



**Environmental Management and Monitoring Plan
(EMMP)
for the
Appraisal Drilling Program in the areas adjacent to
Tambaredjo, Tambaredjo North-West and Uitkijk
area**

Final Draft Report

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Staatsolie Maatschappij Suriname N.V.**

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Abbreviations

AOI	Area of Interest
ADP	Appraisal Drilling Program
BO	Government Inspector (Bestuursopzichter)
CCU	Corporate Communication Upstream
CEP	Caribbean Environment Program
CR	Community Relations
CSR	Corporate Social Responsibility
DC	District Commissariat
DS	Districts Secretary (Districts Secretaris)
EA	Environmental Assessment
EFA	Environmental Framework Act
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMMP	Environmental Management and Monitoring Plan
ESIA	Environmental and Social Impact Assessment
FLE	Farmersland East
FLW	Farmersland West
GPS	Global Positioning System
HSE	Health, Safety and Environment.
HSEQ	Health Safety Environmental and Quality
HSSE	Health, Safety, Security and Environment
ID&M	Infrastructure, Development and Maintenance department
IFC	International Finance Corporation
ILACO	ILACO Suriname N.V.
ITCZ	Inter-Tropical Convergence Zone
IUCN	International Union for Conservation of Nature
LBB	National Forestry Service (Dienst's Lands Bosbeheer)
LVV	Ministry of Agriculture, Animal Husbandry and Fisheries (Ministerie van Landbouw, Veeteelt en Visserij)
MAC	Maximum Allowable Concentration
MMSTB	Million Stock Tank Barrels
MOP	Meerjaren Ontwikkeling Plan- Development Plan of Suriname
MUMA	Multiple Use Management Areas
NB	Nature Conservation Division (afdeling Natuurbeheer)
NBAP	National Biodiversity Action Plan
NBS	National Biodiversity Strategy
NCD	Nature Conservation Division
NIMOS	National Institute for Environment & Development in Suriname
NMA	National Environment Authority
OW	Ministry of Public works (Ministerie van Openbare werken)
PPE	Personal protective equipment
QA/ QC	Quality Assurance/ Quality Control
S.B.	Staats Besluit
SEP	Stakeholder Engagement Plan
Staatsolie	Staatsolie Maatschappij Suriname N.V.
UNCBD	United Nations Convention on Biological Diversity
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank
WHSRN	Western hemisphere shorebird Reserve Network

Executive Summary

This document presents the results of the Environmental Management and Monitoring Plan (EMMP) for the Appraisal Drilling Program in the areas adjacent to Tambaredjo field, Tambaredjo North-West field and the Uitkijk area. The Appraisal Drilling Program (ADP) will be conducted in four (4) Areas of Interests (AOIs) namely Tambaredjo-Uitkijk (TAM-UIT) (A), Tambaredjo West (TAM-West) (B), Tambaredjo North-East (TAMNE) (C) and Tambaredjo North-West South (TNW South) (D).

The EMMP has been prepared in accordance with national regulatory requirements (Milieu Raamwet S.B. 2020 no. 97/ Environmental Framework Act S.B. 2020 no. 97) and the guidelines of the National Institute for Environment and Development in Suriname (NIMOS, 2005 and NIMOS, 2009), as well as international best practices.

The Appraisal Drilling Program has been classified as a Category B, Path-2 project by NIMOS. Numerous ESIA's and specialist studies have already been conducted within or in close proximity to the proposed project areas. Consequently, as stated in the Screening Report by NIMOS (dated 14th September 2022), it has been determined that only an EMMP is necessary for the current project. As a result, the study was primarily conducted as a desk study, supplemented by field surveys and stakeholder consultations.

Conclusions drawn from this study include:

Environmental and Social baseline

From the environmental baseline assessment, the following can be stated:

- High temperatures and high humidity characterize the study area with the main variation being rainfall and the associated cloud cover. However, in the north (area C) the total rainfall may be slightly lower.
- The air quality in the northern wetland (area C) is still predominantly in its natural state and no sources of relevant air emissions are found in its vicinity. In contrast, the other areas, situated in the southern region and comprising rice polders, do have potential sources of air pollution, primarily associated with mechanized activities in the rice fields.
- Area C experiences predominantly natural noises, while the other Areas of Interest (AOIs) may have man-made noise sources such as traffic along the main road, swamp boats, and farm activities, primarily during daytime.
- Area A and C are located in the Wayambo Swamp and area B and D in the Buru Swamp. Both swamps are known as the Duivelsbroek Swamp. Swamp water depths vary from less than 20 to 70 cm in the dry season to 90-120 cm in the rainy season. Most of the Duivelsbroek Swamp is draining predominantly towards the sea, because the Gangaram Pandayweg and the Wayamboweg and their polders block most of the water flow towards the Saramacca River in the south and southwest. This seaward drainage is applicable for the areas B, C and D. Area C will drain partly through the Calor Canal to the east of it. The hydrology is influenced by canals, dams, and the surrounding oilfield. Rice polders in areas A, B, and D have controlled water management systems, utilizing water from the swamp or river for irrigation and directing excess water to the Saramacca River.
- The water quality of the Duivelsbroek Swamp reveals variations between freshwater and brackish water zones. The freshwater swamps generally have slightly more acidic water and lower salinity compared to the brackish swamps. Monitoring of turbidity levels showed exceeding of the established standard (36-102 NTU for brackish herbaceous swamps and 36-107 NTU for freshwater herbaceous swamps and swamp wood). However, observations from monitoring showed that the turbidity values eventually return to its natural state, 4 – 6 weeks after the activities in the swamps are completed.
- Two vegetation types with (potential) high international conservation value are present in the project areas: the black mangrove forest (Parwa forest) and the high swamp wood.

From the socio-economic baseline assessment, the following can be stated:

- Receptors within area A, B and D are residents living scattered along the Wayambo and Gangaram Pandayweg. Area C is located in the Wayambo swamp area, with no nearby residents.
- The economic activities in the study area include agriculture activities (rice cultivation, horticulture and livestock farming) and other commercial activities.
- The main concerns raised during the stakeholder consultations include:
 - Concerns regarding human activities within the Coppename Monding Nature Reserve, potentially leading to ecological disturbances and habitat degradation.
 - Issues related to disrupted water management leading to areas being flooded causing significant damage and delays for farmers in harvesting their crops.
 - Lack of maintenance of the Gangaram Pandayweg.
 - Dust and odor nuisance.
 - Poor communication, engagement, and transparency from Staatsolie,

Potential impacts and mitigation measures

From the assessment of potential impacts of the Appraisal Drilling Program, there is one (1) impact with major significance which can effectively be reduced to minor after implementation of the proposed mitigation measures. Furthermore, there are eight (8) impacts with a moderate significance, which can also effectively be reduced to minor after implementation of the proposed mitigation measures. The remaining impacts are minor or negligible.

The table below presents a summary of the main identified impacts and the residual impacts for the Appraisal Drilling Program.

Component	Impact Description	Area of interest (AOI)	Significance	Residual impact
Noise	Noise impacts from airboats, construction, and operational activities on breeding colonies	C	Major	Minor
Surface Water Resources	Changes in the hydrology of the Buru or Wayambo Swamp due to blockage of water	A, C, & D (wetland locations)	Moderate	Minor
	Blockage and pollution of irrigation water supply	B & D (Water is used by rice farmers for crop irrigation)	Moderate	Minor
	Changes in the hydrology of the Wayambo Swamp due construction of new trails and opening in the Van Dijk 2 dam	A & D (C if applicable)	Moderate	Minor
Vegetation	Loss of vegetation (general)	A, B, C, & D	Moderate	Minor
Socio-economic	Social conflicts and complaints of landowners/users or other parties	A, B, C, & D	Moderate	Minor
	Nuisance (noise, dust or other form) to the people living along the Wayamboweg and Gangaram Pandayweg	A, B & D	Moderate	Minor
	Occupational health: attacks from wildlife such	A, B, C & D	Moderate	Minor

	as bees, snakes, general swamp safety e.g. hydration, vector borne diseases (mosquitos), sunburn and other environmental hazards such as unstable ground, waterborne diseases, extreme weather conditions, working in deep swamps (accidents/incidents)			
	Loss of land and/or damage to crops	A, B & D	Moderate	Minor

The several mitigation measures, management and monitoring requirements, as described in the EMMP must be implemented as part of normal operations by effectively incorporating the key components into daily activities, such as including environmental issues in the decision-making process, carrying out operations in accordance with the standard procedures, and maintaining complete records.

1 Introduction and Description of the project

This document presents the findings of the Environmental Management and Monitoring Plan (EMMP) for the Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area.

1.1 General

Staatsolie has a strategic goal to maintain an annual long-term production target of at least 6 million Stock Tank Barrels per year. To confirm the presence of economically producible oil, to assess geological risks in these areas, and to secure future development opportunities by adding new reserves, Staatsolie plans to carry out an Appraisal Drilling Program (ADP). This program will be executed in different Areas of Interest (AOI) adjacent to the existing producing oilfields of the upstream operation of Staatsolie Maatschappij Suriname N.V. (Staatsolie) in the Saramacca district (Figure 1). The AOI is divided into first-priority areas which are planned to be drilled in 2023 and second-priority areas to be drilled in 2024. First-priority areas are Tambaredjo-Uitkijk (A) and Tambaredjo West (B). Second priority areas are Tambaredjo North-East (C) and Tambaredjo North-West South (D). The number of proposed locations to be drilled is subject to change during the execution phase of these appraisal programs after evaluation of the results of the drilled appraisal wells. Additional appraisal wells could be considered for future drilling, or existing appraisal wells could be discarded based on the results of the drilled wells.



Figure 1: Overview planned appraisal drilling locations

1.1.1 Project background and scope

The Appraisal Drilling Project has been classified as Category B-path 2 project by the National Institute for Environment and Development in Suriname ((Nationaal Instituut voor Milieu en Ontwikkeling in Suriname - NIMOS), thus requiring a limited Environmental and Social Impact Assessment (ESIA). However, numerous ESIA's and specialist studies have already been conducted within or in close proximity to the proposed project areas. Consequently, as stated in the Screening Report by NIMOS

(dated 14th September 2022), it has been determined that only an Environmental Management and Monitoring Plan (EMMP) is necessary for the current project.

Previous ESIA's, specialist studies, monitoring and compliance reports produced within or near the proposed project area have been used for the current study, namely:

1. Noordam Environmental Consultancy (NEC), 2010. Environmental Impact Assessment of production development of the Tambaredjo North-West oil field in Suriname.
2. Noordam Environmental Consultancy (NEC), 2011. Review of the Environmental and Social Impact Statement prepared in 2000 for the Uitkijk/Wayambo Exploration Drilling and Validation with respect to proposed exploration drilling and testing in the Uitkijk-North Block.
3. Noordam Environmental Consultancy (NEC), 2011. Preliminary Environmental Impact Assessment for proposed exploration drilling and testing in the Uitkijk-North Block: Addendum for five additional wells.
4. Noordam Environmental Consultancy (NEC), 2012. Preliminary Environmental & Social Impact Assessment of appraisal drilling & strattesting in the Tambaredjo North project area in Suriname.
5. Noordam Environmental Consultancy (NEC), 2013. Environmental Impact Assessment for the proposed appraisal drilling project in the Uitkijk-North Block. Addendum for ten additional wells, Final Draft.
6. Noordam Environmental Consultancy (NEC), 2014. Environmental and Social Impact Assessment of production development by Staatsolie in the Farmersland area in Suriname.
7. Staatsolie Maatschappij Suriname N.V., 2016. Environmental study for Expansion of the Tambaredjo North West oil field.
8. ILACO Suriname N.V., 2018. Updated Environmental and Social Impact Assessment (ESIA) for the Uitkijk Appraisal Drilling Program (ADP).
9. ILACO Suriname N.V., 2023. Update Environmental and Social Management Plan (ESMP) for the Exploration Drilling Project in the Uitkijk Area.

The purpose and scope of this study are as follows:

- Describe the existing environmental and socio-economic conditions which may affect or be affected by the appraisal drilling program.
- Identify and engage with relevant stakeholders regarding the current project activities.
- Identify, evaluate, update and/or amend the potential environmental and socio-economic impacts, both positive and negative, of the proposed project, and as presented in earlier ESIA reports and if required, make additional assessments.
- Propose, review and/or update mitigation measures for avoiding or minimizing adverse effects and measures that promote or enhance potential benefits.
- Provide appropriate recommendations to ensure that measures for preventing or minimizing any adverse impacts during all the phases of project implementation are incorporated, and establish an EMMP specifically tailored for the proposed project.

1.1.2 Project and study area

The project area for the ADP is located in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area, within the Saramacca district. These regions are located within the North Saramacca Multi-Use Management Area (MUMA). The appraisal drilling activities will be executed in both swamp and dryland location, positioned to the north of the Wayamboweg and the R. Gangaram Pandayweg (Figure 1).

The ESIA study area, referred to as the study area, encompasses not only the project area itself (the project footprint or the area of interest where the actual activities will occur), but also the access routes, and their immediate surroundings where potential impacts may arise. For certain environmental components, such as geology, soil, and ecology (including vegetation, wildlife, ecosystems, and habitat), the study area coincides with the project area, making it local in scope. However, for specific

impacts like noise and water quality, the effects could extend beyond the boundaries of the project area. Additionally, the socio-economic environment exists beyond the confines of the project footprint.

1.1.3 Methodology

The study is executed in accordance with national regulatory requirements (the Milieu Raamwet S.B. 2020 no. 97/ Environmental Framework Act S.B. 2020 no. 97), the Generic Environmental Impact Assessment Guidelines of NIMOS (August, 2009) and the Social Impact Assessment Guidelines of NIMOS (March, 2005). Additionally, it considers the Staatsolie Corporate Standards, including the Health Safety Environmental and Quality (HSEQ) Policy and Community Relations (CR) Policy, along with all relevant international standards, guidelines and best practices from organizations such as the World Bank (WB) Group and the International Finance Corporation (IFC).

As indicated, the current project is classified as a Category B-path 2 project, as stated in the Screening Report by NIMOS (dated 14th September 2022) only an EMMP is required. The study was primarily conducted as a desk study, supplemented by field surveys and stakeholder consultations. Additionally, a public meeting will be convened following the submission of the draft EMMP report to NIMOS.

Baseline study

The environmental (biophysical) and socio-economic baseline studies have been conducted primarily as desk studies. This involved a review of previous ESIA's (Ch. 1.1.1), as well as recent data from other studies (not older than five years). Additional data and information were collected during the execution of these baseline studies. For the biophysical environment, data was obtained through visual observations. In the social-economic study, conducted through site visits, consultation with key stakeholders and residents were conducted.

Impact assessment

The impacts and proposed actions presented in the most recent ESIA studies were evaluated, and shortcomings were identified and supplemented or corrected where necessary. Ultimately, the results were used to prepare the EMMP for the current project. The methodology for the impact assessment was the same as previous studies and is included in **Appendix 1**.

1.1.4 Team of Experts

ILACO Suriname N.V. (ILACO) has been awarded the contract to undertake the EMMP for the Staatsolie Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area. The EMMP has been undertaken by a team of highly motivated experts with ample national and international experience and under conditions similar to the assignment. The team of experts is presented in the table below.

Table 1: Overview team of experts

ESIA Team	
Shareen Koenjbiharie B.Sc.	Team Leader/ ESIA Specialist
Marie Fortune B.Sc.	Dept. Team Leader/ Project Engineer
Dirk Noordam M.Sc.	Sr. ESIA Specialist/ QA&QC
Arshna Naigi B.Sc.	Stakeholder & Communication Specialist

1.2 Description of the EMMP

1.2.1 Scope of the EMMP

The EMMP applies to all Staatsolie's activities associated with the Appraisal Drilling Program including operations conducted on Staatsolie's behalf by contractors and sub-contractors. This includes but is not limited to drilling and support operations as well as administrative support.

The EMMP is linked to and works together with the following documents which are to be submitted by Staatsolie: Emergency Response Plan (ERP), the Oil Spill Response Plan (OSRP), Community Relations Plan (CRP) and Waste Management Plan (WMP) for the project. All plans should also be in line with the Staatsolie procedures as considered relevant.

1.2.2 Purpose of the EMMP

The purpose of the EMMP is to set out the management and monitoring measures required to minimize the environmental impacts of construction, operations and decommissioning the projects, and to ensure that responsibilities and appropriate resources are efficiently allocated to the project. The EMMP addresses all the phases of the projects. This plan may be reviewed and where necessary, updated as required.

1.2.3 Structure of the EMMP

This EMMP is made up of six chapters as follows:

- **Chapter 1: Introduction and Description of the Project**
Provides a general introduction (including study area and methodology), brief background to the project, description of the EMMP and description of the updated bio-physical and socio-economic environment.
- **Chapter 2: Legal and Regulatory Framework**
Provides an overview and relevant legislation and the regulatory framework for this project.
- **Chapter 3: Environmental Management Responsibilities and Responsibilities**
Sets out the roles and responsibilities for implementation of the EMMP, for environmental and social components and training requirements.
- **Chapter 4: Stakeholder Consultation**
Explains the results of the conducted stakeholder consultation as part of the EMMP process.
- **Chapter 5: Environmental and Social Specifications**
Explains the approach adopted to develop the environmental and social specifications and sets out the actual specifications in tabular form.
- **Chapter 6: Monitoring and Reporting Requirements**
Sets out the different monitoring and reporting requirements, which will enable Staatsolie to determine the environmental performance of the project and if the mitigation measures are implemented.
- **Chapter 7: Community Engagement and Grievance Redress Mechanism of Staatsolie**
Sets out the communication plan, which will enable Staatsolie to engage with the different stakeholders during the execution of the project. Additionally, the grievance redress mechanism (complaint handling procedure) is discussed.
- **Chapter 8: Conclusion**
Provides an overview of the conclusions for this project.

1.3 Project Description

As described in Chapter 1.1, Staatsolie intends to carry out an appraisal drilling project in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area. The main objective of the Appraisal Drilling Program is to contribute to the Reserves Replacement Ratio (RRR) by finding new reserves and to acquire fundamental geological data in order to delineate development locations for future development programs.

1.3.1 Project Site and Planning

The project site will be in different Areas of Interest (AOI) adjacent to the existing producing oilfields of the Staatsolie Upstream operation in the Saramacca district. The project activities will be executed in four specific areas: Tambaredjo-Uitkijk (TAM-UIT) (A), Tambaredjo West (TAM-West) (B), Tambaredjo North-East (TAMNE) (C) and Tambaredjo North-West South (TNW South) (D). In **Figure 2**, the orange polygons depict the AOI designated for appraisal drilling purposes. The shaded polygons are the boundaries of project areas where existing ESIA studies have been conducted, namely in TNW, Uitkijk, Farmersland East (FLE), Farmersland West (FLW), and TAM North areas.

