



إحدى شركات مؤسسة البترول الكويتية
A Subsidiary of Kuwait Petroleum Corporation

Non-Technical Summary

KOC Drilling Operation- SAIPEM S.p.A RIG 5946 January 2021

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Introduction

This Non-Technical Summary Report provides an overview of the main environmental & social findings from the Environmental & Social Impact Assessment (ESIA) study considering all phase of Drilling Project in KOC. The content of this non-technical summary report is summarized below:

- Section 1 gives Non-Technical Summary Report of KOC Onshore Drilling comprehensive ESIA
- Section 2 provides a Non-Technical Summary Report of SAIPAM SPA Kuwait Drilling Rig 5946

It is important to note that this non-technical summary report does not, and is not intended to, convey all the information relating to the aspects and impacts of the Project. Its intention is to present key information, describe the main findings and conclusions, enabling the reader to understand the significant environmental effects of the Project without needing to refer to the detailed Environmental and Social Impact Assessments study report.

Non-Technical Summary Report of KOC Onshore Drilling ESIA Project overview

Kuwait Oil Company (KOC) is state owned company operates under the umbrella of Kuwait Petroleum Corporation (KPC). KOC scope includes exploration, drilling and production of oil and gas in the State of Kuwait. KOC represents one of the pillars of the national economy in the State of Kuwait, and one of the largest global oil companies. KOC contributes to high revenues enabling Kuwait to implement development programmes at all levels. KOC has developed its 2030 vision, mission and institutional capacity in line with the national vision of Kuwait.

KOC has developed Integrated Assets Plans (IAPs) to achieve an increase and enhancement of Crude Production Capacity. Under the IAPs framework and via this project, Drilling of New Wells in South East Kuwait Asset During 2017-2022, KOC intends to drill a cluster of new oil and gas wells in South east Kuwait (SEK) with the aim to increase the production capacity. The project will also contribute to the overall SEK production target. The environmental permit for the project is needed by March 2018 to maintain KOC production plan as scheduled.

M/S. Wataniya Environmental Services Company (WES) has conducted the ESIA, as a class "A" approved Environmental Consulting Firm approved by Kuwait Environment Public Authority (KEPA). The project scoping report was completed and submitted to KEPA on December 2017 and approved on January 2018. The ESIA report has been prepared in accordance with the ESIA system in the State of Kuwait Decree 2/2015, as well as KOC procedures. The ESIA process was carried out during November 2017 to February 2018. The ESIA scope covers drilling and associated activities and will not entail production stages.

Environmental & Social Baseline Conditions

Land Use/Cover

Project specific land use and land cover map generated using GIS and Remote Sensing Technology. It has been produced to provide instant information on landuse and land cover in the project area

and its vicinity. The project proposed well locations spread over large area, where the land cover in the project site and its vicinity is mainly inland sabkha, active sand sheet and rugged sand sheet. All the wells are located within SEK oil fields and the land use in the project site is only KOC oil fields and its development and production facilities.

Surface Geology

Kuwait's desert can be divided into four physiographic provinces: Al-Dibdibba gravelly plain; southern desert flat; coastal flat; and coastal hills (Khalaf et al., 1984). Major geological surface features at the project site consist mainly of Holocene aeolian sand deposits, with frequent undifferentiated Far and Ghar formation, lower diddibah formation. The general geology maps shows Far and Ghar Formations, Active Sand Sheet and Marine Sand features at the project area.

Topography

The land surface of Kuwait is flat and slopes gradually north-eastward with an average gradient of about 2m/km. A site-specific topographic map for the study area has been generated. The map shows that elevations in the project area vary from 45 m to the most northern side to more than 110 m above sea level to the most eastern side. In general, the project site varies in its topographical levels. By comparing the elevations at almost similar well location, the elevations at the same drilling areas is almost flat with some changes in the levels of 10 m in average level.

Geomorphology

The project geomorphologic map of the study area shows that smooth sand sheets dominate the project area with less presence of active sand sheets.

Ambient Air Quality

KOC operates several Ambient Air Quality Monitoring Stations in KOC different oil operational areas covering all oil facilities. Six months ambient air quality monitoring data provided by KOC has been used to describe ambient air quality at project area. All the assessed parameters were found within the limits set in Decree 8/2017 except Ozone and Sulphur Dioxide.

Ambient Noise Measurements

Noise level measurements have been conducted at five locations, where monitoring has been conducted for a continuous period of 24 hrs. Locations have been selected close proximity to the main sensitive receptors. Measurements of noise level have been found to be lower than ambient noise criteria set out by KEPA regulations (Decision 8/2017).

Soil Quality

Soil samples have been collected from the different locations in order to assess soil quality at the project site. Samples have been analyzed mainly for contamination indicator parameters. Results show that almost all analyzed parameters are under criteria set by KOC's remediation standards.

