Yes	Positive
Babel Water Authority / Directorate Babylon	Contacted	Yes	Positive
Ministry of Environment - Department of Environmental Protection & Improvement. Babylon	Contacted	Yes	Positive
The United Organization for Human rights	Contacted	No	N/A
Babylon Organization for Human Rights	Contacted	No	N/A
Asen organization for Human rights	Contacted	No	N/A
Fishermen (Shatt Al Hillah)	Contacted	N/A	N/A
Sensitive receptors in the Project AoI including IDP's, disadvantage communities and female led households that may exist in the AOI and be identifiable	None Identified	N/A	N/A
Nature Iraq (non-governmental organisation with particular focus on wetland avifauna)	Contacted	No	N/A

Baseline Surveys

Baseline Surveys

Baseline Surveys were undertaken to determine the quality of the environmental and social baseline as it presently exists (i.e. what are the conditions that would prevail on and around the Project sites if the development did not proceed.

The baseline assessments considered air quality, noise, soil quality and surface water quality.

Air Quality

A baseline air quality assessment was undertaken at seven locations. The selection of monitoring sites was based in part on providing spatial spread across the City but was also dictated by available (suitable) structures to fit sampling tubes to whilst ensuring the security of the monitoring equipment. Where possible the diffusion tube monitoring was supplemented using portable air quality monitoring equipment. Determinands subject to assessment included Benzene, toluene, ethylbenzene, and xylenes (BTEX), Nitrogen dioxide, Sulphur dioxide and Particulate Matter (PM).

Noise

The noise assessment took place at all the proposed rainwater and sewage stations, to assess the representative baseline conditions. Each location was monitored for a maximum of 1 hour (allowing for the local security situation). It should be noted that all locations are located within the major urban area of Hillah hence there are substantial and varied surrounding anthropogenic noise sources. It was not possible to monitor the noise levels at different times of the day to try and capture some of the local variations.

Soil Quality

In-line with the scope of works, ten composite soils samples were collected from RPS10, SPS11, SPS12, SPS10/RPS11, SPS9, RPS8, SPS8, RPS5, SPS6 and RPS4/SPS5 respectively and were subject to analysis and screening against international assessment criteria.

Although each of the sites was contaminated with fly-tipped wastes with unknown provenance and there had been some mixing of this with the site soils, the materials present did not exhibit any asbestos presence, or heavy metals or hydrocarbon species above the selected screening values. These materials and the sites therefore are not considered to be chemically contaminated or hazardous.

Surface Water

In-line with the scope of works three water samples were collected along the Shatt al-Hillah i.e. RPS4 (upstream), RPS8 and RPS10 (downstream).

It is recognised that the surface water sampling campaign was limited in scope and nature, comprising only three samples taken at one specific point in time. In order for there to be a comprehensive baseline assessment of the quality of a dynamic water course, there would need to be multiple sample rounds over an extended period of time for a comprehensive suite of parameters. It is important to note that the Project will not discharge any water direct to the Shatt al-Hillah. All waters (e.g. dewatering) will be treated by Hillah wastewater treatment plant (WWTP) prior to discharge.

Environmental and Social (E&S) Impacts Summary

Construction Phase E&S Impacts

A summary of the predicted impacts (associated with the construction phase of the Project) are summarized below.

It is important to note that the residual impact considers the proposed mitigation and management techniques.

Aspect	Duration	Consequence	Scale	Residual Impact
Noise	Temporary	Major Adverse	Local	MODERATE
Air Quality	Temporary	Minor Adverse	Local	LOW
Land and Groundwater Quality	Temporary	Minor Adverse	Local	LOW
Surface Water	Temporary	Minor Adverse	Local	LOW
Waste Management	Temporary	Minor Adverse	District	LOW
Socio-economic Conditions	Temporary	Positive	Local	BENEFICIAL

Operational Phase E&S Impacts

A summary of the predicted impacts (associated with the operational phase of the Project) are summarized below.

It is important to note that the residual impact considers the proposed mitigation and management techniques.