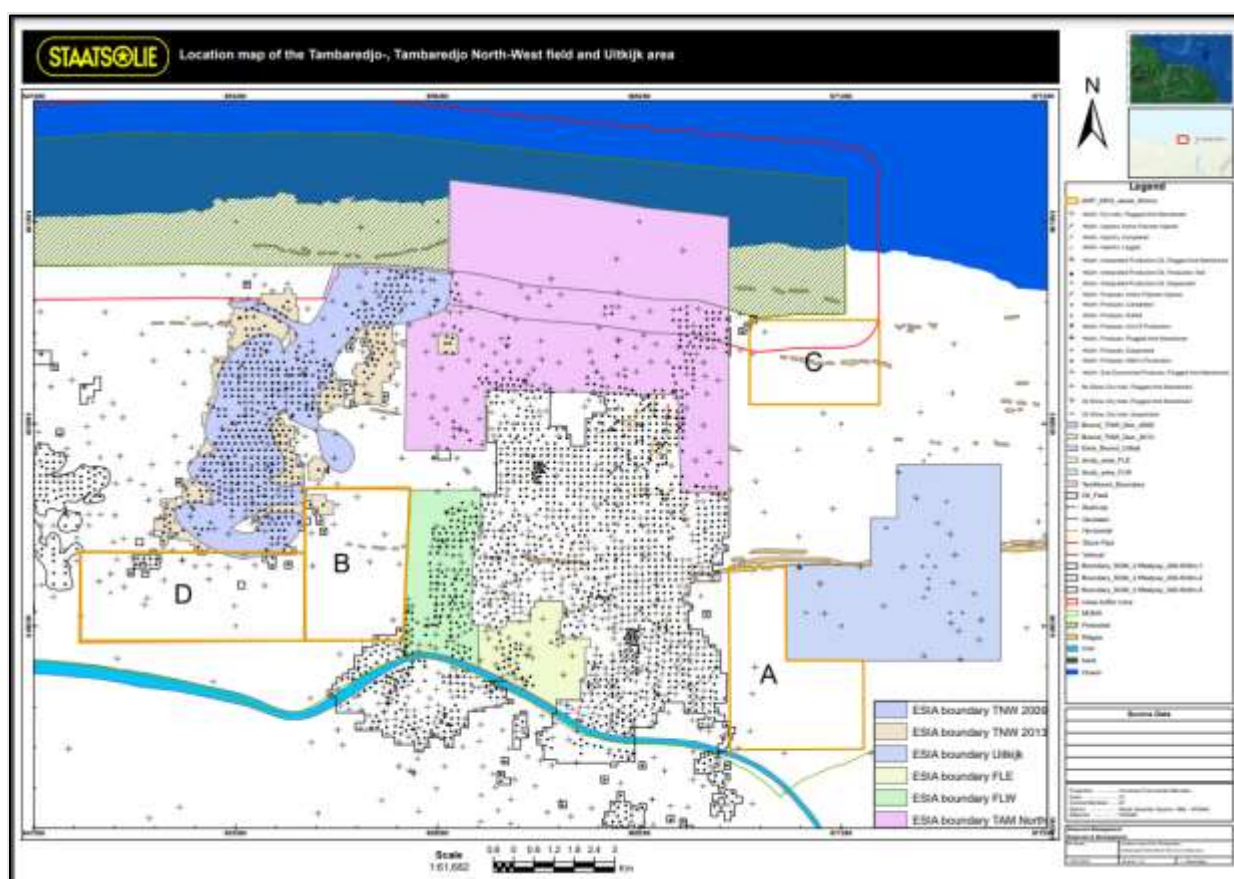


Figure 2: Location map of the AOI adjacent to the Tambaredjo and Tambaredjo North-West oil fields and the Uitkijk area

A total of thirteen (13) appraisal locations projected in both wetland and dryland areas have been proposed for future appraisal drilling programs. The appraisal program of 2023 consists of nine (9) appraisal locations and is planned to start in the 4th quarter of 2023. In the TAM-West (B) area, four (4) locations are proposed and, in the TAM-UIT (A) area five (5). Out of these five TAM-UIT appraisal locations, one location is a dependent location. The decision to drill the dependent location will be taken based on the results of the first wells.

The 2024 appraisal program consists of six (6) wetland locations from which four (4) locations are already identified in the TNW South (D) area. Out of the four (4) TNW South locations, two are

dependent locations. Furthermore, the TAMNE (C) is included in the EMMP process to have permission to enter this location in future programs.

Table 2 provides detailed information of the proposed appraisal locations in the three (3) areas, which have already been identified.

Table 2: Overview of the coordinates of the Appraisal 2023 & Preliminary 2024 areas

GENERAL INFORMATION 2023-2024 ADP LOCATIONS							
#	Projected well name	Projected coordinate (WGS 84)		Latitude WGS84	Longitude WGS84	Field/Area	Target reservoir(s)
		X-coordinate	Y-coordinate				
1	30LN20	658651	652334	5°53'59.3371"N	55°34'0.6574"W	TAM-West 30LO	T2
2	30LI25	658758	651455.92	5°53'30.7408"N	55°33'57.2519"W	TAM-West 30LO	T2
3	30LM14	657492	652055	5°53'50.3504"N	55°34'38.3634"W	TAM-West 2M16	N1-2
4	30LR05	657754.03	652674.73	5°54'10.5050"N	55°34'29.7924"W	TAM-West 2M16	N1-2
5	30HT17	669200	648393.9	5°51'50.1537"N	55°28'18.0335"W	TAM-Uitkijk	T2
6	30JR25	672700	648613	5°51'56.9726"N	55°26'24.2306"W	TAM-Uitkijk	T2
7	30JP17 (Dependent on 30JR25)	670060	648393.9	5°51'50.0772"N	55°27'50.0752"W	TAM-Uitkijk	T2
8	30JQ25	671690	648460	5°51'52.0830"N	55°26'57.0789"W	TAM-Uitkijk	T2
9	30NJ16_Back up	668761	651357	5°53'26.6670"N	55°28'32.0427"W	TAM-Uitkijk	T2
10	29PD14	653620	650192	5°52'50.0224"N	55°36'44.4092"W	TNW South	N2
11	29PH07	652157	651020	5°53'17.0892"N	55°37'31.9059"W	TNW South	N2
12	29KX14 (Dependent)	653520	649600	5°52'30.7481"N	55°36'47.7049"W	TNW South	N2
13	29PC12 (Dependent)	652157	650100	5°52'47.1363"N	55°37'31.9795"W	TNW South	N2

Figure 3 provides a map overview of the proposed appraisal well locations in the TAM-West area (4 main appraisal locations), TNW-South area (2 main appraisal locations and 2 dependent) and the UIT-TAM area (3 main appraisal locations, 1 dependent and 1 backup location). For 2023, the projected main appraisal locations are depicted in green; the dependent locations are in blue and the backup location in orange.

For 2024, the main locations are indicated in purple and the dependent in blue.

The exact well locations of the TAMNE area are not identified yet.

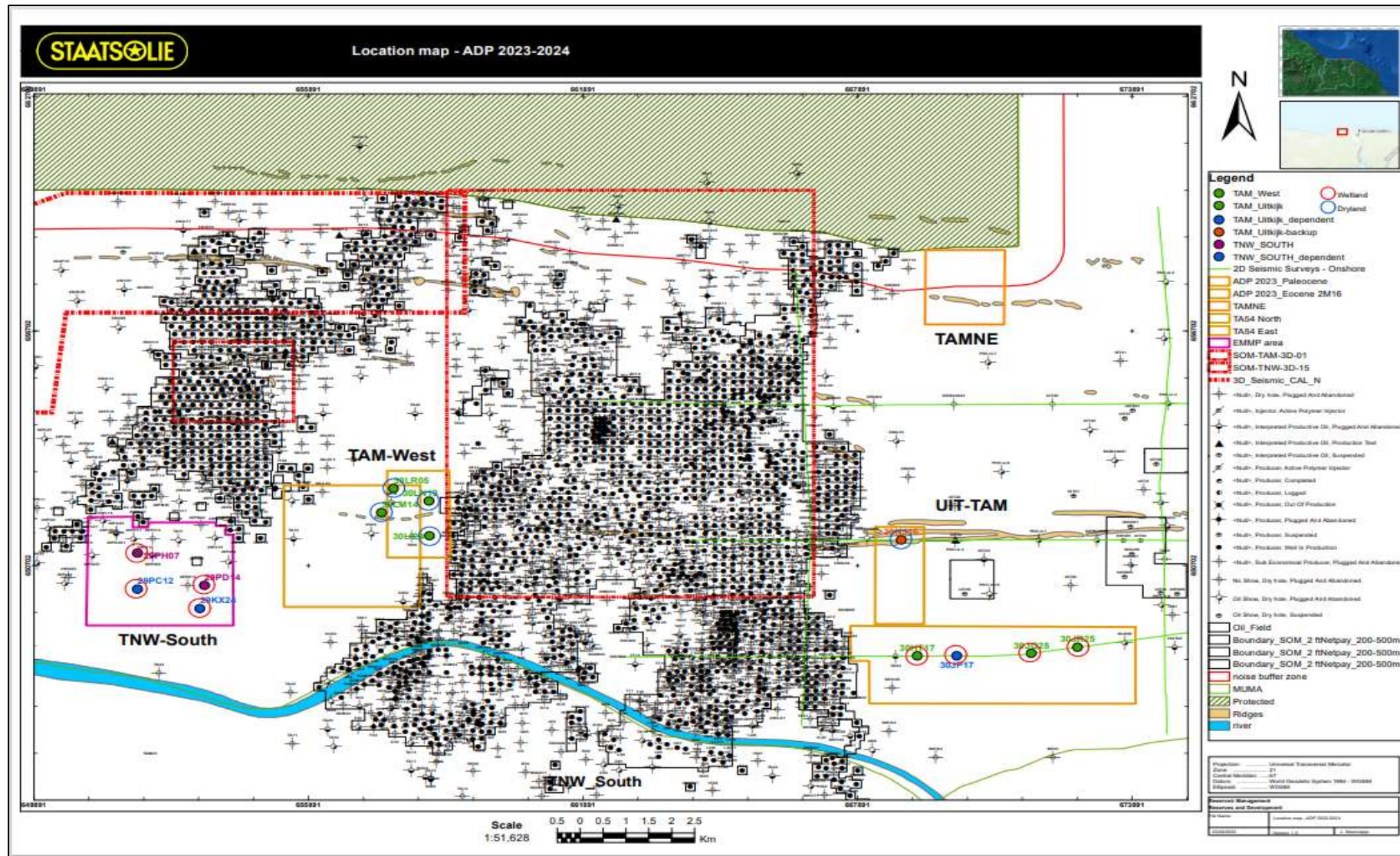


Figure 3: Location map of the proposed 2023-2024 appraisal locations in the TAM-West area, TNW South area and the UIT-TAM area

Of the nine (9) well locations planned for 2023, four (4) locations are in the wetland area, while five (5) are in the dryland area. Of the six (6) locations planned for 2024, four (4) locations are identified in the wetland area and the other two (2) locations in area C are yet to be determined. In Figure 3 the wells in wetland area are circled in red and the dryland locations in blue.

Table 3 gives an overview of the timeline of the project is indicated.

Table 3: Planning of the Appraisal Drilling Project 2023 (based on nine (9) locations)

Phase 1	
Activities	Timeline
Project planning (including consultations with landowners)	
Scouting of locations	1x week
Cleaning of overgrown trails and construction of location (s)	<p>Area A:</p> <ul style="list-style-type: none"> Construction of new trails conform Figure 5 35 days and location construction 14 days. <p>Area B</p> <ul style="list-style-type: none"> Rehab existing trails conform 20 days and location construction 25 days <p>Area D</p> <p>Cleaning of overgrown trails and construction of new trails 10 days and construction of 4 locations 30 days</p>
Rig move to first well location	10 days
Drilling & wireline logging	12 days per well
Decommissioning (Decommissioning of flowlines, LV network and X-mas tree)	10 days per well

	No. of wells	Nov. 2023	Dec. 2023	Jan. 2024	Febr. 2024
Area A	2 wells	35 days	14 days		
	3 wells (1 backup)			21 days	
Area B	4 wells (dryland)	20 days	25 days		
Area C					
Area D	4 wells	10days			
			30 days		
	Scouting & Construction				
	Location building				

Drilling of the proposed ADP locations requires:

For wetland operations:

- Existing TNW and POC landing stages: for transportation of personnel and materials.
- Trails and drilling locations: for swamp rig and equipment move (carriers etc.), material transportation, construction, drilling activities via the swamp.
- Transportation of personnel and materials for drilling

For dryland operations:

- Roads and drilling locations: for land rig and equipment move (10-wheel horse etc.), material transportation, construction, drilling activities.

2. Transportation of personnel and materials for drilling

1.3.2 Construction phase

Main access point/ Landing stages

The project sites will be reached via the following routes:

- TNW-South (D) is accessible via the TNW landing stages, which can be reached by car via Kisoensingh westweg, TA58 cluster 2, Broederschapweg and Noorddamweg.
- The location of the wells 30LR05 and 30LM14 in the TAM-West (B) area can be reached via the Gangaram Pandayweg. The locations to the wells 30LR05 and 30LM14 can be reached via the existing Farmersland area known as Debi-Tewarie that can be reached via: 1. Gangaram Pandayweg, 2. Broederschapweg TA41 (3N17) and 3. TNW, the Soekhadam to the south.
- TAM-UIT (A) is an area accessible via POC Landing (TA53). The POC (TA53) landing can be reached via the Kisoensingh westweg, TA58 cluster 1 east, Tjon A Pan (TAP) weg, 3O24 cluster 3 towards POC Landing.

An overview of the existing main infrastructure (roads/ dams and/or trails) is presented in **Figure 4**. The detailed planned routes to the well location are presented in **Figure 5 - Figure 7**.



Figure 4: Overview existing roads/ dams, landing stages and waterways near the project sites

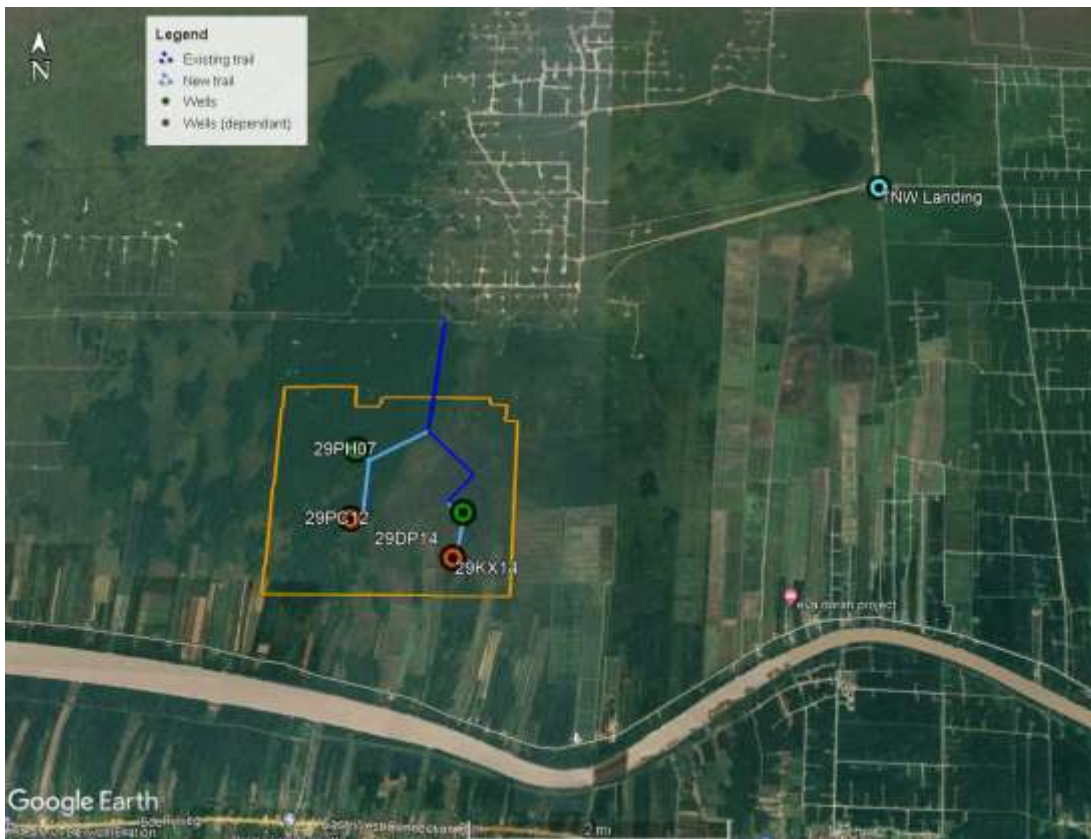


Figure 5: Planned trail to TNW South wetland locations



Figure 6: Planned and backup road to TAM west dryland locations



Figure 7: Planned and backup trail to TAM UIT dryland and wetland locations

Trails and drilling locations

TAM-West area

TAM-West area (Perceel Abhelak) is accessible by using 4-m wide existing roads of the Farmersland. In the TAM-West area, the existing roads will be rehabilitated and, where necessary, new roads will be constructed to reach the drilling locations. The drilling location measures 65 x 27m. Culverts with a diameter of at least 1 m will be placed at locations where the roads intersect with a discharge canal. Or an existing clay (Perceel Abhelak) dam of 3km will be used as an alternative road which can be reached from Gangaram Panday weg

TNW-South

Two types of trails can be distinguished: access and service trails. Access trails are used for rig move and service trails for transportation of personnel and materials (good and supplies) during each phase of the project.

The project site will be reached through the existing trail from the TNW Landing through the currently overgrown trail to the TNW-South area (cluster 3). To execute the drilling program, existing overgrown trails will be cleared and a new trail with a length of 1000 m from cluster 3 to the TNW-South area will be constructed. The clearing of existing trails and the construction of new access trail (wide 10-12 m) and service trails (wide 6m) and the drilling locations (60m x 70m) will be done with one swamp excavator.

The planned route may change if deep spots are encountered during clearance of the waterways, especially within the Typha ecosystem where the deepest swamps are found (Noordam, 2010). Deep spots are not favorable for the traction of the excavator that pulls the rig forward.

TAM-UIT area

The project site will be reached through the existing and new (9 km) trails from the POC landing. The clearing of existing and new routes, including drilling locations, is in accordance with the specification of TNW-South. From 30JQ25 a new trail will be constructed through an existing ridge to 30JR25.

Note: The existing route crosses a ridge, this will be indicated in the method statement for performing the work.

Transportation

Materials and goods for swamp drilling purposes will be transported with a carrier or on a barge through the waterways. The rig will move to the project area (AOI) after completion of the Exploration project in the Uitkijk area and the excavator will move from the POC landing or the TNW Chemical landing to the project area (AOI) depending on the sequence of the wells. Transportation of personnel will be done with vehicles at the Staatsolie Saramacca plant on land and by airboats in the swamp area through existing and new service trails.

Materials and goods for land drilling purposes will be transported with a 10-wheel horse with trailer along the roads. The rig will move from the TA-45 area to the project area (AOI). Transportation of personnel on land will be done with vehicles through the Staatsolie Saramacca plant to the location.

Dams

To reach the location in 30JR25 (TAM UIT) the van Dijk dam will be crossed. An opening of max. 6m will be made to mobilize the rig, airboats and carriers for transport drilling & completion materials.

In the swamp, clay dams will be constructed for installation of flowlines, headers and testing facilities (see Figure 8 to Figure 10). The flowlines and headers will be constructed on top of these clay dams.

1.3.3 Operation Phase**Drilling Operations (wetland and dryland)***Drilling*

A Failing 2500 rig on a barge (6 by 12m) will be utilized to drill the wells on wetland. The auxiliary equipment installed on barges (6 by 12m) will be pulled with swamp excavators or carriers to the location.

A Failing 2500 rig on a trailer will be utilized to drill the wells on dryland. The auxiliary equipment installed on trailers will be pulled with a 10-wheel horse to the location.

Drilling is a cutting process that uses a drill bit to cut a hole of circular cross-section in the earth. The drill bit is usually a rotary cutting tool, attached to steel pipes. In an initial stage of the drilling process, a surface steel pipe (conductor or surface casing) is pressed down to a depth of about 24m (80 feet). After the surface casing has been pressed, drilling is resumed to the planned total depth (TD). After drilling is completed, the wireline logging process will commence to measure reservoir parameters especially for the oil sands encountered (see wireline logging).

Drilling fluid

During the drilling process, drilling fluid (also known as “mud”) is pumped down through the drill pipe and exits through the drill bit (Noordam, 2010). For the Saramacca Operations water-based drilling mud is used, mainly composed of water, clay (Bentonite – 5500 kg), Sodium Bicarbonate (85 kg), Barite (1818 kg), Pac LV (568 kg) and calcium carbonate (909 kg) to drill a well.

“Cuttings”, consisting of clay, sand and shell fragments generated during drilling, and the remaining mud, will be disposed at the drill site, since no significant impacts were predicted and observed up to now. Oil contaminated drilling fluid on dryland drilling locations, will be collected and transported to the Staatsolie land farm for further processing.

Wireline Logging

After finalization of the drilling process, the hole is logged with a variety of logging tools that are lowered into the open well hole. Measurements include electrical properties (resistivity and conductivity at various frequencies), sonic properties, and active and passive nuclear measurements. The logging cabin, equipment and tools are placed on a pontoon to log the well. No emissions occur during the logging process.

Logistics

The required materials for the drilling process and personnel will be transported via the above-mentioned landing sites to the well locations.

Well testing

If economically producible oil is encountered in any of the proposed wells, production and testing facilities should be available on time to start a production testing program.

The wells will be made production ready. For the testing phase, test facilities including flowlines & test tanks will be installed.