Lithology

The lithological features of the SEK well drilling locations comprise Dibdibah formation, fars and Ghar formation and aeolian sand formations. The Dibdibah Formation in Kuwait consists of all beds above the fossiliferous horizons of the Lower Fars Formation except for Recent deposits. The formation is composed of sands and gravels with minor clay and gypsiferous sandy clay beds. The beds show poor to medium stratification and in places the sands are cemented by calcium carbonate and gypsum. The upper part of the formation consists of coarse gravels deposited in sheets and

trains. These gravels are composed of metamorphic and igneous rock debris. The lithology of Ghar formation consists of current-bedded coarse-grained to pebbly sandstones which show a nodular sugary weathering surface. Some of the sandstones are firmly cemented and calcareous, and a few green clay beds are scattered through the section. (Source: Geology of the Arabian Peninsula, Kuwait, USGS Publication).

Sand Encroachment

Kuwait is classified into 3 sand movement zones: high, medium and low. Site specific sand movement map has been generated based on Kuwait classification provided by Sand movement of Kuwait in (Beatona, 2010). Sand encroachment map shows the project proposed wells fall under Low exposure to sand encroachment except 4 wells located within western side of SEK area which will require mitigation measures to be in place during drilling activities according to article (47) of law number 42/2014.

Protected Areas

The nearest protected area to the proposed SEK well drilling project site is Al-Qurain Hill Natural Reserve which is located at a distance of 9.78 km towards south of the proposed well locations and Umm Gudair protected area which is located at 26 km in South west of the project site.

Terrestrial Ecology

Terrestrial ecological survey was conducted on February 2018. The result in the present study showing the average percentage cover at the Burgan oil field was (7%) per meter square, meanwhile, the average percentage cover at the Magwa oil field was (39%) per meter square. There was no fauna observed in the proposed project location during the survey.

Roads Networks & Site Access

The project site is connected to main areas in Kuwait through main roads such as Sulibiya Road (604) to the south west, 212 to the North, 7th Ring road to the North, 306 road towards South East, 304, Magwa road (51) to South West and Al Artal military road. In addition, there is a network of paved and unpaved roads serving the project site. The rig itself will not use public roads but will use rig rods with rig roads crossing the public roads.

Surrounding Resident Community

The project will be implemented in Burgan and Magwa oil fields. The wells to be drilled for SEK area are all located well within KOC fence boundary. The direct surrounding community includes mainly oil production community, with different oil facilities, offices and on-site labor camp. The major nearest township is Ahmadi which is at a distance of 5.2 km east to the project site, Kabd area at 11.74 km towards south west direction and Sabah Al Ahmad residential area at a distance of 12.5km towards south direction. To the West side of the oil field, Ahmed Al Jaber Air Base is located with the nearest point to the field of about 9.67 Km.

Impacts & Mitigation

The project activities will be associated with positive as well as negative potential environmental and social impacts. The key positive impact of the project is national economic growth supporting the country development plans in all levels, in addition to identifying new employment opportunities. KOC has adopted spacing and management systems to avoid or reduce all the

environmental and social impacts of its projects. The project environmental and social impacts are controlled by KOC management procedures. In addition, KOC has developed procedures to respond to the environmental and social impacts during abnormal and emergency operating conditions to minimize the impacts to minimum possible levels. The potential environmental negative impacts of the projects are emissions to air, high noise levels, land contamination and ecological impacts. The potential social impacts of the project are gatch material resources consumption and stress on public potable water supply if needed during the drilling. There is no anticipated public community negatively affected by the project. The below sections provide details on the impacts and mitigation measures.

Mitigation by Drilling Pad Sitting

Site selection of the drilling location and executing the works outside the zone of influence is understood to have significant positive reduction of the environmental and social risks of the project activities. KOC has adopted sitting procedures in order to avoid/minimize the environmental and social impacts of the well location.

Well Control & Blowout Prevention

During drilling, incidents such as rig explosions and well blowout could occur, which would have severe and immediate impacts on the environment and surrounding areas, as well as social impacts including risk to on-site human resources and KOC reputation. Risks may include groundwater contamination, oil spillages leaking into ground surface and gas releases to the atmosphere, fatal or injuries of labors. Risks and impacts associated with these kinds of accidental spills apply to both drilling and production of the onshore lifecycle.

To avoid well blowout, the drilling rig is equipped with well control set of equipment. The well control equipment set is an important part of the drilling rig equipment. The main purpose of well control equipment is to control the wellhead pressure during the operations, prevent any blow out hazard effectively, and ensure safe operations.

Emissions to Air

During drilling operations, the emissions to air vary depending on the drilling operating conditions, normal or emergency operating conditions. During normal operating conditions, the anticipated emissions to air are dust emissions, vehicles and equipment exhaust emissions, temporary flaring emissions and burn pit emissions resulted from burning of the drilling fluids. During emergency operating conditions and well blow out, emissions to air are significant and cause degradation of ambient air quality within the zone of influence.

Cold Toxic/Sour Venting

Well Control & Blowout Prevention is the normal control adopted to prevent such incident. Well ignition is the mitigation action followed in KOC in case of catastrophic wellhead failure, toxic/sour venting occurred, and all well safety controls measures are lost. Well ignition may be required to remove a threatening H₂S hazard in order to ensure workers and public safety. The ignition criteria assessment and procedures are provided in KOC Well Ignition Procedure.