Aspect	Duration	Consequence	Scale	Residual Impact
Noise	Permanent	Minor Adverse	Local	LOW
Air Quality	Permanent	Minor Adverse	Local	LOW
Land &Water Quality	Permanent	Minor Adverse	Local	LOW
Surface Water	Permanent	Minor Adverse	Local	LOW
Waste Management	Permanent	Minor Adverse	District	LOW
Socio-economic Conditions	Permanent	Positive	Local	BENEFICIAL

Overall Conclusion

Introduction

The existing sewage and rainwater management infrastructure in Al-Hillah District is old and inadequate in terms of capacity, condition, and capability to manage rainwater and wastewater and to meet the demand of the expanding population of the district. As a result, there is a demonstrable need for the installation of a system to support the poorly functioning existing infrastructure.

Project Impacts

It can be seen that except for short-term temporary noise impacts, which could be moderate in scale given the close proximity of residential dwellers, all of the predicted impacts (with the application of appropriate control and mitigation measures) are low.

Furthermore, the project sites and their development do not involve the relocation, resettlement or disturbance of any third-parties or the disruption of any livelihoods, so resettlement plans and impacts on indigenous communities have been discounted from the assessment.

Similarly, a review of the national cultural heritage and archaeological sites database and consultation with experts has determined that none of the project sites have significant potential archaeological merit and a chance finds procedure employed during the earthworks phase will be sufficient to deal with this issue.

Conclusions

The overall conclusion of the socio-economic impact assessment is that the project implementation will provide an overall significantly positive societal benefit in that the improved provision of rainwater and sewage management will be beneficial to the whole community. There will, however, be short-term temporary construction related impacts that could affect traffic flows for example, but these can be readily mitigated to **LOW** impact status by effective traffic and transport management. Moreover, any negative construction related impacts will be off-site by the construction employment and supply opportunities provided that the developers adhere to good industry labour and security management practices.

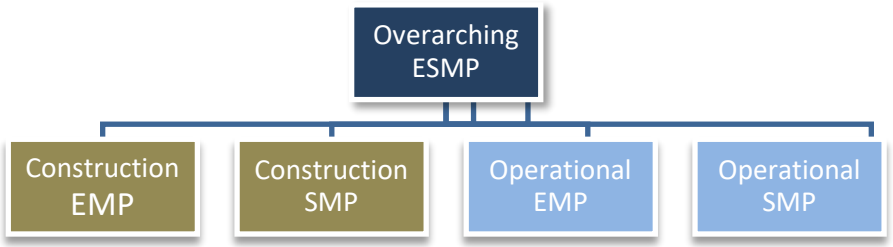
The overwhelming impact of the proposals on socio-economic factors is moderately **POSITIVE**.

Environmental & Social Management Plan

Environmental & Social Management Plans

A key deliverable from the ESIA process is the development of a Project specific Environmental & Social Management Plans (ESMPs).

These documents set out (in some detail) how all of the anticipated environmental and social impacts identified through the ESIA process, will be managed and mitigated.



The ESMPs cover the following activities (as a minimum):

- E&S Policy
- Construction Environmental Management
- Waste Management Plan
- Air Quality Management Plan
- Soil Management Plan
- Noise Management Plan
- Water Management Plan
- Archaeological and Chance Finds Plan
- Materials Management Plan
- Traffic Management Plan
- Stakeholder Engagement Plan (SEP)
- Occupational Health, Safety and Security (Community & Workers)
- Operations Environmental Management

The management plans are live documents that will be subject to review and update and will be fully incorporated into the Principal Contractors overarching Environmental, Quality, Health, Safety and Security management systems.

Project documentation has been aligned with Good International Industry Practice (GIIP).

Grievance Mechanisms

A Community Liaison Officer (CLO) has been appointed and will serve as an information conduit between the project team and the local community as the Project develops.

There is a formal grievance procedure for any persons who feel they have been adversely affected by the Project to raise this with the Project team via the CLO.

Full copies of all ESIA related documentation can be obtained from www.eame.co.uk

Earth & Marine Environmental Consultants Ltd
UK | Iraq | Kurdistan Region of Iraq | Guyana
7th Floor, West One, Forth Banks, Newcastle Upon Tyne, NE1 3PA, UK
Tel: +44 (0)800 130 3408 | enquiry@eame.co.uk | www.eame.co.uk