The activities for setting up the production and testing facilities are as follows:

1. Designing the size of the HDPE pipes (flowlines and sub-headers)
2. Preparation and approval of the construction drawings, including review with HSE
3. Procurement of materials, including a site visit
4. Mobilization and demobilization
5. Transportation of the materials
6. Excavation and bush clearing of the area, approximately 70 x 45 m for dryland and 40 x 50 m for wetland, both for vertical wells
7. Construction of civil works (dams to Test Tank facilities), in case of wetland
8. Fabrication of the test tank and transport to site
9. Installation of the test tank
10. Installation of the HDPE pipes, including hydrotesting
11. Installation of the LV poles, including electrical cables and powerrack (well and test tank)
12. Installation of the well platform
13. Installation of the X-mas tree
14. Tie-in of the LV line
15. Tie-in of the flowline, manifold and well
16. Commissioning and start-up of the facilities

Below are sketches made in Google Earth of the proposed flowline and sub-header routings and test tank locations: the yellow lines indicate flowlines, whereas the red lines represent (existing) sub-headers. Hook-up of these wells to the network is based on the assumption that the maximum allowable well pressure (MAWP) of 167 psi is not exceeded and there are no landowner issues.



Figure 8: Routing of well 29PH07 and 29PD14 in the TNW South area

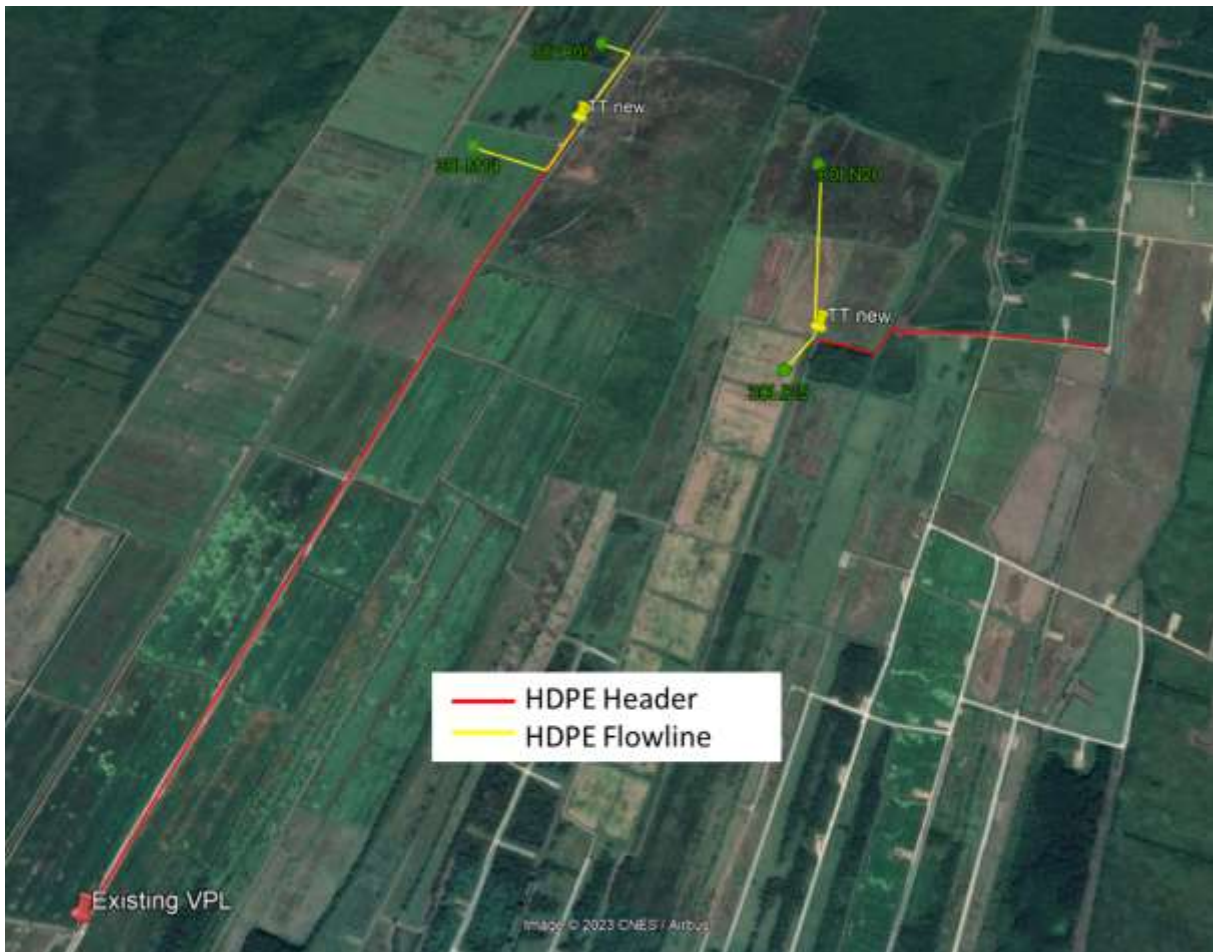


Figure 9: Routing of wells 30LM14, 30LR05, 30LN20, 30LI25 in the TAM WEST area

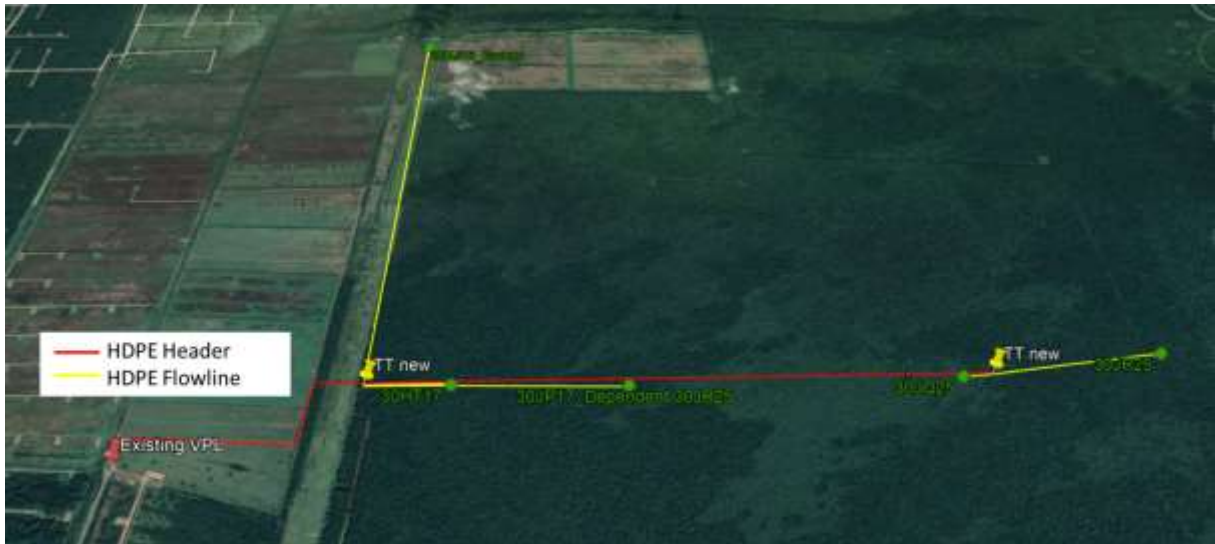


Figure 10: Routing of wells 30HT17, 30JP17, 30JQ25, 30JR25 and 30NJ16 in the TAM UIT area

1.3.4 Decommissioning

In the decommissioning phase of the project, the surface casing of the well will be removed or cut of 15 ft. below the surface and the sections of the well bore will be filled with cement to isolate the flow path between oil and water zones from each other, as well as the surface. The project area will be abandoned, and the trails will be barricaded to prevent access for intruders, unless Staatsolie decides to proceed with further appraisal of the Uitkijk area after acquiring a permit from NIMOS. A close out inspection will be carried out by representatives of HSSE, Drilling operation and CCU department including the project manager, and the respective landowners.

1.3.5 Equipment and manpower input

The table below provides an overview of the equipment that will be employed for the various project activities. In addition, an overview of the expected number of personnel is presented.

Table 4: Information on planned resources for this project

Equipment	#	Deployment	Activity	Personnel
CONSTRUCTION				
Airboat	2	Daily-workdays	Personnel transport	4
Excavator	2	Daily – workdays	Clearing	
DRILLING OPERATIONS (SWAMP)				
Airboat	2	Per tour of 12 hrs.	Transport personnel	50 (total) / per shift 16
Carrier	2	Per tour of 12 hrs.	Transport supplies and materials	
Excavator	2	Per tour of 12 hrs.	Transport pontoons	
Pontoon	6	Per well	Transport supplies	
Rig	1	Per well	Drilling and Completion of wells	
Testing (RFT)		Per well	Wireline logging with a special tool	2
DRILLING OPERATIONS (LAND)				
Vehicles (Bus)	1	Per tour of 12 hrs.	Transport personnel	50 (total) / per shift 16
10-wheel Horse with trailer	1	Daily	Transport supplies and materials	
Water truck	1	1-2 per tour of 12 hrs.	Transport water for drilling and completion activities	
Logging unit truck	1	1-2 Per well	Wireline logging (and perforating)	
Cementing unit truck and silo	2	1-3 per well	Cementing and gravel packing	
Rig	1	Per well	Drilling and Completion of wells	
Testing (RFT)		Per well	Wireline logging with a special tool	2
DECOMISSIONING PHASE				
Airboats	2	Daily	Personnel transport	6
Excavator	2	Daily – workdays	Transport	
Engineering Facilities	10	Daily – workdays	Decommissioning of flowlines, LV network and X-mas tree	

1.4 Updated Bio-physical environment

1.4.1 Introduction

The environment in which the four (4) AOI's are located is shown in **Figure 11**.

In previous years, this area has been extensively studied in the context of ESIA studies for oil exploration and production development projects, while project monitoring also took place (see references). The collected information has been used to describe the current biophysical baseline conditions.

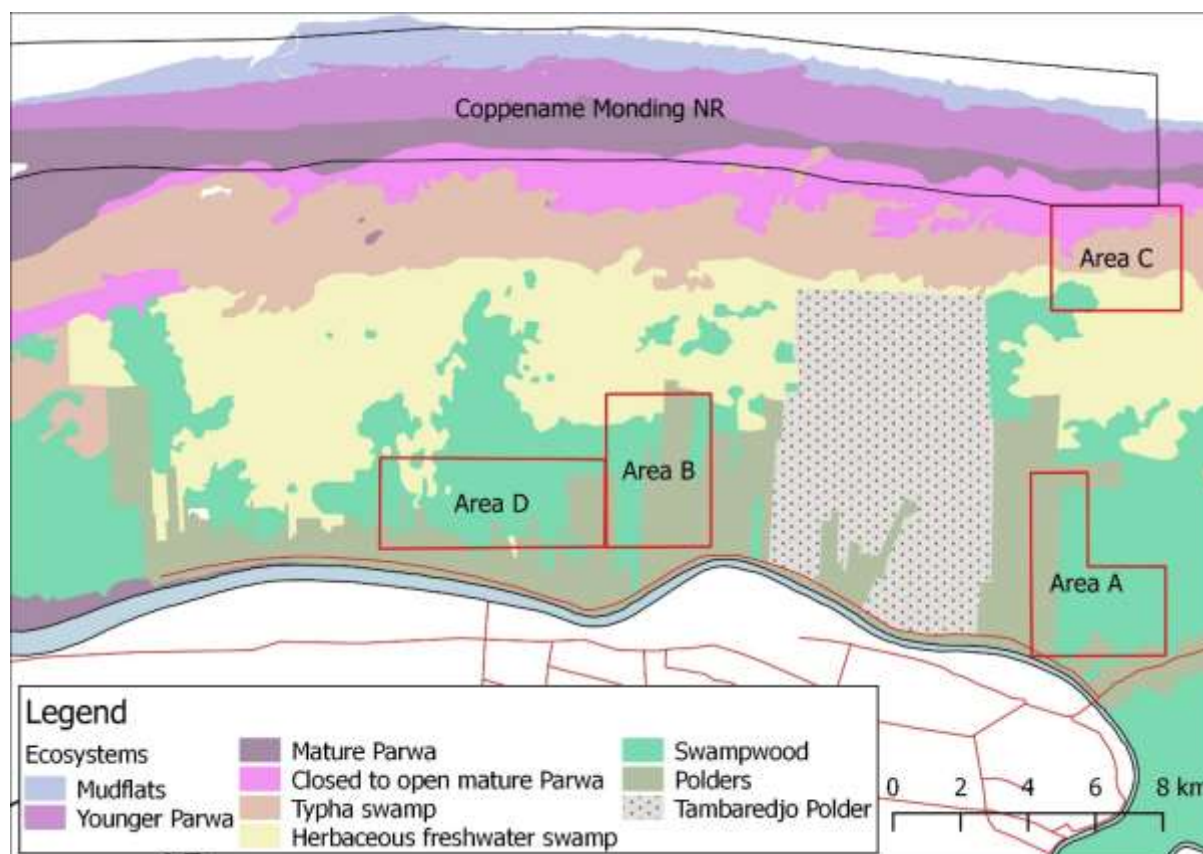


Figure 11: Overview of the environment (ecosystem) near the Areas of Interests

1.4.2 Climate

Like in most parts of Suriname, consistently high temperatures and a high humidity characterize the study area with the main variation being rainfall and the associated cloud cover. The mean annual air temperature at Paramaribo, which is representative of the coastal zone in Suriname, including the project area, is 27.3 °C, with a daily range of 7-10 °C and with an annual range of about 2-3°C.

The average annual rainfall in the northern part of Suriname predominantly ranges between 2,000 and 2,500 mm, which apply for most of the study areas (Area A, B and D). However, in the north the total rainfall may be slightly lower (Area C). There are four seasons, based upon rainfall distribution:

Long Rainy Season	End April-Mid August
Long Dry Season	Mid-August-Early December
Short Rainy Season	Early December-Early February
Short Dry Season	Early February-End April.

1.4.3 Air quality

Related to air quality, Area C is in the northern wetland that is still predominantly in its natural state and no sources of relevant air emissions are found in its vicinity. The other AOI's (A, B and D) are all found in the south and include rice polders. Sources of potential air pollution within these areas are mechanized activities in the rice fields. However, only a minor part of the fields is used, and activities are incidental and short-lived. From the outside, air quality may be affected by emissions from nearby swamp boats, test-tanks, vehicles on nearby roads and farm activities at neighboring farms. Air pollution within the Areas of Interest from these sources is minimal, given the low and intermittent emissions from these sources, the prevailing eastern (NE-SE) winds and the distance from the sources. So generally speaking, the air quality at all Areas of Interest is good.

1.4.4 Noise

In the absence of relevant man-made sources, predominantly natural noises will occur in Area C. Sources of noise in the other AOI's are traffic along the Gangaram Pandayweg (B and D) and the Wayamboweg (A), the incidental passage of a swamp boat in the distance (B and D) and farm activities (B and D). These man-made noises will mainly be heard at daytime. In the period 2018-2022, several measurements were conducted along the Wayamboweg and the Gangaram Pandayweg. Highest LAeq was 70.6 dBA (at 8 meters from the road axis), measured along the Wayamboweg in the dry season, with a traffic intensity of 318 vehicles/hour (ILACO, 2018 and ILACO, 2023). Due to sound attenuation, this sound level will be reduced to a level below 55 dBA at approximately 50 meters from the road axis. Sound levels along the Gangaram Pandayweg are on average 10 dB lower than those along the Wayamboweg. With most of the southern Areas of Interest at least at a distance of 300 meter from roads, it is concluded that the sound level in these areas is predominantly determined by animal sounds and the effect of the wind on the vegetation, and that it is very unlikely that these will reach unacceptable levels.

1.4.5 Land and soil

The study areas are located in the Coastal Plain, which together with the Coastal Plains of French Guiana and of Guyana constitutes the margin of the large Guiana Basin. More specifically, they are found in the flat and very low-lying Young Coastal Plain in an area dominated by clay flats. Some discontinuous, very narrow and usually very low ridges indicate former coastlines. The area is within a zone with recent to very recent marine deposits. Currently, sedimentation is dominating along the coast north of the study areas and predominantly coastal accretion has occurred during the last decades.

The dominant soil type in Area C is a gray, half ripe to nearly unripe (soft) clay; the soils are brackish with a saline subsoil. Peat (pegasse) thickness here ranges between 5 and 40 cm. The swamp soils in the other areas of interest comprise half ripe to nearly ripe clays, which are fresh with a brackish subsoil. A thick layer (40-80 cm) of peat (pegasse) is usually present. The clay soils of the rice fields have been drained and are ripe to nearly ripe with a half ripe subsoil. They are fresh with a slightly brackish subsoil.

1.4.6 Hydrology

The area to the north of the Wayamboweg and the Saramacca River is known as the Duivelsbroek Swamp, which is subdivided in the Buru Swamp (west) and the Wayambo Swamp (east). Areas of Interest A and C are located in the Wayambo Swamp and Areas of Interest B and D in the Buru Swamp. The Duivelsbroek Swamp is dominated by a 4-5 km wide zone of saline to brackish wetlands along the coast with extensive freshwater wetlands to the south of it. Swamp water depths vary from less than 20 to 70 cm in the dry season to 90-120 cm in the rainy season. The deepest swamps are found within the Typha zone and the shallowest in the Parwa zone.

Most of the Duivelsbroek Swamp is draining predominantly towards the sea, because the Gangaram Pandayweg and the Wayamboweg and their polders block most of the water flow towards the Saramacca River in the south and southwest. This seaward drainage is applicable for the Areas of Interest B, C and D. Area C will drain partly through the Calor Canal to the east of it.

But the swamps of Area A will predominantly drain towards the southwest through the James Creek to the Saramacca River.

Water flow in the swamps is generally very slow due to the high hydrological resistivity of the vegetation and the peat. But within the existing trails and canals, flow may be faster. A relatively small amount of water is taken in from Areas of Interest B and D by rice farmers for crop irrigation and excess water is drained to the Saramacca River. Another part of southern flow towards the river flows across and through unmaintained dams of abandoned polders and from there to the river via the polder drainage system.

For nature management purposes, the so-called “red line” has been created to serve as an arbitrary watershed boundary (**Figure 12**). In the Duivelsbroek Swamp, this line has been drawn approximately halfway between the ocean and the Saramacca River, but the actual watershed is situated more to the south.

The flow of clean fresh water from the Buru Swamp adds to the brackish environment in which mangrove forests along the coast (including the Coppename-monding Nature Reserve) flourish. Significant water flow towards the ocean only occurs during the peak of the rainy season.

Within the Duivelsbroek Swamp a number of south-north canals and associated dams are found. Areas of Interest A and C are located between the Durga Canal and the Calor Canal, resulting in a south-north flow for Area of Interest A and a SW-facing flow (towards the Saramacca River) and a south-north flow (to the ocean) for the swamp section of Area of Interest C. The hydrology of the swamp section of Areas of Interest B and D is to a large extent governed by the open water trails of the nearby Tambaredjo NW oilfield to which there is an uninterrupted connection (no dams).

The rice polders within Areas of Interest A, B and D have controlled water management with a system for irrigation and drainage. Irrigation water is taken in from either the swamp or the river, depending on the salinity of the river and the availability of water in the swamp. All excess water from the polders is discharged towards the Saramacca River.



Figure 12: Existing canals and the arbitrary watershed boundary

1.4.7 Water quality

Data on the water quality in the Duivelsbroek Swamp was collected during several baseline studies and during monitoring. Benchmark values were determined for pH, Electrical Conductivity, Chloride and

Turbidity, using the collected baseline data (**Table 5** and **Table 6**). A distinction is made between the freshwater swamp and the brackish water swamp, which have slightly different characteristics. Hydrocarbons are not present in natural swamps, although in a number of cases their presence was indicated by analysis, also in surface water elsewhere in Suriname. Most likely this is due to the presence of certain organic components in the water, other than hydrocarbons. The IFC benchmark value is used for this parameter.