Flaring & Burn Pit Emissions

As per the Well Program, Oil & Gas is flowed during well testing in all exploratory wells, Jurassic Gas wells and some of the Development Drilling wells, where the well fluids are invariably flared in Flare pit. Flaring is a safe option relative to cold venting during well testing or other operations due to

associated toxic and flammable properties. Flaring of gasses, however, releases its combustion products along with unburnt gases that are classified as greenhouse gasses and degrade the ambient air quality. Temporary mobile flaring system may be required during drilling and well testing works. The mitigation measures proposed are mainly:-

1. Implement/follow KOC procedures for sitting and safe distance procedures (Drilling Works Sitting)
2. Flare pit design
3. Green flaring to achieve acceptable targets
4. Using H₂S scrubbers to reduce H₂S concentrations in the atmosphere during flaring operations.

Dust Emissions

Trenching, backfilling, movement of vehicles, excavation and other earth works during the drilling and supporting activities are the anticipated activities which might have potential for dust emissions. Dust emissions controls are proposed such as dust suppression and some site practices.

Equipment & Vehicles Emissions

Equipment and vehicles exhaust emissions are also anticipated during the drilling activities. Emissions anticipated are PM, NO_x, CO, CO₂, un-burnt hydrocarbons (HC) and Volatile Organic Compounds (VOCs). The drilling machinery shall be standard models and the equipment and vehicles shall have standard exhaust pipes. The emission rates of pollutants are controlled through proper engine maintenance and tuning. NO_x emissions control shall be applied to power generation equipment. All emissions rates from fixed sources and vehicles emissions shall comply with executive bylaw decision number 8/2017.

Drilling Noise

Equipment used for site preparation, and transportation will generate noise levels. In addition, drilling operations will generate higher noise levels than ambient criteria. Sources of noise during drilling entail rigs, generators, pumps, compressors, workshops, engines, etc. Implementation of applicable KOC procedures including safe distances requirements would effectively reduce the ambient noise levels to acceptable limits. Noise is best mitigated by distance. The further from receptors the lower the impact. The second level of noise mitigation is direction. Directing noise-generating equipment away from receptors greatly reduces associated impacts. Timing also plays a key role in mitigating noise impacts. Scheduling the more significant noise generating operations during daylight hours provides for tolerance that may not be achievable during the evening hours.

Ecological & Biological Impacts

The result in the terrestrial ecological survey shows that the average percentage cover at the Burgan oil field was (7%) per square meter; meanwhile, the average percentage cover at the Magwa oil field was (39%) per meter square. This is may be due to that most land at Magwa filed covered by water bodies encouraging the plant to survive and grow. Five species were identified at 19 locations. Given the site vegetation cover, the magnitude of the impact is expected to be medium.

At some locations, the drilling may lead to clear or degrade existing vegetation cover. Mitigation measures include requirements for mitigation measures as set out by KOC Management of Wildlife Habitat procedure. In addition, prior drilling ecological surveys, habitat enhancement program and management of chemicals and waste and site restoration would be preferred.

Land Contamination

Land contamination from drilling operation is mainly anticipated from different types of solid and liquid waste streams anticipated during drilling activities. The key waste streams that anticipated causing land contamination are:-

1. Disposal of OBM cuttings
2. Disposal of WBM cutting
3. Disposal of dead volume of the drilling mud
4. Disposal of sewage waste from rig site office and rig camp
5. Soil contamination at flaring and burn pits areas
6. Accidental spill of mud and chemicals
7. Accidental spill of fuel
8. Accidental leak from the machinery and equipment
9. Office and domestic waste

In the future drilling works, there will not be any OBM cuttings pits. KOC has constructed and operated and two OBM cuttings treatment plants. The first plant is located at West Kuwait and is used to treat OBM cuttings resulted from drilling works at West Kuwait and South East Kuwait Assets. The second plant is located at North Kuwait and is used to treat OBM cuttings resulted from drilling works at North Kuwait asset. Thermal Desorption Technology is used in West Kuwait OBM cuttings treatment plant. Sewage waste generated from rig site office and camp are treated by Package Sewage Treatment Plant. The sewage wastewater is to be treated up the quality meets Table 5 of decision 12/2017.

Drilling and Technology (D&T) Directorate Waste Management Plan has set a comprehensive approach for the management of all types of waste which are anticipated from drilling works as shown in the below table.

Waste management current practice in D&T directorate, Waste Management Plan (April 2017)	
Generated Waste	Management Strategy
Non-Hazardous Waste	Sent To approved Waste Handling Facility
Hazardous Waste	Approved Waste hauler with Waste Manifest
OBM Cuttings	OBM Cutting Treatment Plant
WBM Cuttings	Stored in Pit and later on backfilling
Sewage	Packaged Sewage Treatment Plant
Domestic Kitchen waste	Approved Waste Hauler to Main Waste collection
Laundry waste	Packaged Sewage Treatment Plant
Used Kitchen Oil	Recycling by Kuwait Lube Oil Co
Used Engine Oil	Recycling by Kuwait Lube Oil Co

NORM Management during Drilling Operation

Naturally Occurring Radioactive Materials (NORM) are present at various concentrations in the Earth's crust and can be concentrated and enhanced due to the processes involved with the recovery of oil and gas. Uncontrolled processes and activities associated with the elevated levels of NORM that can contaminate the environment as well as pose a health risk to working force in KOC. NORM is managed by Implementation of NORM Management procedure that will enable KOC to prevent all employees from the occupational illnesses that may be the outcome of potential

exposure to NORM. The procedure covers the safe storage and transportation of NORM contaminated materials / equipment / wastes in KOC.