Table 5: Benchmark values for the brackish herbaceous swamps (Open Parwa and Typha)

Parameter	Benchmark Value	Source
pH	5.8-7.1 (rainy season) 5.5-6.9 (dry season)	Noordam Environmental Consultancy 2012
Electrical Conductivity (EC)	2,000 $\mu\text{S}/\text{cm}$ (rainy season), 5,400 $\mu\text{S}/\text{cm}$ (dry season)	Noordam Environmental Consultancy 2012
Chloride	1,300 mg/L (rainy season), 1,800 mg/L (dry season)	Noordam Environmental Consultancy 2012
Turbidity	36 NTU 102 NTU	ILACO 2021: Maximum value at undisturbed reference point C1 ILACO 2018: Baseline measurements dry season
Total Hydrocarbon content	10 mg/L	IFC 2007

Table 6: Benchmark values for the Freshwater herbaceous swamps and swampwood

Parameter	Benchmark Value	Source
pH	4.8-6.7 (rainy season) 4.8-6.7 (dry season)	Noordam Environmental Consultancy 2012
Electrical Conductivity (EC)	1,100 $\mu\text{S}/\text{cm}$ (rainy season), 2,200 $\mu\text{S}/\text{cm}$ (dry season)	Noordam Environmental Consultancy 2012
Chloride	375 mg/L (rainy season), 720 mg/L (dry season)	Noordam Environmental Consultancy 2012
Turbidity	36 NTU 107 NTU	ILACO 2021: Maximum value at undisturbed reference point C1 ILACO 2018: Baseline measurements dry season
Total Hydrocarbon content	10 mg/L	IFC 2007

Area of Interest C has a brackish water swamp in the north and a freshwater swamp in the south, while the other three AOI's are all located within the southern freshwater swamp (Figure 11 and Figure 12). In addition, part of the latter three areas consists of polder land. The water of the brackish zone is neutral to slightly acid in both the rainy season and the dry season. It has a low to moderate salinity in respectively the rainy and dry season, with figures usually between 200 and 800 mg/L in the rainy seasons and between 600 and 1,600 mg/L in the dry seasons.

The freshwater swamps overall have slightly more acid water than the brackish swamps, due to the lower salt content (bases) of the water. There is no difference between the rainy and dry seasons. Salinity here is also lower, most likely due to the lower salt content of the soils (older soils and more loss of salts over the years). In general, chloride content in the rainy season ranges between 100 and 300 mg/L, and in the dry season between 400 and 900 mg/L.

Higher chloride levels (and EC) will occur in extremely dry years due to low swamp water levels. In addition, peaks in chloride have occasionally been observed following construction of clay dams, during which saline subsoil was brought to the surface and salts were leached to the neighboring swamp. Such peaks were usually localized and short-lived due to dilution of the released salts and the discharge of the water to the river or the ocean. The water of the freshwater swamp in the rainy season is suitable to be used as irrigation water for wetland rice (<300 mg Cl/L).

Monitoring in the period 2020-2022 indicates that pH is almost always between the above-mentioned benchmark values¹.

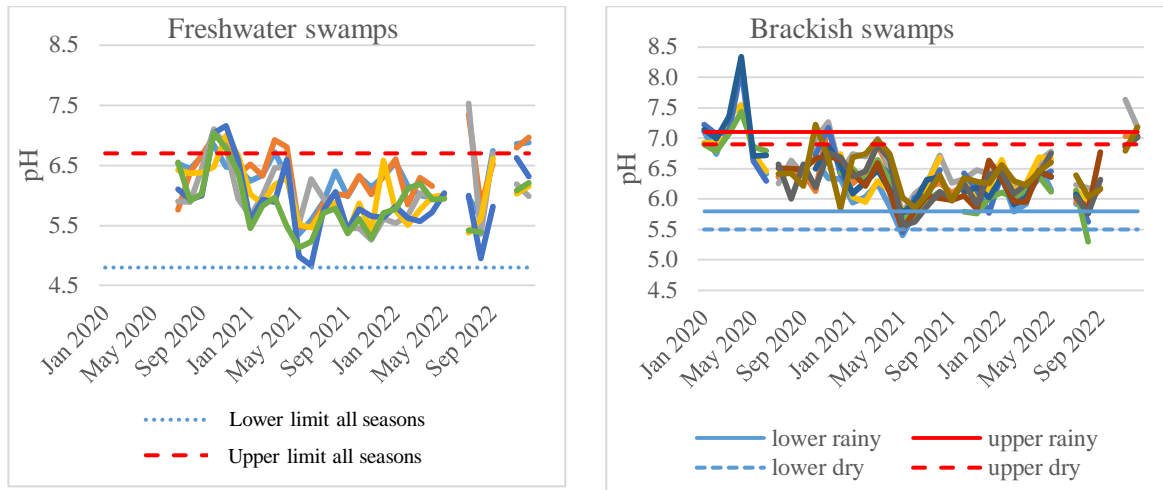


Figure 13: pH monitoring Tambaredjo NW and Tambaredjo North (2020-2022)

The higher-than-normal brackish water pH in the dry season of 2020 is related to elevated chloride levels in the same period ((**Figure 14**).

Chloride is almost always below the benchmark values of the two seasons (**Figure 14**), except for the dry season of 2020 (November), when chloride levels reached up to 950 mg/L in the Freshwater swamp. Upon the onset of the rains in December, the levels dropped again below the benchmark value.

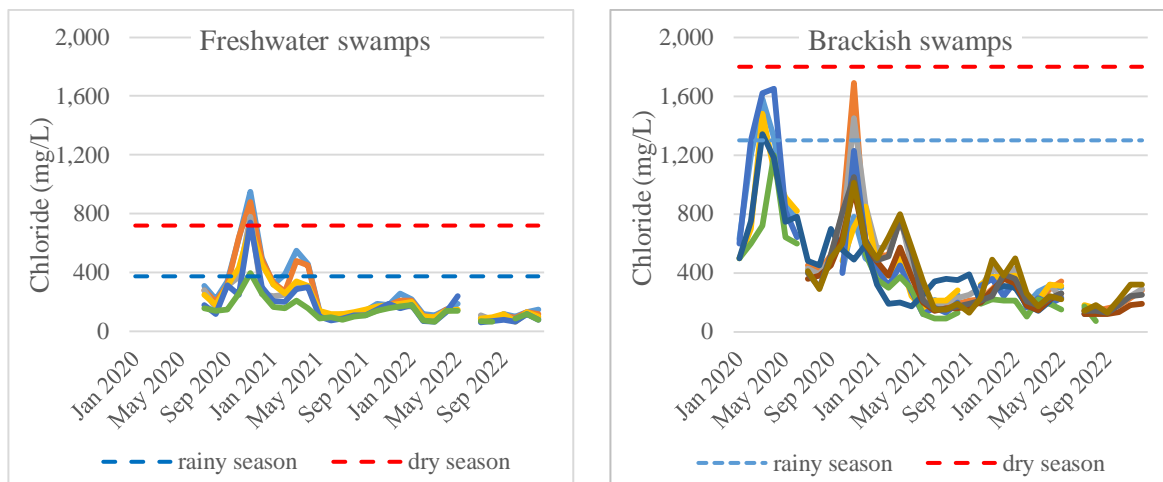


Figure 14: Chloride monitoring Tambaredjo NW and Tambaredjo North (2020-2022)

Monitoring shows that the turbidity of the swamp water in the 2020-2022 period is almost always above the set standard. This is logical because measurements are made in an active oilfield, with daily activities in the swamp. Monitoring in the Wayambo Swamp has shown that it takes 4-6 weeks after activities for the high turbidity to subside and to regain the natural transparency (Staatsolie, 2020 and 2022).

¹ A few very high pH values (up to 8.5) are suspicious and cannot be explained. It is most likely a malfunction of the pH meter, especially since these high values were all measured on the same day (October 2022). These values have been disregarded.

Swamps generally have low oxygen content, with values changing over the day. Values are lowest in the early morning and increase during daytime. Oxygen is continuously consumed by decomposing organic materials, but during the daytime, a considerable production of oxygen occurs by photosynthesis of algae. Temperature, water movement and precipitation furthermore affect the oxygen content. Higher levels are found in the trails, due to wind action and flow.

The frequent presence of insect-eating Bladderwort (Blaasjeskruid, *Utricularia foliosa*) in almost all of the airboat trails may indicate a non-polluted (oligotrophic = poor in nutrients) aquatic environment (Teunissen, personal communication, 2009).

1.4.8 Ecosystems

The study area is characterized by a vegetation succession from a saline mangrove along the ocean to a freshwater environment in the south (**Figure 11**).

Along the coast, young Black Mangrove (Parwa) develops as soon as mudflats are silted up above mean sea level. With the prevailing net coastal accretion, a Black Mangrove belt has developed with mature mangrove to the south of the more recently established mangrove. The mature mangrove forest is of the blocked type, meaning that there is no longer an influence from the tides. In the rainy season there is a freshwater outflow through this zone toward the northern mangrove forest. Parwa in the southern part of the mangrove belt will gradually die off due to the prolonged higher water levels here. An open vegetation with scattered Parwa will develop here. This vegetation is found in the northern part of Area C. A herbaceous brackish water swamp (with or without scattered Black Mangrove trees) borders the southern edge of the mature Parwa forest. It is established on firmer soils on which a peat layer develops. Typha (Langagrasi) dominates these swamps in Area C. Grass and peat fires, which may occur during dry seasons, could prevent the development of any woody vegetation here. The southern part of Area C comprises freshwater herbaceous swamps, with patches of low swampwood.

Further inland, so-called “grass swamps” become fresh and richer in species. Gradually a low to high, species-rich swamp wood may develop. The other three Areas of Interest comprise mainly low swampwood with smaller portions of high swampwood.

Two vegetation types with (potential) high international conservation value is present in the project area:

- the black mangrove forest (Parwa forest)
- the high swamp wood that forms an intergrade toward high swamp forest

At a national level, the mangrove vegetation along the coast contributes to the many goods and services the estuarine zone has to offer. Conversion of mangrove forest means loss of free coastal protection and reducing the high primary production of mangrove forest. Loss of mangrove forest reduces the secondary production of fauna, including ocean fish and shrimp. Virtually all plant species in the area are confined to the Surinamese coastal region, which means that they are found only in 1 % of the Surinamese land area, where many human activities are taking place and even are increasing.

The mudflats and the mangrove zone between the Coppename and the Suriname River are important feeding and nesting areas for residential coastal birds and the most important feeding and wintering ground for migratory birds from the north (including from Canada). The Saramacca coast hosts 13 bird species of international importance. Almost every year breeding colonies of scarlet ibises and heron species are present in the young Black Mangrove forests along the Saramacca coast. The breeding season starts between March and April and ends between August and September.

Seafood abundance is directly related to the extent of the local mangroves. Up to 90% of marine fish and shrimp species are found in and near mangrove areas during one or more periods of their life cycle. High production of seafood is found in the near-shore habitats where small-scale fisheries are practiced: in the shallow sea, the river estuaries, tidal creeks, lagoons and brackish swamps. In Suriname, these ecosystems provide the local market with fish and shrimp. Also, large-scale industrial deep-sea fisheries benefit from the nursery function of these ecosystems.

The ecosystems of the coastal zone of Suriname, with their abundant bird and fish life, contribute to the increase of local and international nature tourism and outdoor recreation and attract international and local researchers and students.

The national, regional and international importance of the coastal zone north of the Tambaredjo NW and Tambaredjo North oil fields can be summarized as follows:

- between 1955 and 1966 the area had the status of a local “Bird Sanctuary”.
- in 1966 the same area became a national “Nature Reserve” (Coppename-monding Nature Reserve);
- in 1989 it received the regional status of "Western Hemispheric Reserve" within the Western Hemisphere Shorebird Reserve Network (WHSRN). As such, the area is twinned with two protected areas in the Bay of Fundy in Canada;
- in 1985 it was declared a RAMSAR Convention Wetland of International Importance;
- in 2002 the area has been embedded in the North Saramacca Multiple-Use Management Area (MUMA) that may be considered as a buffer zone.

The mangrove forest in the northern project area (Area C) is of the blocked type, which does not, or to a much lesser extent, contribute to above-mentioned goods and services. Most of this area is located in the buffer zone.

1.4.9 Fauna

Aquatic ecology

In 2009 the ichthyologist Mol conducted an extensive baseline study of the aquatic ecology of the Buru Swamp (Noordam et al. 2010). It was concluded that no unique, rare, endangered, vulnerable or biogeographically important fish species are present. Based on the similarities in ecosystems, it is anticipated that the aquatic ecology in the Wayambo Swamp will be comparable to the one in the Buru Swamp.

Birds

The avifauna of the Buru Swamp is characterized by moderate species richness and a prevalence of common species. Given the disturbance in the existing production areas it is to be expected that the avifauna of the Calcutta, Tambaredjo NW and Tambaredjo North areas is already accustomed to human disturbance, in particular noise disturbance.

Compared to these production areas, much higher species densities can be expected in the area along the coastline, where mud banks and lagoons provide ample food to a wide range of species, which often occur in large numbers. For nine bird species, these areas are considered to be of international importance. A list of species is included in the ESIA for the Tambaredjo NW production development (Noordam et al. 2010). The focus has since been on the aerial monitoring of breeding colonies, where the biggest impact on birds could occur. Many colonies were observed in the Coppename-monding Nature Reserve (CMNR), but none in the area directly north of the oilfields. Aerial survey conducted in March 2019 by Staatsolie in collaboration with the Suriname Forest Service (LBB), showed that several groups of scarlet ibis were observed but no breeding colonies yet. Other birds that were observed are the Snowy Egret and the Spoonbill. During the aerial survey conducted in May 2019 showed that the birds (Scarlet ibis, Snowy Egret, Spoonbill, Black skimmer, Great Egret and Cocoi heron), including 2 colonies of scarlet ibis, were mostly observed on the west site of the CMNR (Staatsolie, 2019).

Mammals

The species recorded in the Buru Swamp are widely distributed throughout the coastal lowlands of the Guyana's (and beyond) and none are endemic to the region. A list of mammals that typically occurs in coastal swamps in Suriname is presented in Noordam et al. (2010). Since then, camera trapping also revealed the presence of the Ocelot (*Leopardus pardalis*), which has been added to the list. Except for the Jaguar (IUCN Red List: Near threatened) and the Giant anteater (IUCN Red List: Vulnerable), all other mammal species are classified as Lower risk or Least concern. The Jaguar, however, is still common in Suriname, while the Giant Anteater is a rare visitor of the coastal plain. A report on the camera trapping in the Tambaredjo area is still pending.

1.5 Updated Socio-economic environment

This paragraph describes the socio-economic environment of the study area based on existing data, field observations on the 14th of July and 1st of August 2023, and several stakeholder consultations.

1.5.1 Geographic and Demographic Information

The district of Saramacca encompasses an area of 3,636 square kilometers and is divided into six administrative districts, also known as resorts, with Groningen serving as the district's capital. The boundaries of the Saramacca district are defined as follows: to the North, it is bordered by the Atlantic Ocean; to the East, it shares its border with Wanica district; to the West, it borders Coronie district; and to the South, it is adjacent to Para district. This district boasts a multicultural society comprising various ethnic groups, with the Hindustani and Javanese ethnic communities predominantly shaping its social landscape (Districtsplan Saramacca, March 2022). The Area of Interest (AOI) for the Appraisal Drilling Program is located north of Wayamboweg and R. Gangaram Pandayweg, within the administrative region or resort of Wayamboweg. According to data from the Central Office for Civil Affairs (Districtsplan Saramacca, March 2022), the District of Saramacca has a population of 18,225 inhabitants, with approximately 7.8% (1,418 inhabitants) residing within the Wayamboweg resort.

In Suriname, each district is overseen by a District Commissioner (DC), appointed by the government and affiliated with the Ministry of Regional Development and Sport (www.gov.sr). The DC is supported by an advisory council comprising elected civil servants at both the district (known as District Council members or district raadsleden) and resort levels (Resort Council members or ressort raadsleden). At the local level, the DC receives assistance from a workforce consisting of Government Manager (*Bestuursopzichter*- BO's) and Assistant Government Manager (Onder Bestuursopzichter- OBO's). Since 2018, the DC has also received support from Adjunct District Secretaries (ADS).

The District Commissioner's Office is situated in Groningen, Saramacca's primary town, where most of the state's administrative services are concentrated. These include government offices for ministries such as Agriculture, Livestock & Fisheries (Min. LVV), Public Works (Min. OW), and Regional Development and Sport (ROS).

1.5.2 Infrastructure and services

The primary roads within the study area are the Wayamboweg and the R. Gangaram Pandayweg. The Wayamboweg is a paved road and constitutes a segment of the Oost-Westverbinding, which serves as a major public road connecting the eastern and western regions of Suriname. On the other hand, the R. Gangaram Pandayweg is a secondary road branching off from the Wayamboweg and is currently unpaved (sandy). In the Wayamboressort, utilities such as drinking water (*Surinaamsche Waterleiding Maatschappij*- SWM), electricity (Energy Bedrijven Suriname-EBS), and telecommunications (Telesur) are available. Additionally, two Regional Healthcare Service (RGD) clinics have been observed in the study area, namely in Huwelijkszorg and La Prevoyance. There is one primary school located in Huwelijkszorg, and students along the Wayamboweg also utilize the primary school in Pomona (ILACO, 2018). Other services in the study area include waste management, which is overseen by the Ministry of Public Works- Department of Public Greenery twice a week along the main road, and once a week by the commissioner's office in the side streets.

1.5.3 Economic Activities

During site visits along the Wayamboweg and the R. Gangaram Pandayweg, the same primary economic activities outlined in the 2018 ESIA report and the 2023 ESMP (ILACO, 2018 and 2023) were observed. These activities include:

- Along the Wayamboweg, these activities involve cattle farming (pigs, cows, sheep, goats, and poultry) and the cultivation of a variety of fruit and vegetable crops such as plantains/ banana (*Musa* spp.), citrus (*Citrus* spp.), sweet potatoes, and more.
- Along the R. Gangaram Pandayweg these activities involve animal husbandry (cattle and poultry) and the cultivation of several fruit and vegetable crops often in conjunction with rice monoculture. Fallow or abandoned farming lands were also observed. Additionally, other

observed commercial activities in the area include supermarkets, food stands, rice mill (operating on a small scale²), a gas station and facilities of companies (such as shed for sand storage).

Some pictures are presented below and their location is presented in **Figure 15**.



Photo 1: Ricefield area along the R. Gangaram Pandayweg (July 2023)



Photo 2: Areal plane for rice cultivation observed



Photo 3: Cattle farming (cows)



Photo 4: Agriculture activities (banana)



Photo 5: Observed rice mill

² Personal communication with onsite representative on the 1st of August 2023.



Figure 15: Overview location economic activities within the study area

1.5.4 Receptors

Sensitive receptors in the study area include two places of worship, a RGD health clinic and a school at Huwelijkszorg, all along the Gangaram Pandayweg. Some pictures are presented below and their location is presented in **Figure 16** .



Photo 6: Place of worship at Huwelijkszorg



Photo 7: School at Huwelijkszorg



Photo 8: RGD clinic



Figure 16: Location of sensitive receptors

Other receptors within the study area are the residents along the Wayambo and Gangaram Pandayweg. The residents live scattered along these roads. Along the Gangaram Pandayweg, homes are concentrated in four specific locations: Sarah Maria, La Prevoyance, Bombay and Huwelijkszorg. Furthermore, residents are also observed in the stretch of the road beginning from the junction of the Gangaram Pandayweg with the Wayamboweg and extending up to the Staatsolie Sarah Maria facility.

The planned well locations are located at some distance from the main roads. The nearest well to the main road (29KX14 of Area D) is at a distance of approx. 1.9 km away from the Gangaram Pandayweg. The exact location of the well in Area C has not yet been determined; however, this area is located in the Wayambo swamp area, with no nearby residents.

1.5.5 Planned Developments

Planned developments in the Saramacca District include the rehabilitation of the Gangaram Panday Road. Phase 1 of this road has already undergone rehabilitation through the application of 3500 m³ of waste material for paving. The Ministry of Public Works is currently exploring options to further strengthen the road (as reported by Dagblad Suriname in May 2023). Regarding the Zesde rijweg, the Department of Drainage within the Ministry of Public Works is actively working on developing strategies to address the issue of waterlogging in Wayambo. Discussions have centered on potential solutions such as the excavation of drainage channels and the installation of sluices in the Zesde rijweg area.

2 Legal and Regulatory Framework

The legal and regulatory framework applicable for appraisal drilling activities in and near the oil fields of Upstream operation of Staatsolie are described in the several existing ESIA studies. This section provides a summary and update overview of Suriname's environmental legislative and regulatory framework, with a specific focus on the proposed appraisal drilling program. It encompasses Suriname's commitments as a signatory to international conventions and agreements, and emphasizes Staatsolie's Health, Safety, Environmental, Quality and Communication Policy. Additionally, relevant international standards and procedures governing this type of activity are also addressed.

2.1 National laws and regulations

The national laws and regulations relevant for this project are described in the section below, namely:

- Grondwet van de Republiek Suriname S.B. 1987 no.116 z.l.g bij S.B. 1992 no.38 (Constitution of the Republic of Suriname S.B. 1987 no. 116 as amended by S.B. 1992 no. 38);
- Milieu Raamwet S.B. 2020 no. 97 (Environmental Framework Act (EFA) S.B. 2020 no. 97);
- Petroleum-Related Legislation;
- Environmental-Related Legislation, and
- Occupational Health and Safety Legislation.