UXO Management

Unexploded Ordnance (UXO) material is managed by KOC Procedure for Handling of Explosive Materials, Substance and Explosive Ordnance Disposal (EOD).

Seismic & Sand Encroachment Hazards

Data collection and review of the project baseline maps showed that the project is exposed to seismic and sand encroachment natural hazards. Seismic hazards are expected and would have impacts on the project activities. However, given applicable KOC management procedures, impacts can be mitigated and controlled. KOC has developed design guidelines that take seismic hazards into account during project design.

Four wells are exposed to high sand encroachment hazard. Sand encroachment mitigation measures guidelines are suggested to comply with article (47) of the environmental protection law 42/2014. Protection installations are common in Kuwait with different interventions based on the industry. To control sand movement in desert dune environment engineering measures could be used. The aim of introducing engineering measures is to increase surface roughness and/or by increasing the threshold velocity that is required.

Surrounding Community

All the proposed wells are located in SEK oil fields. Therefore, direct surrounding community includes mainly oil production community, with different oil facilities, offices and on-site labour camps.

Stakeholders Consultation

Stakeholder consultation has been conducted through an ESIA questionnaire, which has been prepared by WES, and distributed to KOC employees, being identified as the social receptors. The questionnaire has been setup to introduce the project scope and accordingly get feedback from respondents on environmental and social aspects of the projects. The main focused areas and respondents feedback are Economic impacts, Potential environmental impacts, Relation between the project advantages and disadvantages, Most critical environmental issues and Respondent's suggestions or recommendations. Respondents agree that this project will help to boost Kuwait Economy by increasing production of crude and gas for export, refinery feed and internal use (power plants) and expected to create direct employment opportunities in O&G, in addition to indirect opportunities such as in transportation sector. Most respondents agree that the project potential environmental impacts would entail ambient air quality (during well testing flaring) including GHG, dust generation, local increase of noise level, resource consumption (water, gatch, fuel, energy, etc.), contamination of drilling site (land/soil) due to leak/spill and improper handling of drilling mud/cutting, waste & wastewater disposal including hazardous wastes, generation of sewage water, impact to public road and transportation, habitat disturbance and fragmentation, radio hazards, loss of plant biodiversity. Most respondents agree that the key environmental issues are likely to be management of drilling mud cuttings, oil spills, and management of wastes including hazardous wastes. Minor respondents claim that the most critical issues are workers HSE, and well blow out. 100% of respondents have confirmed the advantages of the project are more than its disadvantages. All recommendations have been covered in this ESIA.

Impacts on Groundwater Aquifer Resources

During drilling, water will be needed for various operational activities including drilling. Therefore, KOC intends to source water from existing groundwater resources. Impacts on the groundwater consumption have been assessed to be low because the daily use is estimated low compared to the field production rate. Additionally, the targeted groundwater field aquifer is brackish to saline. However, water conservation measures are applicable by KOC.

Gatch/Material Fill Consumption

Gatch material will be required for a variety of construction purposes including soil replacement, well padding, etc. According to current environmental regulations in the State of Kuwait, new quarries are required to be issued approvals from Environmental Supreme Council, KEPA as well as Kuwait Municipality. Therefore, KOC will manage the provision of this quantity from KOC Assets approved gatch pits. KOC enforces strict mitigation measures to manage gatch resources from existing gatch quarries within the KOC assets. According to the procedure, any new gatch extraction pit will require Complete ESIA.

Other Natural Resource Consumption

During drilling phase, resources such as construction raw materials including sand, steel, cement, fuel and quarry materials will be utilized. Using of natural resources for drilling is fundamental and cannot be avoided. On the other hand, these resources are non-renewable. KOC maintains Management of Energy and Resources Procedure to efficiently manage natural resources.

Stress on Public Landfills

Part of the project domestic or municipal waste (non-hazardous waste) will be transported off-site to nearby municipal landfills. KOC management strategy for Non-Hazardous Waste and domestic kitchen waste involves disposal to approved Waste Handling Facility via approved Waste Hauler to Main Waste collection. The impact on using public landfill has been found low. However, quantity of the waste sent to the landfill shall be minimized as low as possible.

Stress on Public Potable Water Supply

During drilling phase, potable water will be required for drilling as well as workforce involved in the project to meet their daily personal consumption needs including drinking, food and other purposes. Therefore, the project may source water from potable water resources if the available groundwater quality does not meet the drilling water criteria. The estimated required daily water quantity will be in the order of 4,370 m³. Water conservation measures are the best applicable approach to reduce water consumption impacts arising from using public portable water.