Constitution of the Republic of Suriname

The 'Grondwet van de Republiek Suriname S.B. 1987 no.116 z.l.g bij S.B. 1992 no.38 (Constitution of the Republic of Suriname S.B. 1987 no. 116 as amended by S.B. 1992 no. 38) serves as the primary law that governs all existing and forthcoming legislation in Suriname. Alongside various national acts, it contains provisions that are pertinent to environmental preservation and the management of natural resources, particularly concerning the petroleum sector. The Constitution proclaims that:

- Natural riches and resources belong to the State, and the State has the right to take possession of these natural resources to use them for the benefit of Suriname's economic, social, and cultural development (Article 41).
- The State must also create and improve the necessary conditions to protect, nature, and preserve the ecological balance. Moreover, Article 6g emphasizes the State's social objective to foster conditions necessary for nature protection and ecological balance.
- Ensuring the well-being of workers, Article 28 affirms the entitlement of all workers to have safe and healthy working conditions and everyone has a right to health (Article 36).
- Lastly, Article 42 stipulates that the law must safeguard that trade and industry practices align with national objectives and the public interest, particularly concerning public order, health, morality, and state security.

In March 2020, the 'Milieu Raamwet S.B. 2020 no. 97 (Environmental Framework Act (EFA) S.B. 2020 no. 97)' was approved by the Parliament and published in the Gazette in May 2020. The EFA aims to protect and elevate sustainable management of the environment in Suriname. The Act establishes the National Environment Authority (NMA) as a statutory body responsible for the implementation and enforcement of this law. In July 2020, the institutional structure for environmental management changed with the change of Government. The structural change included the establishment of a Ministry for Spatial Planning and Environment (ROM). The Ministry of ROM aims to coordinate all environmental activities in the country. Legal positioning of the Ministry of ROM became a priority of the Government, and a formal working group was established for amending the Environmental Framework Act³. The amendment proposes the Ministry to become primarily responsible for

³ The Draft law to amend the Environmental Framework Act is being addressed in the DNA

coordinating Environmental Policy while the NIMOS is being transformed into the National Environmental Authority.

For the EFA to be operational, a set of subsidiary legislation needs to be promulgated, most of which is already in draft form (see below):

1. *The Duty of Care*, whereby every citizen has a general duty of care regarding the environment, including refraining from acts or omissions that have adverse consequences for the environment.
2. *Environmental and Social Impact Assessment*. Although the EIA process has been administered by NIMOS since 2005, with the promulgation of the EFA it becomes mandatory. EIA regulations have been drafted and will immediately take effect after its promulgation.
3. *Pollution and Standards*. Environmental norms and standards will be developed under the EFA. This will be executed through implementation regulations. This includes the application of environmental permits and the rehabilitation of affected areas. The pollution regulations standardize the determination of contaminants, Maximum Allowable Concentration (MAC) values for the release of contaminants, and procedures for the rehabilitation of contaminated areas. Pollution regulations have already been drafted. Staatsolie will have to apply for an environmental permit when these regulations are promulgated.
4. *Waste and Hazardous Substances and Emergency Plans*. The NMA will determine norms and procedures for handling of waste (collection, transportation, storage, and transfer) and may, among other things, prohibit the import or export of any waste. Furthermore, the NMA can prohibit hazardous substances or impose procedures for import, export, safe storage, handling, transport, use and disposal. These procedures are part of a permit for hazardous substances. Staatsolie will have to register its storage, handling, and transport of hazardous substances and apply for a hazardous substance permit when regulations are promulgated. Furthermore, the NMA is authorized to require an emergency response plan for the storage, use, and transportation of contaminants, waste, or hazardous substances.
5. *Environmental Audits*. The EFA provides for the establishment of guidelines and procedures for conducting an audit. These Guidelines had not been prepared as of this writing.

An overview of the regulations that will apply to the project activities are detailed in Table 7.

Table 7: Overview applicable regulations

Regulations	Compliance
Draft Implementation Regulations⁴ under the Environmental Framework Act (S.B. 2020 no. 97)	
EIA Regulation The regulation gives an overview about the activities for which an EIA is or is not required. The list includes activities related to different kinds of projects and indicates to which category (A, B) they belong. According to the determined category, NIMOS (soon the NMA) shall decide whether the further execution of an EIA shall take place. The regulation further indicates that project activities that fall under Category C do not require an EIA,	Completion of the EIA process phases, viz. Screening, Scoping, Assessment, Review, Decision and monitoring and its requirements.

⁴ Once the NMA is formalized (NIMOS transformed into NMA), and the relevant regulations are promulgated, the EIA and other environmental licensing processes will become paid processes. Project proponents will have to pay when applying for the EIA process and other permits under the Environmental Law, etc.

<p>but are still obliged to apply for an environmental license.</p> <p>The regulation provides a list with activities for which an EIA is required.</p> <p>The regulation sets further provisions regarding the determination of the scope of the required EIA, specifications for the qualification of persons to conduct an EIA, minimum requirements for the Environmental Impact Statement (EIS) including the submission and assessment of the EIS.</p>	
<p>Environmental Pollution</p> <p>This regulation lays down provisions concerning the prevention of environmental pollution by means of inter alia introducing a licensing system. For an effective monitoring of compliance with the provisions under or pursuant to the Environmental Act, the regulation also determines the pollutants, their values, quantities and other technical details in connection with the measurability of environmental pollution. Regarding existing sources of pollution, it is obliged to register these sources at NIMOS. The regulations further provide provisions regarding spills and accidental releases.</p>	<ol style="list-style-type: none"> 1. Registration of existing sources of pollution. 2. Apply for an environmental permit for the release of contaminants. 3. Comply with the specifications in the environmental permit provided by NIMOS 4. In case of leakage or accidental release: <ul style="list-style-type: none"> • Take immediate action to stop this leakage or release; • Take measures to repair damage to the environment; • Notify NIMOS of this event immediately and strictly follow instructions given by NIMOS.
<p>Hazardous Substances</p> <p>The implementation regulation lays down provisions concerning hazardous substances to prevent environmental pollution by means of inter alia introducing a licensing system. For an effective monitoring of compliance with the provisions under or pursuant to the Environmental Framework Act, the regulation also determines the hazardous substances as well as the provisions concerning inter alia the license for the registration of such substances and their transport, storage, use, treatment and disposal.</p>	<ul style="list-style-type: none"> • Proof of Registration • Apply for permit • Comply with the specifications in the permit provided by NIMOS <p>With regard to transportation: Bulk transport over land, water and in the air, are in accordance with good international industry practice and NIMOS can give instructions. Transportation is only allowed by authorized persons and vehicles. Notification obligation for transport to: Fire brigade; law enforcement; NIMOS; National Coordination Centre for Disaster Management (NCCR) or its district representative; Districts Commissioner</p> <p>Disposal: Apply environmentally friendly practices; Recycling and reuse in accordance with NIMOS permit.</p> <p>Emergency Response Plan: NIMOS can give the obligation to draw up an emergency response plan related to contaminants, waste or hazardous substances. NIMOS approves the emergency response plan. Notification of NIMOS in case of contamination or accidental release of hazardous substance.</p>
<p>Act</p>	<p>Relevance</p>
<p>Petroleum-Related Legislation</p>	

Petroleumwet 1990 S.B. 1991 no. 7 z.l.g. bij S.B. 2001 no. 58 (Petroleum Act 1990 S.B. 1981 no. 7 as amended by S.B. 2001 no. 58)	<ul style="list-style-type: none"> • Staatsolie is required to comply with the requirements of this Act.
Decreet Mijnbouw S.B. 1986 no. 28 z.l.g. bij S.B. 2017 no. 41 (Mining Decree S.B. 1986 no. 28 as amended by S.B. 2017 no. 41)	<ul style="list-style-type: none"> • The general provisions of the Mining Decree apply unless otherwise stipulated in special legislation such as the Petroleum Act
Decreet E8B S.B. 1981 no. 59 houdende machtiging tot verlening aan de Staatsolie Maatschappij N.V. van een vergunning voor het doen van onderzoek naar en van een concessie voor de ontginning van koolwaterstofvoorkomens (Decree E8B S.B. 1981 no. 59 authorising the granting to Staatsolie Maatschappij N.V. of a license to conduct research into and concessions for the exploitation of hydrocarbon deposits)	<ul style="list-style-type: none"> • A permit to Staatsolie to conduct research into hydrocarbon deposits and a concession for the exploitation of the hydrocarbon deposits. • Staatsolie is required to comply with the rules for research and exploitation of hydrocarbons as stated in the Decree.
Besluit Mijnbouwinstallaties S.B. 1989 no.38 (State Order on Mining Installations S.B. 1989 No.38)	<ul style="list-style-type: none"> • Specific elements of this State Order • (e.g., protection of the environment; traffic and transportation) will be applicable.
Environmental-Related Legislation	
Natuurbeschermingswet 1954, G.B. 1954 no. 26 z.l.g. bij S.B. 1992 no. 80 (Nature Conservation Act 1954, G.B. 1954 no. 26 as amended by S.B. 1992 no. 80)	<ul style="list-style-type: none"> • There is a potential for impacts on coastal ecosystems from accidental spills associated with the proposed appraisal drilling program. In this context, the Act is germane to the conservation and protection of important or designated areas.
Ministeriele Beschikking betreffende de instelling van het Noord Saramacca bijzonder beheersgebied S.B. 2001 no.88 (Ministerial Order to designate North Saramacca as special management area S.B. 2001 no.88);	<ul style="list-style-type: none"> • There is a potential for impacts on coastal ecosystems from accidental spills associated with the project. In this context, the Act is germane to the conservation and protection of important or designated areas. • The proposed project will need to minimize impacts to marine resources.
Jachtwet 1954 G.B. 1954 no. 25 z.l.g. bij S.B. 1997 no. 33 (Game Act 1954, G.B. 1954 no. 26 as lastly amended by S.B. 1997 no. 33).	<ul style="list-style-type: none"> • Protection of species that can be affected by the project.
Jachtbesluit 2002 S.B.2002 no. 116 (Game State Order 2002 S.B. 2002 no. 116)	
Wetboek van Strafrecht G.B. 1911 no.1 z.l.g. bij S.B.2020 no. 42 (Penal Code G.B. 1911 no.1 as amended by S.B. 2020 no.42)	<ul style="list-style-type: none"> • All activities under the proposed project should avoid littering and water pollution but also air and soil.
Politie strafwet G.B. 1915 no. 77 z.l.g. bij S.B. 1990 no. 24 (Police Criminal Act G.B. 1915 no. 77 as amended by S.B. 1990 no. 24)	
Occupational Health & Safety Legislation	
Arbeidswet G.B. 1963 no. 163 z.l.g. bij S.B. 2011 no. 71 (Labour Code G.B. 1963 no. 163 as amended by S.B. 2011 no.71)	<ul style="list-style-type: none"> • The labor regulations need to be complied with for the workers involved in the project.
Veiligheidswet 1947 G.B. 1947 no. 142, z.l.g. bij SB. 1980 no.116 (Occupational Safety and Health	<ul style="list-style-type: none"> • The project will be carried out in compliance with this Act concerning management and reporting of accidents.

Act 1947 G.B. 1947 no. 142, as amended by SB. 1980 no.116)	
Veiligheidsvoorschrift nr. 1, G.B. 1972 no. 95 (Safety regulation nr. 1, G.B. 1972 no. 95)	<ul style="list-style-type: none"> To prevent or minimize injuries the proposed project should be carried out in compliance with the safety regulation.
Veiligheidsvoorschrift nr. 2, G.B. 1948 no. 104 (Safety regulation nr. 2, G.B. 1948 no. 104)	<ul style="list-style-type: none"> Project activities must be carried out taking into consideration the regulations regarding hygiene.
Veiligheidsvoorschrift nr. 3, G.B. 1948 no. 183 (Safety regulation nr. 3, G.B. 1948 no. 183)	<ul style="list-style-type: none"> To prevent or minimize injuries the project should be carried out in compliance with the safety regulation.
Veiligheidsvoorschrift nr. 4, G.B. 1948 no. 128; 1969, no 30 (Safety regulation nr. 4, G.B. 1948, no. 128; 1969, no. 30)	<ul style="list-style-type: none"> To prevent or minimize injuries the project should be carried out in compliance with the safety regulation.
Veiligheidsvoorschrift nr. 7, S.B. 1981 no 72 (Safety regulation nr. 7, S.B. 1981 no. 72).	<ul style="list-style-type: none"> In order to promote safe and comfortable working conditions, the project activities need to be implemented in compliance with this regulation.
Veiligheidsvoorschrift nr. 9, S.B. 1981 no. 74 (Safety regulation nr. 9, S.B. 1981 no. 74) (State Order harmful gases and vapors).	<ul style="list-style-type: none"> This regulation is applicable if areas belonging to associated canteens, dressing rooms or sleeping quarters are being set up where noxious and irritating gasses are released.
Ongevallenwet G.B. 1947 z.l.g. bij S.B. 2007 no.26 (Industrial Accidents Act G.B. 1947 as amended by S.B. 2007 no.26)	<ul style="list-style-type: none"> The provisions of this Act and requirements thereto are applicable to the projects in case accidents or occupational diseases related to the project activities occur.

2.2 International conventions, agreements and guidelines

Suriname has become a signatory to various international agreements and conventions that focus on environmental management and occupational health and safety. These conventions typically necessitate governmental involvement in implementing legal and administrative measures. Below is a comprehensive compilation of the relevant Conventions pertinent to the proposed 2D seismic exploration and the exploration drilling program.

- Convention on Biological Diversity (CBD)** - In June 1992, Suriname officially signed the Convention on Biological Diversity (CBD) and later ratified it on 12 January 1996. The CBD's main objectives revolve around the preservation of biological diversity, sustainable utilization of its components, and the equitable sharing of benefits derived from these valuable resources.
- Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Western Hemisphere Convention)** - In 1985, Suriname ratified the Western Hemisphere Convention. The primary objectives of this convention are twofold: to safeguard all species and genera of native fauna and flora from the threat of extinction and to preserve areas of exceptional beauty, remarkable geological formations, or those possessing aesthetic, historical, or scientific significance. The Coppename-monding Nature Reserve is a Western hemisphere shorebird Reserve Network (WHSRN) site. One of the projects AOI (C) is located near this nature reserve.
- Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat**- on 22 November 1985, Suriname became a party to the Convention on Wetlands, widely known as the Ramsar Convention. Functioning as an intergovernmental treaty, the Ramsar Convention establishes a comprehensive framework for national and international efforts towards the conservation and sustainable use of wetlands and their resources. Suriname has one site designated as a Wetland of International Importance – the Coppenamemonding

wetland. This expansive wetland complex, covering an area of 12,000 hectares, lies along the Saramacca coastline and stands as an exemplary representation of natural or near-natural wetland habitats. The Coppename-monding Nature Reserve is a Ramsar site. One of the projects AOI (C) is located near this Ramsar site.

- ***United Nations Framework Convention on Climate Change (UNFCCC)*** - On 14 October 1997, Suriname ratified the United Nations Framework Convention on Climate Change (UNFCCC). The primary objective of the UNFCCC is to stabilize greenhouse gas emissions in the atmosphere at a level that ensures dangerous human-induced interference with the climate system is avoided. This target must be achieved within a specific timeframe to allow ecosystems to naturally adapt to climate changes, safeguard food production, and promote sustainable economic development. The UNFCCC establishes international guidelines to limit greenhouse gas emissions and combat climate change. Combustion of fuel will contribute to greenhouse gases, which will need to be recorded and reported.
- ***Paris Agreement*** - In 2016, Suriname acceded to the Paris Agreement, an international accord linked to the UNFCCC (United Nations Framework Convention on Climate Change). The agreement commits its participating countries to promote the mitigation of greenhouse gas emissions while fostering sustainable development. Under the Paris Agreement, Suriname is obligated to regulate and control greenhouse gas emissions within its territory. To comply with the requirements of the Paris Agreement, the proposed project must implement measures aimed at reducing and reporting emissions from e.g., vehicles and equipment.
- ***Stockholm Convention on Persistent Organic Pollutants, POP's Stockholm*** – This Convention deals with water and air pollution as well as waste management. Suriname ratified the Stockholm Convention in 2011. The proposed project activities will generate waste that may be incinerated and can cause emissions of persistent organic pollutants. Inspection of waste management facilities to ensure compliance with incinerator standards will be necessary to eliminate persistent organic pollutants in accordance with this Convention.
- ***Vienna Convention for the Protection of the Ozone Layer*** – Suriname acceded to the Vienna Convention for the Protection of the Ozone Layer in 1997, which relates to the protection of air quality and climate. The Convention sets international standards for protection of the ozone layer by phasing out the use of stratospheric ozone depleting chemicals, chiefly chlorofluorocarbons (CFCs), halons, and carbon tetrachloride, of relevance to some mining endeavors. The project will need to comply with requirements to reduce or eliminate ozone-depleting substances (e.g., certain types of refrigerants).

Suriname is also preparing to accede to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention) and its Protocols (oil spills, specially protected areas and wildlife and land-based sources of pollution). Suriname is also an official team member of the Caribbean Environment Program (CEP).

2.3 Institutional Framework

Several institutional stakeholders play a role in the context of environmental management in Suriname. In this section, only the primary institutions and their relevance to the project are presented. The functions of these stakeholders are summarized in **Table 8**.

Table 8: Relevant actors and their relevance to the project

Relevant Stakeholder	Role/ Relevance to project
<p>Ministerie van Ruimtelijke Ordening en Milieu, ROM</p> <p>Ministry of Spatial Planning and Environment (</p>	<p>The Ministry of Spatial Planning and Environment is responsible for proper spatial planning and must do this in consultation with relevant ministries and institutes and coordinate national policy for spatial planning.</p> <p>In addition, the ministry is also charged with ensuring compliance with statutory regulations with regard to spatial planning and the environment, if necessary, in an interdepartmental context.</p> <p>In accordance with its mission statement, the Ministry of Spatial planning and Environment is also responsible for coordinating and monitoring the implementation of national environmental policy, in collaboration with relevant ministries and agencies.</p> <p>The Ministry is further responsible for developing and maintaining cooperation mechanisms and partnerships in order to meet national and international environmental obligations in an efficient and effective manner.</p>
<p>Nationaal Instituut voor Milieu en Ontwikkeling in Suriname</p> <p>National Institute for Environment and Development in Suriname (NIMOS) in transition to become NMA</p>	<p>With the promulgation of the Milieu Raamwet S.B. 2020 no. 97 (Environmental Framework Act S.B. 2020 no. 97) the National Institute for Environment and Development (NIMOS) will be transformed into the National Environmental Authority (NMA).</p> <p>The NMA will be responsible for administering the Environmental Impact Assessment process and Pollution Control.</p>
<p>Ministerie van Natuurlijke Hulpbronnen</p> <p>Ministry of Natural Resources</p>	<p>Responsible for policy direction, legislation, issuance of permits, budget allocation and inter-ministerial coordination, and for all matters relating to natural resources (not fisheries).</p> <p>Supporting agency to NIMOS in the approval process for a project associated with exploitation of natural resources.</p>
<p>Directoraat Visserij van het Ministerie van Landbouw, Veeteelt en Visserij</p> <p>Fisheries Department of the Ministry of Agriculture Animal Husbandry and Fisheries</p>	<p>The Ministry of LVV is responsible for the maintenance of the waterways, roads and water structures on agricultural lands that are located between the East-West connection road and the swamp-retaining dam.</p>
<p>Ministerie van Grondbeleid en Bosbeheer, GBB</p>	<p>The Ministry of Land Policy and Forest Management is responsible for nature management with regards to the protected areas. Not directly involved in project approval and management.</p> <p>Can become a key stakeholder in situations where project activities can affect biodiversity.</p>

Ministry of Land Policy and Forest Management	
Dienst 's Lands Bosbeheer en Afdeling Natuurbeheer Suriname Forest Service and Nature Conservation Division of the National Forest Service (NB)	The Suriname Forest Service is part of the Ministry of Land Policy and Forest Management and is responsible for management of nature reserves established under the Nature Conservation Act 1954. This task is being delegated to the Nature Conservation Division (NCD). Not directly involved in project approval and management. The NCD supports the Ministry of Land Policy and Forest Management in law enforcement and management with regards to conservation, nature reserves and wildlife. The NCD is responsible for the day-to-day management of protected areas in Suriname. The NCD is also responsible for wildlife protection. Can become a key stakeholder in situations where project activities can affect protected species and areas in the coastal area.
Ministerie van Werkgelegenheid en Jeugdzaken Ministry of Labor, Employment and Youth Affairs	Development and safeguarding of the labor market. Regulatory responsibility for specifying safety conditions for projects of this nature and for receiving and investigating safety-related incidents as necessary. Regulation of permits required for labor or work by foreigners. The Project will be accomplished in accordance with all applicable Surinamese health and safety regulations.
Ministerie van Volksgezondheid Ministry of Public Health	Responsible for environmental health management, such as control of infectious disease, food and drinking water quality, sanitation, and disposal of industrial waste in collaboration with other relevant institutions.
Ministerie van Openbare Werken Ministry of Public Works	Policy, planning and development of general architectural structure, and other civil engineering infrastructure in the public interest; Flood control and drainage; Technical provisions for traffic and public transport. The Ministry of Public Works' responsibilities are the management of all main waterways, roads, bridges, sluices etc. north of the East West connection, from the sluices to the Atlantic Ocean.
Ministerie van Regionale Ontwikkeling en Sport Ministry of Regional Development and Sport	One of the tasks on regional level is to develop administrative procedures to promote participation in decision-making at the level of districts. Furthermore, the DC gives authorization for transport if the road will be occupied more than usually.
Nationaal Coördinatie Centrum van Rampenbeheersing National Coordination Centre for Disaster Management (NCCR)	A division of the Ministry of Defense that develops national policies on disaster management through coordination and prevention of potential threats and disasters. Supporting agency to NIMOS in the approval process for a project of this nature. Can become a key stakeholder in situations involving accidental spills or other project-related emergencies.