Stress on Public Roads & Traffic Impacts

Drilling activities will be carried out within South East Kuwait oil fields and are not anticipated to cause any major traffic interruption. However, drilling will require the supply of cement, mud, water, fuel and other materials; transportation of wastes to landfill, transportation of OBM to treatment facilities, labor transport, etc. which will be carried out by different vehicles and trucks which will use public roads. The project site is connected to main areas in Kuwait through main roads such as Sulibiya Road (604) to the south west, 212 to the North, 7th Ring road to the North, 306 road towards South East, 304, Magwa road (51) to South West and Al Artal military road. In addition, there is a network of paved and unpaved roads serving the project site. On the other hand, during rig move use of public roads will only be limited to road crossings. Works, however, will be carried out in accordance with KOC procedures to minimize traffic impacts. As part of the public roads

design requirements, Kuwait Ministry of Public Works (MPW) road design consultants and contractors have to co-ordinate with KOC to identify its requirements including rig crossing locations and specifications.

Visual Impacts

The proposed project sites spread over a large area of Land in South East Kuwait. All wells locations are not closely adjacent to any urban areas or populated centers. However, installation of drilling rigs will cause temporary visual impacts where rigs could be visible from far distance of up to 3 km. Visual impacts would result from erecting of rigs and its physical presence at the rig site. Cumulative visual impact would result setting up more rigs in close by areas. Mitigation measures, therefore, would involve the time management of activities to reduce the overall visual impacts.

Contingency Management Plan

During drilling and associated activities, contingency management plan is needed to prepare for and respond to emergency scenarios. The below list of KOC HSEMS procedures provides for Crisis Preparedness and Management procedures for the emergency operating scenarios:

- KOC.EV.005 - Chemical Spill Cleanup Procedure
- KOC.GE.022 - Inland Oil Spill Contingency Procedure
- KOC.GE.025 - KOC Crisis Management Plan
- KOC.GE.026 - KOC Corporate Emergency Response Plan
- KOC.GE.041 - KOC Fire Safety Management
- KOC.PS.019 - Guidelines for Escape, Evacuation and Rescue Assessment (EERA)
- KOC.GE.039 - Well Ignition Procedure

Environmental Management & Monitoring Plan

An Environmental Management and Monitoring Plan is provided in ESIA to provide a link between the mitigation measures provided and the integration of such measures during the drilling and associated works. It summarizes the anticipated impacts of projects and provides details on the mitigation measures, responsibilities and scheduling to mitigate these impacts, monitoring and reporting.

Conclusion

The project objective is increasing the oil and gas production in state of Kuwait that will contribute to implementation of the state development programs at all levels. Project environmental and social impacts assessed according to the guidelines of Decision 2/2015 for ESIA guidelines in state of Kuwait. Environmental mitigation, management and monitoring measures recommended. As overall, during normal operating conditions, the implementation of the environmental mitigation, management and monitoring measures would reduce the environmental and social impacts of the project to acceptable levels. Also, KOC HSEMS procedures are found comprehensive and enough to control the project environmental and social impacts. During emergency operating conditions, environmental and social impacts cannot be avoided. However, KOC has crisis preparedness and management procedures that can reduce the impacts to lowest level possible.

SAIPEM S.p.A KUWAIT DRILLING PROJECT

RIG 5946

NON-TECHNICAL SUMMARY

1. PROJECT DESCRIPTION

Saipem Kuwait Branch is a branch of Saipem S.p.A Company leader in providing engineering, procurement, project management, and construction services with a preference for large-scale offshore and onshore projects.

Saipem has been awarded from Kuwait Oil Company for Drilling Operations in the State of Kuwait a contract for two heavy land Rigs 3000 HP (RIG 5913 & RIG 5946) for five years plus one year optional on deep well locations.

Rig 5913 spud on the first well on 15 January 2017 on Well number UG 251 in West Kuwait.

Rig 5946 spud on the first well on 6 October 2017 on Well number UN 0131 in North Kuwait.

Scope of work RIG 5913/Rig 5946

Saipem provide drilling rigs, equipment and camps as per the specification in the contract, to carry out drilling and workover operations including mobilization and commissioning of the rigs, equipment and camps at first well location or other location to be specification by Superintendent's Representative.

Rig's Camp & Site Location / Operation Area

Different allocation within the listed below area at the rigs movement:

No	Area of Kuwait:	Operation areas:
1	North Kuwait	Abdali, Sabriyah, Raudhatain, Ratqa, Bahra, Mutriba fields, Umm Al-Aish, Umm-Niga,, West Abdali, Al-Dhabi, Liyyah, Ladirah, North West Raudhatain, Se Ratqa, Bubiyan or any other development or exploration well location in this Area
2	South East Kuwait	Ahmadi, Arifjan, Burgan, Magwa, Wafra fields, Mina Al-Ahmadi, Mina Abdullah, Khashman or any other development or exploration well location in this Area
3	West Kuwait	Minagish, Dharif, Kra Al-Marzuq, Abduliyah, Al-Rahiyah, Umm-Gudair fields, South MinagishUmm-Ros, Kahlulah or any other development or exploration well location in this Area

Drilling Project activities

The following are the activities carried out at rig site:

Drilling Works:

1. Drilling location preparation (carried out with involvement of an approved third-party company)
2. Rig move and third party (carried out with involvement of an approved third-party company)
3. Rig Up Operation

4. Drilling Operations (carried out under Client program requirements)

5. Rig Down Operation

Supporting Works:

1. Drilling Crew Accommodation Camp

2. Saipem Site office activities

Client (KOC) is in charge of providing the facilities below to the rig and managing the services related to the Subcontractors and Service Providers that are working under Client's responsibility.