2.4 Environmental and Social Management at Staatsolie

Compliance with the provisions of a number of Staatsolie documents that address Health, Safety, Environmental (HSE) and Community Relations issues is mandatory, principally:

- **Health, Safety Environmental and Quality (HSEQ) Policy:** in which Staatsolie demonstrates a firm commitment to Health, Safety, Environment and Quality (HSEQ) by effectively using an integrated management system (**Appendix 1A**). The Code of Conduct in which Staatsolie provides the basic rules that serve as a behavioral compass, and reflect their philosophy and mode of operation and Alcohol and Drugs Policy form an integrated part of the HSEQ Policy;
- **Community Relations (CR) Policy:** is aimed at properly considering and managing communities and other stakeholders' socio – environmental interests and expectations while performing its business (**Appendix 1B**);
- **Risk Management Policy:** explains the principles that Staatsolie will follow for managing risk. The policy also outlines the process for managing risk, and who at Staatsolie is responsible for the different aspects of risk management (**Appendix 1C**); and
- **Staatsolie procedures:** general procedures to guide Staatsolie's operations so that it complies with the HSEQ policy. Procedures applicable to this project are listed in **Appendix 1D**.

3 Environmental Management Roles and Responsibilities

3.1 Roles and responsibility

This paragraph is intended to ensure that an accountability process is defined and implemented to make certain that responsibilities are performed effectively. The general roles and responsibilities of various parties are outlined in the section below.

3.1.1 The Owner's team

Different processes will be executed during the project. All processes within Staatsolie are owned by a Process Owner. The following table indicates the different processes that will take place during the project and the responsible Process Owner.

Table 9: Process Owners and responsibilities

Process	Process Owner
Project planning (including consultations with landowners)	Reservoir Management Team (RMT)
Scouting of locations (ID&M)	Sr. Head Drilling Services
Construction of infrastructure (cleaning of overgrown trails) and drilling locations (ID&M)	
Drilling and wireline logging (Drilling Operations)	
Well testing	Production Operations/Field Production
Decommissioning	Field Production Tambaredjo

Position	Responsibility, including HSE
Upstream Director	Overall accountability for HSE matters for all upstream operations. Overall accountability for management of the appraisal drilling program, including environmental management aspects. Responsibility for the execution of the appraisal drilling project and HSE matters related to this project
Production Asset Manager	Overall responsibility for HSE matters with regards to activities during the operational and decommissioning phase.
Sr. Head Drilling Services (project sponsor)	Accountable for the execution of the appraisal drilling project in the appraisal areas Responsible for HSE matters related to construction of infrastructure and drilling locations, drilling, plug and abandonment and decommissioning of the wells.
RMT (Project owner)	Overall accountability for management of the appraisal drilling program, including environmental management aspects. Responsibility for the execution of the appraisal drilling project and HSE matters related to this project
HSSE Upstream Manager	Responsibility to support the operations and monitor the performance with regards to HSE and Community matters.
Environmental Engineer	Overall responsibility for Environmental Support for the project

Corporate Communication Upstream Head	Overall accountability of Community and Public Relations support for all Staatsolie operations and activities.
Corporate Communication Officer	Overall responsibility of Community Relations support for the project
Corporate Legal Affairs	Responsible for the agreements with the landowners (drafting, negotiating and signing)
Staatsolie Employees and contractors	Should be aware of the EMMP requirements and adhere to the relevant mitigation measures.

The **Sr. Head Drilling Services** shall:

- Ensure that the key on-site staff (contractor-supervisors) are duly informed of the EMMP and associated responsibilities and implications of this EMMP prior to commencement of construction (in order to minimize undue delays);
- Inform key on-site staff through initial environmental awareness training of their roles and responsibilities in terms of the EMMP;
- Ensure that a copy of the EMMP shall be available to all on site Construction and Drilling Contractor Field Supervisors;
- Inform the environmental engineer one week before the date of the commencement of the project (this date being the day on which preparations activities will start);
- Perform weekly HSE inspections based on the weekly EMMP checklist and submit compliance reports every 2 weeks to the Environmental Engineer (based on reporting scheme in paragraph 6.2 Reporting);
- Ensure that method statements are submitted to the Environmental Engineer for a task requiring such;
- Undertakes a post-decommissioning inspection upon completion of each location, which may result in recommendations for additional clean-up and rehabilitation measures;
- Ensure that action items to rectify non-compliance are closed out in a timely and satisfactory manner.

The **HSSE Upstream Manager** shall:

- Identify areas of non-compliance and proposes action items to rectify them in consultation with the Project Manager/ Project Leader. Undertakes spot inspections to determine compliance with the EMMP and monitor the activities of the contractor on site with regards to the requirements outlined in this EMMP;
- Alert when action items intended to remedy non-compliance are not closed out in a timely and satisfactory manner;
- Compile compliance reports;
- Submit reports on the implementation of the EMMP and compliance to the NIMOS;
- Undertake a post-decommissioning inspection upon completion of the project area, which may result in recommendations for additional clean-up and rehabilitation measures.

3.1.2 Staatsolie Divisions/Process Owner-representatives and Contractors

The Process Owner-representatives and Contractors delivering services to the project have a duty to demonstrate respect and care for the environment in which they are operating. The Process Owner-representatives and Contractors shall comply with the specifications of the EMMP and abide by the instructions of relevant Process Owners and the HSSE Upstream Manager regarding the

implementation of this EMMP. The Process Owner-representatives and Contractors shall report to the relevant process owner and the HSSE Manager on all matters pertaining to the EMMP.

The representatives of Process Owners shall:

- Ensure that copies of the EMMP be available at their offices, and shall also ensure that all personnel on site (including Sub-Contractors and their staff, and suppliers) are familiar with and understand the requirements of the EMMP;
- Ensure that all activities under their control are undertaken in accordance with the following:
 - Health, Safety, Environment and Quality Policy,
 - Community Relations Policy,
 - All applicable Staatsolie Procedures,
 - This EMMP.
- Ensure that all employees and sub-contractors comply with this EMMP
- Execute daily HSE inspections and any non-compliance with the specifications of the EMMP should be reported immediately.
- Compile Method Statements as listed hereunder;
- Ensure that any problems and non-conformances are remedied in a timely manner, to the satisfaction of the responsible process owner;
- Ensure that all personnel are aware of the Contingency Plans and are adequately trained therein;
- Compile the required reports (see **Table 15**) to be submitted to the Upstream HSE Head.
- Ensure that after decommissioning the site is signed off by the relevant parties.

Method statements are to be compiled by Infrastructure, Development and Maintenance department (ID&M) for approval by their Process Owner, who reviews and endorses them. The HSSE Upstream Manager must receive a copy of the method statement for review 2 weeks before commencement of the activity and if there are any issues regarding the environmental specifications, he/ she shall make these known to the Process Owner within a week. The method statement typically shall cover applicable details including, but not limited to:

- A reference to the Environmental Specifications;
- Description of the activities to be undertaken;
- Location where activities will be undertaken, and if on privately owned land the name of the owner will be placed;
- Construction drawings;
- Map of the location;
- Materials and equipment requirements;
- How and where material will be stored;
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- Timing of activities (start and end dates).
- Assurance that the landowner/user is aware of the planned activity.

The following method statements for construction shall be submitted to the Process Owner not less than two weeks prior to the intended date of commencement of the activity:

- Site preparation;
- Construction activities;
- Setting up or changing of access routes;
- Construction of dams and water management structures;
- Changes of dams and water management structures;
- Movement of rig;
- Large transports along clay dams.

The Process Owner Representatives shall abide by these approved method statements. **Appendix 1E** provides a pro forma method statement sheet that must be completed by the process owner for each activity requiring a method statement as specified in here above. A checklist has been included in **Appendix 1G** to facilitate the random and weekly site inspection for the project site. These completed checklists must be submitted to the HSSE Upstream Manager at the end of each week.

Environmental training

Environmental awareness training courses shall be run for all personnel on site. It is incumbent upon the Process Owner to convey the objectives of the EMMP and the specific provisions of the EMMP to all personnel involved in the operation of the Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area. Environmental training must cover the specific environmental management requirements as set out in the EMMP but must also ensure that all on-site staff are aware of and familiar with the relevant requirements and principles/objectives of the HSE Policy, ER Policy, applicable procedures and the EMMP. The Process Owner will initialize the training sessions for all new or additional staff and the HSE department shall support with Environmental Awareness Courses (Integrated Health, Safety and Environmental Inductions). The Process Owner shall ensure that all his/her staff attends the awareness courses to be held not less than one week before the Commencement Date. Where applicable, the Field Supervisors shall provide job-specific training on an ad hoc basis when workers are engaged in activities that require method statements. A copy of the EMMP shall be available on site, and the Field Supervisors shall ensure that all the personnel on site (including Sub-Contractors and their staff) as well as suppliers are familiar with and understand the specifications contained in the EMMP.

Operation training will include information on:

- Working on privately owned land
- Current land and water use
- Clearing, access and transportation
- Waste minimization, handling and disposal methods
- Fire and spill prevention and control
- Emergency response procedure (Health, Safety and Environmental issues)
- Handling and storage of hazardous materials, fuels and oils
- Reclamation measures.

4 Stakeholder Consultation

4.1 General

Stakeholder engagement and consultation are integral components that run throughout the EIA process. The purpose of stakeholder engagement is to ensure that stakeholders are consulted beforehand about the project and its potential environmental and social impacts. The process offers stakeholders the opportunity to make comments, suggestions, and voice any concerns, which are then considered during the preparation of the EMMP report and the development of mitigation measures and management plans for the project.

The study commenced with the official Contract Signing. The project approval and the official kick-off meeting were held on the 31st of January 2023. On the 27th of February 2023, NIMOS was consulted regarding the approach, methodology, and additional concerns to be included into the study. Since this study only involved the compilation of an EMMP, a scoping phase was not deemed necessary. Several stakeholders, including government organizations, identified landowners and a selection of random residents, have been consulted during the baseline assessment phase. A Background Information Document (BID) containing a non-technical summary of the project and the EMMP study process, was drafted and shared with the stakeholders either prior or during the meetings.

Prior to any stakeholder consultation with landowners and residents, Staatsolie provided a list of landowners. For identification of landowners, the following was conducted by Staatsolie:

- Assessment of existing landowners' data of Staatsolie
- Gathering data from the Management Institute Land Registration and Land Information System (MIGLIS).
- Publish a notice in the media from the 2nd till 11th of August (newspaper and Staatsolie website) to identify other unknown landowners (see **Appendix 2**)

Through the MIGLIS no additional landowners could be identified. On the notice in the media, there were eleven (11) responses. Verification of supplied documents (maps) by the respondents is still ongoing. As a result, only already identified landowners were consulted during the baseline phase. An overview of the consulted stakeholder is provided in the table below.

Table 10: List of consulted stakeholders

Date	Time	Stakeholder	Type of meeting	Platform
Government organizations				
27-Febr-23	15:00- 15:30	NIMOS	One-on-One	Zoom (Online)
5-Apr-23	09:00- 09:30	The District Commissioner of Saramacca	One-on-One	Physical in Saramacca
5-Apr-23	10:00- 10:30	The Ministry of Agriculture, Animal Husbandry and Fisheries (Min. LVV)-Resort Groningen	One-on-One	Physical in Saramacca
26-Apr-23	9:30- 11:00	Suriname Forest Service (LBB) of the Ministry of Land Policy and Forest Management	One-on-One	Zoom (Online)
9-June-23	09:00- 10:00	The Ministry of Agriculture, Animal Husbandry and Fisheries (Min. LVV), Directorate of Agriculture, headquarter	One-on-One	Physical in Paramaribo
Landowners				
28-July-23	11:30-12:00h	Landowner #1	Individual	By phone call

01-Aug-23	09:00-10:30h	Landowner #2	Individual	Physical Saramacca	in
Residents					
01-Aug-23	12:00-12:20	Resident #1	Individual	Physical Saramacca	in
01-Aug-23	12:30-12:45	Resident #2	Individual	Physical Saramacca	in
01-Aug-23	13:00-13:15	Resident #3	Individual	Physical Saramacca	in

4.2 Stakeholder Consultation Results

Table 11: Results stakeholder meetings

Stakeholder Category	Stakeholder	Concerns
Government	District Commissioner of Saramacca	<ul style="list-style-type: none"> Water management and flooding are existing problems within the area. Measures should be taken to prevent flooding of nearby areas. In case activities are executed on land of third parties, there should be clear written agreement between Staatsolie and the landowner.
	Suriname Forest Service (LBB)	<ul style="list-style-type: none"> LBB refers to the updated MUMA Management Plan, which should be considered. Two concerns raised by LBB are as follows: <ul style="list-style-type: none"> Regarding the MUMA, economic activities are allowed in the area with the permission of the head of the LBB. One area (AOI- C) currently overlaps with the Coppename Nature Reserve. Absolutely no activities are permitted in this nature reserve⁵. Clear communication on this matter has been established with Staatsolie.
	The Ministry of Agriculture, Animal Husbandry and Fisheries (Min. LVV), Directorate of Agriculture, headquarter Paramaribo	<ul style="list-style-type: none"> Some areas within the project area have been flooded for more than a year since 2020. This has caused significant damage and delays for farmers in harvesting their crops. The issue primarily pertains to water management in the northern part. The small creeks in the area are now blocked, resulting in the inundation of agricultural lands. This existing problem should be considered during the execution of the project. Consideration must be given to the flora and fauna in the areas. Environmental aspects should be thoroughly addressed in the research.
	The Ministry of Agriculture, Animal Husbandry and Fisheries (Min. LVV), Groningen	<ul style="list-style-type: none"> Disrupted water management leads to areas being flooded, especially during high tides. This has negatively impacted the rice cultivation and farmers are now hesitant to make investments. Consideration should be given to the local community near the project areas and the school in Huwelijkszorg. Effective communication is expected from Staatsolie to keep residents informed about the activities.
Landowners	Mr. Van Dijk and Poeran	<ul style="list-style-type: none"> The dam of Mr. Van Dijk has been damaged due to excessive water accumulation near the dam. This makes it difficult to access it. Staatsolie should consider this if the dam will be used for transport. Lack of maintenance on the Gangaram Pandayweg, resulting in excessive dust emission should be considered The presence of petroleum odors (typical oil odor) near the Huwelijkszorg school is a concern. Proper management and disposal of waste and chemicals should be conducted.

⁵ At the time of the consultation, the boundaries of AOI-C were roughly indicated, and therefore, this note was made by LBB. The boundaries presented in Chapter 1.3 are the precise boundaries, and they do not overlap with the boundaries of the Coppename Nature Reserve

		<ul style="list-style-type: none"> • Landowner Poeran emphasizes that the areas where project activities will take place and the road/ dam to the areas, should remain accessible and well-maintained. • During the installation of existing wells on terrain of Mr. Poeran, there was no signed agreement, which led to misunderstandings. Hence, for this project it is requested that all agreement goes through his counsellor. • Clear and transparent communication from Staatsolie is expected including adequate information sharing.
Residents Gangaram Pandayweg	Several (selected random)	<ul style="list-style-type: none"> • Dust pollution (during dry season), exacerbated by the lack of optimal maintenance. • Poor condition of the Gangaram Pandayweg during rainy seasons. • Inadequate communication (to some residents) from Staatsolie regarding ongoing activities. • Flooding of properties exacerbated due to abandoned and poorly maintained parcels nearby. • Consideration of livestock farming activities near planned project activities.

Based on the consultations, it can be stated that stakeholders are open to the project and development in their district, however they have concerns which are summarized below:

1. No activities should be executed within the Coppename Monding Nature Reserve and permission from LBB is required for activities in the MUMA.
2. Water management and flooding have been an ongoing issue and should be considered in this project as well
3. Establish effective communication and transparency from Staatsolie
4. Dust and odor nuisance are existing problems

4.3 Stakeholder Engagement Plan

Additionally, a Stakeholder Engagement Plan (SEP) has been developed for the project to ensure a consistent procedure is followed during all stakeholder engagement. The EMMP-consultant is responsible for the stakeholder engagement during the EMMP preparation phase and Staatsolie is responsible for the stakeholder engagement during the project execution.

Communication with several relevant stakeholders will be an ongoing process. **Table 12** presents the preliminary SEP (Stakeholder Engagement Plan), with relevant stakeholders and required actions per project phase. The SEP may be updated during the execution of the project.

Table 12: Stakeholder Engagement Plan

Stakeholder (Who)	Information sharing (What)	Frequency (When)	Communication method (How)
Phase 1: EMMP study (responsibility of consultant with input from the Applicant)			
Government institutes (DC, LBB, LVV etc.)	Proposed project and planning of the project Expected impacts Project risks, safety and security measures	EMMP study	BID document Online/ physical meetings
Directly affected stakeholders (landowners/ land and road users/ residents)	Proposed project and planning of the project Expected impacts and mitigation measures	EMMP study	BID document One-on one meetings Public consultations Release of EMMP report
Phase 2: Prior to the start and during the project (responsibility of the Applicant)			
Government institutes (DC, LBB, LVV etc.)	Announcement regarding general information and/ or update planning about the project.	Prior to the start and during the project	During regular communication Phone calls
Directly affected stakeholders (landowners/ land users/ residents)			Posters/ Flyers Phone calls Field visits Focus group meetings
Users of the Gangaram Pandayweg/ Wayamboweg	Planning of the project (transportation of equipment along main roads)	During the life of the project, where applicable	Posters/ Flyers Announcements in newspapers Staatsolie website/ Facebook page Through DC/BIC Saramacca
Phase 3: After the drilling activities (responsibility of the Applicant)			
Local community and relevant institutes	General project results and outcomes	Upon project completion	Poster/Flyers Focus group meetings Staatsolie website/ Facebook page Through DC/BIC Saramacca

5 Environmental and Social Specification

General

The general principles contained within this chapter shall apply to all activities for the duration of the appraisal drilling program. The fundamental approach adopted in the compilation of this EMMP is that management effort should be focused on environmental and social aspects to prevent impacts from occurring, i.e., a proactive approach. Proactive measures are then backed up with reactive measures, which serve to minimize the severity or significance of the impact, if it cannot be prevented at source.

The mitigation and management measures of potential environmental and social impacts are developed. These measures and the following further detail are included in an environmental and social specification table (**Table 13**):

- Impacts arising from aspects;
- Impact significance
- Prescribed mitigation measure(s);
- Environmental control objectives for each impact (or cluster of impacts);
- Compliance reporting requirements, including method and frequency of reporting.
- Monitoring and performance evaluation, including performance indicators and monitoring methods; and
- Identification of the person(s) responsible for implementation of the mitigation measure(s).

The environmental and social specification table is adapted from recent studies conducted in the Tambaredjo North, Tambaredjo North West, Uitikijk and Farmersland area.

Table 13: Environmental and Social Specification table

Impacts	Impacts Assessment	Area of interest (AOI)	Impact significance	Residual Impact	Environmental management objective	Mitigation Measures	Responsibility	Monitoring & Performance Evaluation		Compliance reporting
								Performance indicators	Monitoring Methods	
Noise from airboats, construction and operational activities	Noise impact on fauna	A, B, C, & D	Mag: low; medium-term; small-scale Probability: medium Significance: Minor	Negligible	To prevent disturbance of fauna	<ul style="list-style-type: none"> Regularly maintain engines of vehicles and equipment Reduce the number of transportation trips to the minimum (adequate planning) 	Sr. Head Drilling Services	Maintenance log	Visual inspection	Complete weekly EMMP checklist
	Noise impacts on breeding colonies	C	Mag: high; medium-term; small-scale Probability: medium Significance: Major	Minor	To prevent disturbance to breeding colonies.	<p>Maintain the existing mitigation measures applicable for the Tambaredjo North area (NEC, 2016):</p> <ul style="list-style-type: none"> Avoid planning activities (construction and drilling) within the breeding period (Mid Match- September), especially in the period May- June Maintain a Noise Buffer Zone (NBZ). Place signs along all N-S trails, where appropriate, at the boundary of the CMNR and 1 km south of this boundary, in order to mark the CMNR and the NBZ Plan construction and drilling activities in the NBZ in the period October – mid March, when the likelihood of breeding colonies is lowest; if not feasible: see below Any planned development activities (construction and drilling) within the breeding period (mid-March-September) should - at least 2 weeks prior to the start of those activities (but at the earliest in mid-March) - be preceded by an LBB/Staatsolie aerial survey during high tide to identify locations of breeding colonies in the area. This should be done to ascertain that at the start of the activities no colonies are present within 1 km from AOI C Plan and execute all activities from south to north so that any birds present in the CMNR near the project area will be warned by increasing noise levels, giving them the opportunity to adapt to it, or to move to quieter parts of the Nature Reserve or beyond Select/use the quietest and most effective equipment available, also for the drilling rig In case breeding colonies are present within 1 km for AOI C: <ul style="list-style-type: none"> No construction or drilling activities in this area should be conducted during the breeding period. Limit the number of transportation trips to the minimum during the breeding season When possible: use the Gator-tail boats instead of airboats When using airboats: operate at a moderate speed (2500 RPM) to checklist reduce noise levels, provided that conditions allow such (but no prolonged high speed) 	Sr. Head Drilling Services HSSE Upstream Manager	Conducted aerial survey	Check on planning Visual/ field inspection Transport logs	Planning document Method Statement
Air	Reduction of air quality due to project emissions	A, B, C, & D	Mag: negligible; medium-term; small-scale Probability: low Significance: Negligible	Negligible	Prevent increase of emissions	<ul style="list-style-type: none"> Ensure maintenance schedule for combustion equipment and that maintenance on the equipment is done accordingly Reduce the number of transportation trips to the minimum (adequate planning) 	Sr. Head Drilling Services	Maintenance log	Visual inspection	Complete weekly EMMP checklist

Impacts	Impacts Assessment	Area of interest (AOI)	Impact significance	Residual Impact	Environmental management objective	Mitigation Measures	Responsibility	Monitoring & Performance Evaluation		Compliance reporting
								Performance indicators	Monitoring Methods	
Surface Water Resources	Changes in the hydrology of the Buru or Wayambo Swamp due to blockage of water	A, C, & D (wetland locations)	Mag: Medium; medium-term; medium-scale Probability: medium Significance: Moderate	Minor	To minimize alteration of water flow resulting in and disturbance of swamp vegetation and animals. To prevent blockage of water flow towards the north	<ul style="list-style-type: none"> Prevent creating unnatural dikes, channels and drainage routes Place excavated pegasse material from the trails during cleaning with breaks, every 100 meters in order to preserve the existing drainage patterns, as much as possible Conduct frequent monitoring to the functioning of the infrastructure, as openings may easily be clogged by vegetation or caving in 	Sr. Head Drilling Services	Water level	Visual inspection of water flow, level and excavated materials after construction	Complete weekly EMMP checklist
	Blockage and pollution of irrigation water supply	B & D (water is taken by rice farmers for crop irrigation)	Mag: Medium; medium-term; medium-scale Probability: medium Significance: Moderate	Minor	To prevent blockage of water flow and to prevent pollution of surface water used for irrigation water supply	<ul style="list-style-type: none"> Do not obstruct channels and waterways without adequate provisions (e.g. placement of culverts) (dryland) Prevent creating unnatural dikes, channels and drainage routes (wetland and dryland) Place excavated pegasse material from the trails during cleaning with breaks, every 100 meters in order to preserve the existing drainage patterns, as much as possible (wetland) Conduct frequent monitoring to the functioning of the system, as openings may easily be clogged by vegetation or caving in (wetland and dryland) Use leak proof containers and storage tanks Provide adequate containment for containers or tanks Have the oil spill contingency plan (OSCP) in place for the area under consideration Follow the Staatsolie procedures for maintenance and clean – up Provide adequate containment for tanks Conduct frequent inspections and replace pipes and valves in time Conduct frequent monitoring to detect any spill or leak as soon as possible 	Sr. Head Drilling Services CCU Head	Number of complaints	Visual inspection Water quality monitoring (see Table 14)	Complete weekly EMMP checklist Monthly complaints report
	Changes in the hydrology of the Wayambo Swamp due to the construction of new trails and opening in the Van Dijk 2 dam	A & D (C if applicable)	Mag: Medium; medium-term; medium-scale Probability: medium Significance: Moderate	Minor	Prevent excess water flowing into relatively small catchment found west of the Van Dijk 2 dam and TNW South area that could result in flooding of agricultural land along the Wayamboweg and Gangaram Pandayweg	<ul style="list-style-type: none"> Limit the width of the opening in the Van Dijk 2 dams for passage of the rig to a minimum (4-6m) Measure water level east and west side of the Van Dijk 2 dams, prior to opening the dams. If the water level difference is more than 10cm, a U-dam should be constructed Conduct frequent monitoring on the temporary closing, and prevent any collapse 	Sr. Head Drilling Services	Water level/ Number of complaints	Visual inspection Water quality monitoring (see Table 14)	Complete weekly EMMP checklist
	Changes in the hydrology of the Wayambo Swamp due to increased discharge	C	Mag: Medium; medium-term; medium-scale Probability: low Significance: Minor	Negligible	To minimize alteration of water flow resulting in and disturbance of swamp vegetation and animals.	<ul style="list-style-type: none"> Limit the number of south-north trails to a minimum Limit the width and depth of trails in the mangrove forest zone to the minimum Staatsolie will not construct trails in the mangrove forest. In Typha swamps, clay/peat dams along excavated trails (in both south-north and east-west direction) should be interrupted at regular intervals to facilitate the original water flow in northern and lateral directions 	Sr. Head Drilling Services	Water level	Visual inspection	Complete weekly EMMP checklist

Impacts	Impacts Assessment	Area of interest (AOI)	Impact significance	Residual Impact	Environmental management objective	Mitigation Measures	Responsibility	Monitoring & Performance Evaluation		Compliance reporting
								Performance indicators	Monitoring Methods	
	Water pollution with spilled and leaked oil and/or grease (all project phases)	A, B, C, & D	Mag: medium; short-term; small-scale Probability: medium Significance: Minor	Negligible	To prevent the pollution of surface water and consequent impacts to vegetation and animals. Oil and grease content of surface water is always lower than 10 ppm during the whole project.	<ul style="list-style-type: none"> Use leak proof containers and storage tanks Provide adequate containment for containers or tanks Have the oil spill contingency plan (OSCP) in place for the area under consideration Follow the Staatsolie procedures for maintenance and clean – up Provide adequate containment for tanks Conduct frequent inspections and replace pipes and valves in time Conduct monitoring to detect any spill or leak as soon as possible 	Sr. Head Drilling Services	Number of spills OSCP in place Awareness for field staff	Visual inspection	Complete weekly EMMP checklist
Vegetation	Loss of vegetation (general)	A, B, C, & D	Mag: medium; medium-term; small-scale Probability: high Significance: Moderate	Minor	To minimize biodiversity loss in the area	<ul style="list-style-type: none"> Limit the footprint of disturbance to the minimum through optimized planning 	Sr. Head Drilling Services	Actual clearance not exceeding planned clearance	Visual inspection	Weekly progress report on construction of trails and drilling locations, Method Statement, Weekly ESMP checklist
	Loss of ridge wood and ridge forest, also as a habitat	A, B, C, & D	Mag: medium; short-term; small-scale Probability: medium Significance: Minor	Negligible	To protect ridge habitats	<ul style="list-style-type: none"> Do not project large trails and infrastructure on top, or near ridges; keep a distance of 50m at least Between ridges: if passage of a ridge cannot be avoided: keep the clearing width limited to the bare minimum (approval of HSE required prior clearing) 	Sr. Head Drilling Services	Number of disturbed sand ridges	Track actual clearance on maps with sand ridges indicated	Weekly clearance progress reports
	Damage to ecosystems and to project equipment and installations, due to fires	A, B, C, & D	Mag: low; short-term; small-scale Probability: low Significance: Negligible	Negligible	To prevent the occurrence of fires and risks of loss of life or equipment, but also preventing biodiversity losses	<ul style="list-style-type: none"> Develop a fire contingency plan Develop and implement strict fire control procedures and measures Implement a fire risk awareness program for Staatsolie personnel and contractors working in the Tambaredjo North area Discuss the risks of vegetation and peat fires to Staatsolie personnel, materials and equipment in stakeholder meetings and organize special meetings during extremely dry periods to point out the fire risk again; identify potential stakeholders at start of project Conduct fire patrols in extremely dry periods 	Sr. Head Drilling Services	Plan and awareness among field staff	Field inspections Training records, list of potential stakeholders, minutes of meetings	Complete weekly EMP checklist
Fish and wildlife	Decrease in fish and wildlife abundance due to the Uitkijk project or project-induced activities'	A, B, C, & D	Mag: medium; medium-term; medium-scale Probability: low Significance: Minor	Minor	Prevent loss of biodiversity resulting from increased ecological pressure. No hunting takes place in the concession area.	<ul style="list-style-type: none"> Any access created under this project will be located and constructed in such a way that use by unauthorized persons can be controlled Put up clearly marked signs indicating “No Entry” or “Trespassing on Private Land” 	Sr. Head Drilling Services HSSE Upstream Manager	Number of trespassers	Access control and security inspections	Incident reports
						<ul style="list-style-type: none"> Impose the General Traffic Rules and Life Saving Rules for the operations 		Number of incidents	Safety inspections	Incident reports
						<ul style="list-style-type: none"> When traveling in water, care will be exercised to reduce the risk to aquatic life. Speeds will be adjusted to allow sufficient reaction time to avoid collisions with wildlife 		Number of incidents Awareness	Inspection Training records	Incident reports
						<ul style="list-style-type: none"> Continue to impose a ban on wildlife harvesting at the project area for all Staatsolie personnel, contractors and authorized visitors 		Number of violators	Security inspections	Incident reports
						<ul style="list-style-type: none"> Prohibit travelling outside the designated waterways, unless permission has been obtained for special reasons 		Number of trespassers	Inspection	Complete weekly ESMP checklist

Impacts	Impacts Assessment	Area of interest (AOI)	Impact significance	Residual Impact	Environmental management objective	Mitigation Measures	Responsibility	Monitoring & Performance Evaluation		Compliance reporting	
								Performance indicators	Monitoring Methods		
						<ul style="list-style-type: none"> Upon Closure close the opening in existing dams (Van Dijk 2 dam) and in case of created u-dams, rehabilitate these also to prevent access from east to west or vice versa. 		Closure completion criteria (Appendix 1J)	Visual inspection on compliance with set criteria	Closure report and sign off	
						Undertake a continuous environmental awareness and education program for Contractors and Staatsolie Employees focusing on the importance of minimizing harm to the environment		Awareness among field staff	Training records, number of safety talks	Compliance report	
Solid Waste and Sewage	Pollution of the environment and possible entrapment and poisoning of animals and/or spread of diseases	A, B, C, & D	Mag: medium; medium-term; small-scale Probability: low Significance: Minor	Negligible	No solid waste and sewage are present in the project area during the whole project and all waste is disposed in line with accepted international practice	<ul style="list-style-type: none"> Store solid waste in a designated area in covered drums for collection and disposal Provide rubbish bins for litter at appropriate locations and arrange for regular collection Depending on the waste type, this will be recycled, reused or disposed at a suitable facility All hazardous materials, including oil and contaminated soil, will be stored separately and disposed of according to Staatsolie requirements 	Sr. Head Drilling Services HSSE Upstream Manager	Waste management procedure/ Waste log	Housekeeping inspections	Monthly waste reports	
Socio-economic	Social conflicts and complaints of landowners/users or other parties	A, B, C, & D	Mag: medium; medium-term; medium-scale Probability: medium Significance: Moderate	Minor	To avoid all conflicts and to maintain the good name of the company	<ul style="list-style-type: none"> Enter into a land use agreement (contract) with landowners 	Corporate Legal Affairs (CLA)/ CCU Head	Number of complaints	Records	Signed land use agreement at start of project (see an example of such an agreement in Appendix 1 F)	
						<ul style="list-style-type: none"> Register and address complaints according to Grievance Redress Mechanism which is in place and operational 	CCU Head				Monthly complaints report
						<ul style="list-style-type: none"> Close-out inspection 	HSSE Upstream Manager/ CCU Head				Field inspection
	Nuisance (noise, dust or other form) to the people living along the Wayamboweg and Gangaram Pandayweg	A, B & D	Mag: medium; medium-term; small-scale Probability: high Significance: Moderate	Minor	To avoid all conflicts and to maintain the good name of the company	<ul style="list-style-type: none"> Register and address complaints according to Grievance Redress Mechanism which is in place and operational Truck and other heavy transport should be limited to daytime as much as possible Ensure maintenance schedule for combustion equipment and that maintenance on the equipment is done accordingly Reduce the number of transportation trips to the minimum (adequate planning) In dry periods: maintain a low speed In dry periods: spray the road near houses with water; keep the road as moist as feasible 	HSSE Upstream Manager/ CCU Head/Sr Head Drilling	Number of complaints	Records	Monthly complaints report	
	Occupational health: attacks from wildlife such as bees, snakes, general swamp safety e.g. hydration, vector borne diseases (mosquitos),	A, B, C & D	Mag: medium; medium-term; small-scale ⁶ Probability: medium	Minor	To avoid any incidents and accidents	<ul style="list-style-type: none"> Workers should wear protective clothing Train workers to be aware of bee activity and nests in the area. Look out for signs of bee hives and avoid disturbing them Encourage employees to be vigilant and avoid reaching into tall grass or undergrowth without first checking for snakes. Snakes may be camouflaged and difficult to spot Ensure that all survey team members are trained in basic first aid, including snakebite treatment. Have a well-equipped first aid kit on-site 	Production Asset Manager/ HSSE Upstream Manager	Awareness among field staff	Training records/ Number of safety talks	Incident report	

⁶ For each drilling location there will be 4 people present for the construction phase, approx. 16 people (per shift) for the operation phase and 6 people for the decommissioning phase. The scale of this impact remains small because potential dangers will be assessed during the mobilization and construction phase (4 persons), and therefore, mitigating measures will already be in place for those who come afterward.

Impacts	Impacts Assessment	Area of interest (AOI)	Impact significance	Residual Impact	Environmental management objective	Mitigation Measures	Responsibility	Monitoring & Performance Evaluation		Compliance reporting
								Performance indicators	Monitoring Methods	
	sunburn and other environmental hazards such as unstable ground, waterborne diseases, extreme weather conditions, working in deep swamps (accidents/incidents)		Significance: Moderate			<ul style="list-style-type: none"> Ensure that all team members receive thorough safety training, including specific instructions on how to deal with bee and snake encounters The following safe distance measures should be followed when working/ traveling near beehives: <ul style="list-style-type: none"> In case the presence of high/ dense forest, a min. of 150m should be maintained. In case of less dense forest, a distance of 250m should be maintained and 350m should be maintained for an open area. Ensure that workers stay well-hydrated and have access to clean water Establish a clear communication plan for the survey team to call for help in case of emergencies Consult with local experts or authorities who are familiar with the specific risks in the swamp area. 				
	Loss of land and/or damage to crops	A, B & D	Mag: medium; medium-term; small-scale Probability: medium Significance: Moderate	Minor	To avoid all conflicts and to maintain the good name of the company	<ul style="list-style-type: none"> Compensate for loss of standing crops at the taken land, or for loss or damage resulting from activities of Staatsolie All project activities at farms should be documented and described in detail (including baseline of the area) Consult with landowners prior start with activities Ensure that land-use agreements have been signed with respective landowners (where applicable). Staatsolie will adhere to the TTT (Team Toegang Terreinen) procedure which includes all steps to be taken to identify, inform, and negotiate with the legitimate landowners regarding the planned activities, and monitoring of the compliance of agreements. The activities and schedule of works should be discussed with the landowner. Consent of the landowner is important Farmers should be informed one week ahead about the actual start of activities at his land; any change in program should be communicated one week ahead All production facilities should be adequately fenced of, or protected otherwise, so that no damage to these facilities can occur 	HSSE Upstream Manager/ CCU Head/	Number of complaints	Agreement Method statement Agreement Written correspondence to farmers Consent of farmer Written correspondence to farmers Visual observation	Signed land use agreement Complete EMMP checklist Monthly complaints report

6 Monitoring and Reporting Requirements

This section provides a description of the methods that will be used to monitor performance against EMMP commitments and the way the monitoring results will be reported.

6.1 Monitoring

Respective Process Owners together with the HSSE Upstream Division are responsible for monitoring the performance of on-site personnel against the commitments of the EMMP. Overall control of this function will lie with the HSSE Manager, and responsibility for day-to-day monitoring will lie with the Process Owner representatives. The Process Owner is obliged to and will have the power to suspend activities if they do not comply with the performance standards specified in the EMMP. The following principal items will be monitored:

- Correct implementation of EMMP;
- Compliance with Method Statements; and
- Physical parameters and indicators, e.g., water quality and hydrology.

6.1.1 Physical monitoring framework

Staatsolie is committed to the implementation and completion of the Appraisal Drilling Program, in accordance with the highest environmental standards. Our goal is to maintain this throughout the duration of the project by implementing an environmental monitoring program. The objectives of the monitoring framework are:

- To assess the actual impacts of the proposed project;
- To evaluate the effectiveness of the inherent and additional mitigation measures that have been proposed to minimize the environmental impact of the project;
- To ensure environmental compliance with relevant local, international and company requirements; and
- To provide feedback to Staatsolie on learnings for other future projects.

To achieve these objectives, Staatsolie will undertake Environmental Inspections and Audits. The monitoring framework is presented in **Table 14**.

Table 14: Monitoring framework program for the Appraisal Drilling Project

Aspect	Parameters	Frequency	Monitoring locations
Water quality	Electrical conductivity (EC) (field meter) or chlorides ⁷ , Total Suspended Solids (TSS) or turbidity ⁸ , and Secchi Colour and clarity	At accessible locations: before any activity, meaning also before clearance. At inaccessible locations: one week after clearing activities. During and after drilling till reference / standard is met	1. Reference locations for each AOI- A, C and D. 2. For all wells, two locations near the drilling locations. One location east and one location west near the drilling locations. 3. At 2-3 fixed locations in each zone (swamp, canal, trail) also taking into consideration the type ecosystem (vegetation)
	Check for oil spills and oil films (visual)	Daily during project activities	At all activity areas
Water levels (Hydrology)	Check the water levels in the swamp (visually by placing level bars near the opening of the dams) Monitor a local reference water level	Daily During sampling	East and west site of the Van Dijk 2 dams, near the opening of the dams. Upstream and downstream of dams, data can be acquired from the installed divers (under the project “Study Water management Buru and Wayambo Swamp, District Saramacca”) near the AOI’s (DZS-10, DZS-09, DZS-06 and DZS-03) Collect rainfall data from nearby weather station
Vegetation	Width and location of trails in forested parts – according to design	Directly upon completion of trails	All new trails
Fauna	Presence of breeding colonies	At least two (2) weeks prior to any planned development activities (construction and drilling) within the breeding period (mid-March-September) at Area C.	Along the coast
	Presence of wildlife, bees, etc.	Daily	All working locations
Waste	Check if landing sites and station yards are clean	Daily	All working locations
	Check proper storage and disposal of waste	Weekly	
	Check proper disposal of waste Log on waste	Daily at collection of waste	

6.1.2 Environmental and Social Inspections

To determine the compliance with the Environmental and Social Specifications as indicated in Chapter 5, environmental inspections will be undertaken throughout the duration of the project by the contractors

⁷ For the water of the Buru Swamp the following relation has been found: $EC [\mu S] = 2.95 \times Cl [mg/l]$. The standards for chloride are 600 mg/l (average), 1200 mg/L (maximum). Expressed into EC this becomes 1765 and 3540 μS respectively. For the Typha swamp and the Parwa zone higher figures are allowed.