In this regard, Client is responsible to provide the listed, but not limited to:

Management of the hazardous (chemical) wastes and not-hazardous wastes produced by the Subcontractor and the Service Providers that are directly working under Client.

Therefore, all the activities, services and facilities that are managed and executed by Client are, in consequence, out of the scope of analysis of this document.

2. ENVIRONMENTAL AND SOCIAL ASPECTS

In this section are described the environmental and social aspects related to drilling projects, their potential impacts and mitigation measures.

The key potential environment and social impacts associated with the drilling project are:

<ul style="list-style-type: none">▪ Emissions to air▪ Soil contamination▪ Noise▪ Waste production & management▪ Water consumption	<ul style="list-style-type: none">▪ Flora and Fauna▪ Consumption of natural resources	<ul style="list-style-type: none">▪ Public health and traffic safety▪ Community health and safety▪ Occupational health and safety▪ Other Socio-Economic Impacts
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The identification and assessment of the environmental and social aspects and their impacts are taking in consideration the following operating conditions:

1. Normal operating conditions: activities and equipment that are operating under normal condition and in accordance with management plan

2. Emergency situations (e.g. blowout; fire; exposure to H₂S emissions)

The impacts are assessed and address:

a. Direct environmental and social aspects, as activities on which the company may expected to have an influence and control.

b. Indirect environmental and social aspect, as actual or potential activities over which the company may have influence, but not direct control.

Saipem SpA Kuwait drilling provides services as drilling contractor to KOC (Kuwait Oil Company) therefore the risk assessment and resulting mitigation measures are based on national legislative requirements and the additional Client HSE system requirements.

Potential environmental and social (including community and occupational health and safety) impacts have been identified and mitigation measures have been implemented as per Saipem Environmental Management system and Environmental Impact register developed for Saipem Drilling rigs.

3. SUMMARY OF ENVIRONMENTAL POTENTIAL IMPACTS, MITIGATION AND MANAGEMENT MEASURES

3.1. EMISSIONS TO AIR

Emissions to air are generated during various phases of drilling operations, in normal and emergency conditions. During normal operating conditions, the anticipated emissions to air are dust emissions, vehicles and equipment exhaust emissions.

3.1.1 Emissions generated by vehicles and equipment

Air emission generated by vehicles and equipment are mainly related to the combustion of fuel, mainly diesel, as energy source. The potential negative emissions from diesel engines (NOx and SOx) are regulated and minimized by the implementation regular maintenance activity and fuel control through sampling activities.

Project roads are monitored and controlled by speed cameras. Moreover, Saipem's vehicles have an internal speed monitoring system to alert in case of speed exceeding.

3.1.2 Dust Generation

Dust is generated during the rig move operations, movement of vehicles, rig up and rig down operation, and rig site preparation activities. Several control measures are implemented in order to reduce dust generations, like spraying of water on the ground prior activities that might generate dust and vehicle speed reduction.

Vehicles shall respect local and Rig/Project speed limit (60KPH) so as to reduce both noise and dust. Personnel and material transportations shall be planned and optimized in order to reduce emissions and traffic

3.1.3 Emissions generated in emergency situations

During emergency operating conditions like well blow out, emissions to air could be significant. Saipem has different control measures in place to prevent such incidents, like Emergency Response Plans, BOP regular testing and periodic emergency drills.

3.2. SOIL CONTAMINATION

Soil contamination might be the result of a spill, which could be related to an operational error or to an incidental event occurred during drilling operations or as result of an equipment failure (e.g vehicle transport).

Typical occurrences of spills are mainly related to the following incidental events:

Diesel spills from refuelling, overfilling or connection/disconnection incidents.

Oil spills from equipment and vehicles maintenance (oil leaks while changing oil, engine coolant leaks while changing or adding coolant, etc.).

Hydraulic oil spill resulting from a split hydraulic hose or failed connector (moderate pressure, low volume lines, etc.).

Oil/diesel spills due to improper handling of drums and improper storage of them.

Drilling fluid leaks from tanks, pumps or other associated equipment within the closed loop circuit system.

Spill prevention measures include:

Identification of pollutants and implementation of spill control measures as operating practices, inspections and monitoring of facilities.

Regular maintenance schedule of machinery and equipment containing substances that could cause a spill.

Training on environmental protection issues to ensure that all workers are familiar with spill response procedures.

Moreover, an Emergency Response Plan and a Spill contingency plan are in place to address the accidental spills.

3.3. WASTE MANAGEMENT

Drilling activities as well as support activities produce waste which require adequate storage areas, waste segregation and disposal.

3.3.1 Waste segregation on site

In order to facilitate and improve recycling activities, waste will be collected separately in adequate bins dispatched in all working/generation areas. clear signboards are posted on the bins in all working/generation areas for promoting a best segregation of wastes. The following colour code system is applied:

Type of waste	Color code
Hazardous waste	Red container
Domestic / assimilated waste	Green container
Special waste	Blue container
Organic waste	Black container

3.3.2 Waste disposal and treatment

Licensed facilities are used for disposal of waste, including hazardous waste, and they are defined and approved prior to the commencement of drilling site preparation and operations.

Generated waste	Disposal and treatment
Non-hazardous waste	Transported by approved 3 rd party company with waste manifest. Sent to approved landfill.

Hazardous waste	Transported by approved 3 rd party company with waste manifest.
OBM cuttings	Under KOC control
WBM cuttings	Under KOC control
Sewage	Treated on site by Bio-cube, sent to landfill (pit)
Domestic Kitchen waste	Transported by approved 3 rd party company. Sent to approved landfill.
Medical waste	Treated as hazardous waste and sent with waste manifest. Disposed through British Medical Center.
Used engine oil	Removed by approved 3 rd party company
Used kitchen oil	Removed by approved 3 rd party company
Laundry waste	Treated by Bio-cube
Chemical Waste	Under KOC control

Saipem implemented Waste Management Policies & Procedures (46-PLN-HSE-002) to ensure proper waste generated by site activities.

Additionally, training and awareness of personnel on waste management and segregation is carried out on rig site.

3.4. WASTEWATER

The water generated from human activities and drilling rig activities before discharge is treated to meet the quality limits provided for by Kuwait legislation.

Domestic wastewater is diverted and collected goes thru a BioKube filtration unit and then the treated water is stored inside a waste pit at the Rig and Camp. Once pits are full, the wastewater is pumped out and disposed through licensed companies

Drilling wastewater flow is managed and collected by Rig's drainage systems into wastewater tanks. Once tanks are full, drilling wastewater is transferred to an authorized waste service provider and consequently disposed of

3.5. NOISE

Equipment noise is generated by the movement of heavy vehicles during site preparation and rig move.

During drilling operations, sources of noise are associated to rig equipment and machineries such as generators, pumps, engines, workshop activities, etc.

Since Rig generally operates far from terrestrial sensitive environmental receptors it is not expected a significant environmental impact in terms of environmental noise to the local environmental receptors.

Surveys will be carried out to monitor the level of noise and the possible impact over the workers welfare and health and safety.

3.6. WATER CONSUMPTION

The rig consumes water both for the domestic use of personnel on site and for general services. Due to the rig location the water used for domestic use is provided periodically by a truck, while the water for general services is subsoil water extracted from water wells.

To reduce water consumption and water usage efficiency several periodic environmental campaign and environmental awareness events are organized on site.

3.7. RESOURCES EFFICIENCY (FUEL, ENERGY, WATER)

Resource Efficiency is related to the use of resources like energy, fuel, water and construction materials, along with the recovery and reuse of waste.

Periodical environmental campaigns and environmental awareness events with personnel are organised on site, in order to incentive good practice behaviours in terms of resources consumption.

The consumptions of fuel, electricity, water and raw material are regularly tracked and reported through Saipem Environmental Data Management System

3.8. CONSUMPTION OF RAW MATERIALS

The main raw material consumed in the offices is paper, used for administrative procedures.

All the employees are encouraged to a more conscious use through promotion measures such as: printing only when necessary, using the double-sided printing option as the default setting maximize the use of soft copy and prefer it to paper prints, and optimizing the archives on the network to avoid unnecessary printing; recycling of paper waste.

Due to the low quantity of paper used on site, the impact of this environmental aspect is considered low.

Nevertheless, Saipem promotes the protection of natural resources and periodical Environmental campaigns are launched and implemented on site.

3.9. FLORA AND FAUNA DISTURBANCE

Since the site is located in a desertic area and there are no particularly protected areas for flora and fauna in its proximity, the evaluation of environmental aspect can be considered low.

Disturbance of terrestrial flora and fauna is reduced as lowest as possible since all the environmental protection and preservation practices are in place. Special focus shall be given to:

- The prevention measures to avoid any oil spill out of Rig's border
- Control measures to avoid discharging any polluted water into local water surface;
- Reduction of environmental noise.

Furthermore, the usage of supply transporters shall be reduced as low as reasonable possible so as to minimize the impact on the local habitat.

4. SUMMARY OF SOCIAL POTENTIAL IMPACTS, MITIGATION AND MANAGEMENT MEASURES

4.1 PUBLIC ROADS AND TRAFFIC SAFETY

Rig move is carried out in the approved rig roads in KOC field. The public roads may be partially affected during the rig movement operations. The rig equipment movement is coordinated with KOC so to ensure that the public roads and traffic safety are impacted as minimum as possible. Prior rig move is obtained the authorisation from KOC.

Saipem Kuwait implemented driving procedures and carries out defensive driving training courses for its personnel and contractors. Additionally, the drivers are requested to comply with posted speed limits and, as appropriate, further reduce speed when travelling sites on unpaved surfaces to reduce dust creation.

The program of transportation is prepared and coordinated with KOC, ensuring that adequate measures are implemented, and permits are obtained.

4.2 COMMUNITY HEALTH AND SAFETY

The public and community health and safety could be affected by the traffic, noise, air emissions produced by drilling activities or in case of emergency conditions.

For all the above-mentioned situations, Saipem Kuwait developed and implemented a management system of health & safety, implementing measures aimed at mitigating the hazards and reduce the risks on public health and safety.

4.3 OCCUPATIONAL HEALTH AND SAFETY

The drilling project operations works give rise to occupational, health and safety risks to workers, including contractor personnel involved in supporting activities. Saipem Rig HSE management system includes Health and Safety provisions in accordance with the KOC Requirements and the Government Law on the Safety and Health at Work. The management system foresees an adequate workforce management, implementation & enforcement of Saipem code of ethics, provision of health surveillance & healthcare access for all workers.

4.4 WORKERS WELFARE

On Saipem drilling projects all workers are provided with adequate accommodation conditions, with respect of the international and legal norms. Periodical inspections (weekly) are carried out by the Medical personnel and HSE to ensure that the hygiene standards are respected and properly complied.

4.5 OTHER SOCIO-ECONOMIC ASPECTS

Social Aspect Description	Possible positive impact
Employment	Employment opportunities for local personnel.
Training and development	Training opportunities for all personnel (including local) contributing to improvement of competency and enhance professional skills. International environment which allow transfer of know-how.

Economy	Creating economic opportunities for local suppliers of goods and services
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5. ENVIRONMENTAL MANAGEMENT SYSTEM

Saipem Kuwait SpA Drilling developed and implemented an HSE system which in line with Saipem HSE systems and ISO 14001 standards. The HSE procedures are in place for the whole duration of the project.

The Rig HSE Performances is monitored and assessed against goals and stated objectives defined in the annual Rig HSE plan.

Rig HSE management system adopts the established Saipem Corporate HSE management System, procedures, practices, and processes for the collection of the environmental performance data and for what concern the monitoring of the environmental performance through:

- Periodic monitoring: collection of environmental data as per Saipem Corporate Standards
- Incident and reporting analysis: analysis of the environmental accident and high-potential near misses;
- Audit system: implementation and follow-up of an audit program.

Through the above systems, the Rig environmental performance is tracked and under control so as to be able to set up proper actions and program to improve the Environmental Management System.

6. CONTINGENCY MANAGEMENT PLAN

During drilling and associated activities, contingency plan is required to be prepared for and respond to emergency scenarios. The following are the Saipem Kuwait drilling project HSE procedures for Emergency and Crisis management

Saipem Emergency response plan (Doc no. 46-PLN-HSE-008)

Saipem Hydrogen Sulphide Safety Contingency Plan (Doc. No. 46-PLN-HSE-010)

Saipem Spill contingency plan (Doc no. 46-PLN-HSE-003)

Saipem Well side Specific Emergency Plan (doc no 46-PLN-HSE-011)

Covid-19 emergency response plan

Additionally, on rig site specific control measures are implemented to respond to emergency scenarios:

- IWCF Certification Training
- Rig emergency drills
- Regular H2S/SCBA training
- Fire , H2S & SO2 awareness for employees
- Emergency contact details of rig within 1300 meters radius

7. STAKEHOLDERS ENGAGEMENT

Stakeholder Engagement process is functional to achieving Saipem Kuwait drilling projects objectives. A direct engagement with stakeholders is an opportunity to create understanding about

the operations/project activities among those it will likely affect it or influence, and to learn how these, the external parties, view the operations and the related risks, the impacts, and the opportunities.

The Stakeholders engagement process' main purpose is related to getting and maintaining the license to operate in the country, and also involves identifying and consulting stakeholders; building external and internal understanding and trust; allowing the company or project to better integrate into the local social, economic and environmental context.

Saipem Kuwait drilling stakeholder's engagement strategy aims to ensure that stakeholders expressed needs and expectation are fully reflected in the Saipem drilling projects HSE performance programs, legislative compliance, HSE awareness campaigns, compliance with client operational performance and HSE requirements.

Saipem Kuwait drilling stakeholders are those who have an interest and influence over the drilling projects outcomes, and includes: Client, employees, vendors of goods and services, governmental authorities, business partners.

Stakeholders engagement plan for Saipem Kuwait Drilling projects was prepared in line with Saipem Management system Guideline (MSGGR-GROUP-STK-001) and ISO 14001 requirements.

The document is supporting the Saipem Kuwait drilling projects to manage the company strategies related to stakeholder's engagement and management of their needs and expectations for the whole duration of the project. The plan and strategies of engagement are revised annually, based on the stakeholder engagement strategies results, feedbacks received, changes in the context and/or stakeholders' expectations.