⁸ Using a turbidity meter (or Secchi disk) in the field is more practical, less time-consuming and less costly

that are executing project activities on behalf of Staatsolie, as well as by the Process Owners. To facilitate these inspections a checklist has been developed, see **Appendix 1G: Weekly Checklist**.

6.1.3 Data and information management

Environmental data is stored in a respective database, which allows systematic storage and manipulation of data, and will permit rapid retrieval for the purposes of internal and external reporting. The Staatsolie HSSE Representative will ensure that relevant environmental data of the project is provided for this database. In order to ensure a consistent and coherent system for documenting the implementation of the EMMP, all written records and other information will be stored in a filing system that is compatible with the requirements of the existing HSE Management System. This comprises standardized forms, documents and reporting procedures.

6.2 Reporting

The frequency and nature of reporting of environmental management performance will depend upon the nature of the activity and aspect that is being managed. The table below summarizes the formal reporting schedule that will be used for this appraisal drilling project.

Table 15: Regular reports and report lines

Report Name	Description	Frequency	Responsibility of	Receiver
Land use Agreement	“Overeenkomst toegang terreinen voor het verrichten van mijnbouwwerkzaamheden”	Prior to start of project activities at locations, if applicable	Officer Sr. Legal	Project Manager
Weekly report of safety talks	Reports of talks	Weekly	All Process Owners	HSSE Upstream Manager
Weekly HSE Inspection	Compliance with ESIA and ESMP	Weekly	All Process Owners	HSSE Upstream Manager
Incidents	Report type and consequences for loss of days	When accidents happen	All Process Owners	HSSE Upstream Manager
Reports of ERP-drills held.	Drills as emergency response etc.	Monthly	Drilling Operations Manager	HSSE Upstream Manager
Method statement	Method statements	Two weeks before commencement	All Process Owners	HSSE Upstream Manager
Water quality monitoring reports	Reports of water quality monitoring done for the project	1 week after monitoring has taken place.	Drilling Operation	HSSE Upstream Manager
CR report	Report on implementation of Communication Plan, and compliance with ESIA and ESMP	Quarterly	Corporate Communication Officer	HSSE Upstream Manager /
Complaints	Report each complaint in the database and its settlement	Directly after complaint is received	Corporate Communication Officer	HSSE Upstream Manager

Based on data from the above reports, HSSE Representative will compile a Project Completion Report that will be sent to NIMOS.

6.2.1 Feedback

Feedback on performance will be communicated to the appropriate parties (including NIMOS) concerned. Any substandard performance will trigger a process that notifies the responsible party of the nature of the issue and indicates the actions that are required to rectify the situation. This will be followed up by further monitoring to ensure that the substandard performance has been corrected.

7 Community Engagement and Grievance Redress Mechanism of Staatsolie

Staatsolie has a Community Relation Policy that aims to perform business activities in such a way that communities' interest and expectations with regards to socio-environmental aspects are properly considered. The community engagement is the responsibility of the Corporate Communication Upstream (CCU) department of Staatsolie.

In addition, to Staatsolie Community Relation Policy, the SEP for the project, outlined in subchapter 4.3, will assist the stakeholder engagement process during the execution of the project, by enabling the disclosure and dissemination of important information about the project (activities) to all relevant stakeholders that may be impacted. Key objectives of the communication plan and the SEP are:

- to maintain or strengthen productive relationships with stakeholders identified during the consultation process, conducted prior to the start of the project;
- to ensure that any additional stakeholder that may be impacted by the project is identified and included in the communication for the remainder of the project lifecycle;
- to ensure transparent, efficient, and regular dispersal of key project information;
- to provide stakeholders with an opportunity to raise issues or concerns about the project and to ensure that such feedback is addressed in a suitable manner; and
- to avoid conflicts or conflicting situations from emerging.

Further, Staatsolie has a Grievance Redress Mechanism/ complaint procedure that is followed in case of complaints (see **Figure 17**). Complaints can be reported to all personnel of Staatsolie, who should report this within one working day to the CCU department. All complaints are registered in a software allowing that complaints can be registered in the system at any time and from anywhere. There are also complaint forms available at the security posts for registration of complaints after working hours, which are later shared with CCU for registration in the system.

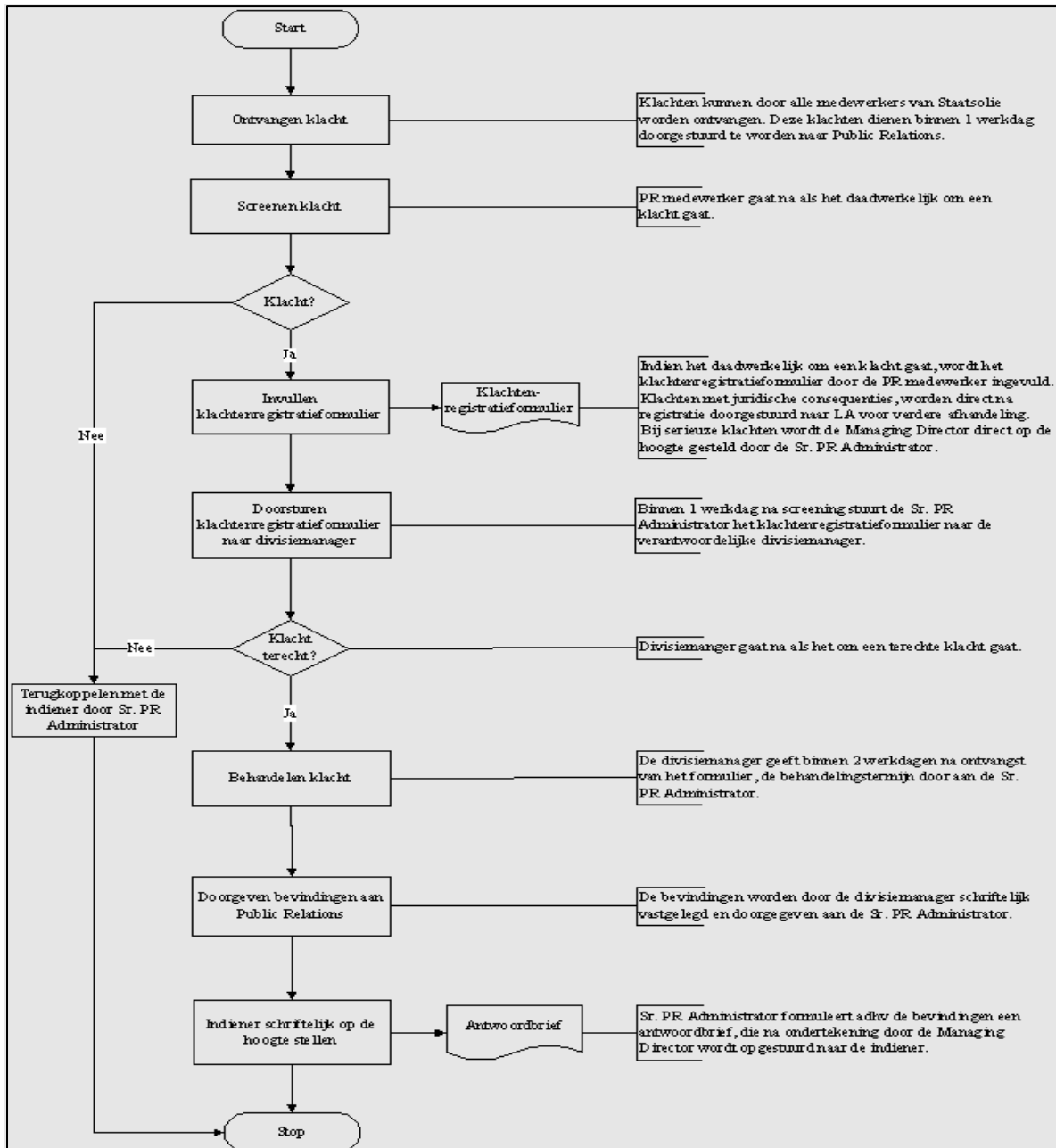


Figure 17: Overview Grievance Redress Mechanism of Staatsolie

8 Conclusion

This chapter presents the conclusions and recommendations of the EMMP for the Appraisal Drilling Program in the areas adjacent to Tambaredjo field, Tambaredjo North-West field and Uitkijk area.

This EMMP study has been conducted in accordance with national regulatory requirements (de Milieu Raamwet S.B. 2020 no. 97/ Environmental Framework Act S.B. 2020 no. 97) and the guidelines of the National Institute for Environment and Development in Suriname (NIMOS, March 2005 and NIMOS August 2009), as well as international best practices.

The project has been classified as a Category B, Path 2 project by NIMOS and it was determined that only an EMMP is necessary for the current project. The EMMP study primarily involved a desk study, supplemented by field surveys and stakeholder consultations.

Environmental and Social baseline:

From the environmental baseline assessment, the following can be stated:

- High temperatures and a high humidity characterize the study area with the main variation being rainfall and the associated cloud cover. However, in the north (area C) the total rainfall may be slightly lower.
- The air quality in the northern wetland (area C) is still predominantly in its natural state and no sources of relevant air emissions are found in its vicinity. In contrast, the other areas, situated in the southern region and comprising rice polders, do have potential sources of air pollution, primarily associated with mechanized activities in the rice fields.
- Area C experiences predominantly natural noises, while the other Areas of Interest (AOIs) may have man-made noise sources such as traffic along the main road, swamp boats, and farm activities, primarily during daytime.
- Area A and C are located in the Wayambo Swamp and area B and D in the Buru Swamp. Both swamps are known as the Duivelsbroek Swamp. Swamp water depths vary from less than 20 to 70 cm in the dry season to 90-120 cm in the rainy season. Most of the Duivelsbroek Swamp is draining predominantly towards the sea, because the Gangaram Pandayweg and the Wayamboweg and their polders block most of the water flow towards the Saramacca River in the south and southwest. This seaward drainage is applicable for the areas B, C and D. Area C will drain partly through the Calor Canal to the east of it. The hydrology is influenced by canals, dams, and the surrounding oilfield. Rice polders in areas A, B, and D have controlled water management systems, utilizing water from the swamp or river for irrigation and directing excess water to the Saramacca River.
- The water quality of the Duivelsbroek Swamp reveals variations between freshwater and brackish water zones. The freshwater swamps generally have slightly more acidic water and lower salinity compared to the brackish swamps. Monitoring of turbidity levels showed exceeding of the established standard (36-102 NTU for brackish herbaceous swamps and 36-107 NTU for freshwater herbaceous swamps and swamp wood). However, observations from monitoring showed that the turbidity values eventually return to its natural state, 4 – 6 weeks after the activities in the swamps are completed.
- Two vegetation types with (potential) high international conservation value are present in the project areas: the black mangrove forest (Parwa forest) and the high swamp wood.

From the socio-economic baseline assessment, the following can be stated:

- Receptors within area A, B and D are residents living scattered along the Wayambo and Gangaram Pandayweg. Area C is located in the Wayambo swamp area, with no nearby residents.
- The economic activities in the study area include agriculture activities (rice cultivation, horticulture and livestock farming) and other commercial activities.
- The main concerns raised during the stakeholder consultations include:

- Concerns regarding human activities within the Coppename Monding Nature Reserve, potentially leading to ecological disturbances and habitat degradation.
- Issues related to disrupted water management leading to areas being flooded causing significant damage and delays for farmers in harvesting their crops.
- Lack of maintenance of the Gangaram Pandayweg.
- Dust and odor nuisance.
- Poor communication, engagement and transparency from Staatsolie,

Potential impacts and mitigation measures

From the assessment of potential impacts of the Appraisal Drilling Program, there is one (1) impact with major significance which can effectively be reduced to minor after implementation of the proposed mitigation measures. Furthermore, there are eight (8) impacts with a moderate significance, which can also effectively be reduced to minor after implementation of the proposed mitigation measures. The remaining impacts are minor or negligible.

The several mitigation measures, management and monitoring requirements, as described in the EMMP must be implemented as part of normal operations by effectively incorporating the key components into daily activities, such as including environmental issues in the decision-making process, carrying out operations in accordance with the standard procedures, and maintaining complete records.

Recommendations

Based on the findings of the EMMP study the following is recommended:

1. Implement the EMMP during all phases of the project as part of normal operations by effectively incorporating the key components into daily activities.
2. During the planning and preparation phase of each AOI (prior to the start of physical works such as cleaning and construction of new trails) the following must be conducted:
 - a. All observations near the well locations must be registered.
 - b. All required detailed assessments (such as detailed hydrology measurements and other provisions) must be conducted.
 - c. All landowners must have been identified. Further, all procedures and mitigation measures (where applicable) included in the respective EMMP, such as signing a land use agreement, must have been followed.
3. Maintain lines of communication, according to the Staatsolie Community Relation Policy and Stakeholder Engagement Plan (SEP), with the landowners and residents in the vicinity of the seismic and drilling locations.
4. Ensure that landowners and residents are aware of the Staatsolie Grievance Redress Mechanism/ complaint procedure and how to utilize it. Further, register and adequately address complaints according to this procedure.
5. Conduct ongoing monitoring and assessment of environmental performance during the projects and take corrective actions in case of non-compliances.

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10 Appendices

Appendix 1 Corporate Environmental Policies and Standard

Appendix 1A: Health, Safety, Environment and Quality (Hseq) Policy Staatsolie






HSEQ BELEID

Wij zijn sterk toegewijd aan gezondheid, veiligheid en een schoon milieu voor al onze werknemers, contractors en de gemeenschappen waarin wij actief zijn. Bovendien streven wij naar klanttevredenheid door voortdurende verbetering van onze producten en diensten.

Dit zal worden bewerkstelligd door naleving van de volgende principes:

WET- EN REGELGEVING
Voldoen aan alle toepasselijke wet- en regelgeving en standaarden, rekening houdende met de behoeften van onze stakeholders en de bedrijfsomgeving waarin wij actief zijn.

VEILIGE EN GEZONDE WERKPLEK
Zorgdragen voor een veilige en gezonde werkplek en het beschermen van het milieu, door de kans op incidenten of onveilige omstandigheden te voorkomen of te minimaliseren. We zijn continu bezig met het identificeren, analyseren en evalueren van risico's, gevaren en milieu-aspecten, om deze effectief te beheren door middel van eliminatie of mitigatie.

EXCELLENTE PRESTATIES
Behalen van excellente prestaties op een veilige en verantwoorde manier, waarbij de medewerkers betrokken en geraadpleegd worden bij de ontwikkeling en implementatie van de HSEQ-processen. We houden onze medewerkers en contractors verantwoordelijk voor het naleven van de kernwaarden, het beleid en de procedures van Staatsolie.

OPTIMALISATIE VAN PROCESSEN
Continu verbeteren van onze HSEQ-prestaties en -managementsystemen door het optimaliseren van processen, diensten en de productkwaliteit. Middels procesmonitoring, periodieke evaluaties en geplande acties, realiseren we gestelde doelen en signaleren we kansen.

TRAINING
Zorgdragen dat elke werknemer en contractor goed getraind en bekwaam is om desbetreffende werkzaamheden uit te voeren conform de vereisten van het Staatsolie HSEQ-managementsysteem.

Oktober 2021
Annand Jagesar

 Managing Director






Appendix 1B: Community Relations Policy Staatsolie

MAATSCHAPPIJ SURINAME N.V.
STATE OIL COMPANY SURINAME N.V.

COMMUNITY RELATIONS POLICY


Staatsolie performs its business activities in such a way that communities' interests and expectations with regard to socio-environmental aspects are properly considered.

Staatsolie is committed to this policy by taking into consideration the following key elements:

1. Establish and encourage relationships of trust with the communities and their representatives, based on continuous dialogue.
2. Conduct business activities in accordance with applicable local laws, regulations and international treaties, ratified by the Government of the Republic of Suriname, with special emphasis on Human Rights and cultural values of a multi-ethnic community.
3. Conduct socio-environmental baselines studies and develop and implement an effective socio-environmental management system to minimize socio-environmental impacts.
4. Maximize positive impacts through initiatives and social alliances aiming at mutual benefits, value creation, and sustainable local development.
5. Ensure community participation and engagement with impacted communities and other stakeholders, during the full lifecycle of projects.
6. Communicate and disseminate the contents of this Community Relations Policy to our various stakeholders, including contractors and suppliers.
7. Communicate and report periodically, publicly the results of community relations management.

To ensure the effectiveness, the Community Relations Policy will be reviewed bi-annually.

December 13, 2011



M.C.H. Waaldijk
Managing Director

Appendix 1C: Risk Management Policy Staatsolie**MAATSCHAPPIJ SURINAME N.V.**

STATE OIL COMPANY SURINAME N.V.

Staatsolie Risk Management Policy

As an integrated oil company, Staatsolie is exposed to a wide range of risks with the potential to impact health, safety, environment, reputation, community, legal and the financial performance of Staatsolie and thereby the achievement of our objectives.

It is therefore the policy of Staatsolie to implement Enterprise Risk Management (ERM) to create a consolidated view of risk throughout our organization.

Risks faced by Staatsolie shall be managed on an enterprise-wide basis which means that we evaluate significant risk exposure related to our corporate goals and that we manage risk at corporate level.

Roles and responsibilities, and accountabilities will be clearly defined in our ERM process, which will contribute to a transparent and clearly understood ERM process. By understanding and managing risk we provide greater assurance and confidence for our shareholders, employees, customers and suppliers, and the community in which we operate. The ERM process consists of the following key steps:

- Risks will be identified, analyzed and scored in a consistent manner for all business processes, projects and functions. Common systems and methodologies will be used.
- Risk controls will be designed and implemented to reasonably assure the achievement of our objectives. The effectiveness of these controls will be systematically reviewed and, where necessary, improved.
- Risks will be monitored, reviewed and reported.

The ERM process will be evaluated on a regular basis to ensure its continuing contribution to the success of our organization achieving its business objectives.

1 April 2013,

43.

M.C.H. Waaldijk
Managing Director

Appendix 1D: List of Applicable Gfis and Procedures

Listing of applicable GFIs and Procedures

GFI No/ Procedure/plan	Subject	Scope
Section 1 ADMINISTRATIVE		
GFI 104N	Security Rules for Saramacca Operations Dutch	This instruction outlines the security rules and regulations applicable to the Saramacca Operations for the different groups concerned.
Procedure HSSE-G- Routine Safety Talks	Routine Safety Talks. English/Dutch	This instruction formalizes the dissemination of information through regular meetings, approximately ten minutes long, commonly called "Toolbox Meetings" or "Safety Talks".
GFI 106	HSE and Security Induction for New Arrivals. English	This instruction describes the management of the system that controls HSE and Security Induction through which every new arrival is made familiar with the company's health, safety, environmental and security requirements as they relate to the activity that they are about to undertake.
GFI 110C	Incident Reporting and Investigation English	This instruction details the process for investigation according to the incident type in accordance with Staatsolie policy and legislation. This will help to control further losses of human and material resources by identifying and correcting unsafe acts and conditions that can lead to an incident.
GFI 119C	Personal Protective Equipment and Dress Code. English/Dutch	This GFI identifies the most common types of personal protective equipment for the various locations on the Saramacca Field.
GFI 120C	General traffic rules. English/Dutch	This GFI defines the general traffic rules to guide the performance of company employees, contractor's employees, and visitors while on company roads. It also defines rules for the behavior of drivers of company owned and rented vehicles on public roads.

GFI 126	Safe Use of Mobile Communication Devices. English	This instruction provides guidance to the safe use of mobile Communication Devices in order to minimize hazards that are introduced with it.
Procedure ISoW	Procedure Integrated System of Work English	This procedure enables all Staatsolie and contractor employees to systematically manage operating risks by adhering to the elements of the Integrated system of Work.
GFI 131	Guidelines for Departmental HSE Teams. English	This GFI outlines the terms of reference and composition of the Departmental HSE Teams which are intended to assist the departmental head in the execution of the departmental HSE program and to achieve workers participation.
GFI 132	Contractor Health, Safety and Environmental Management English	This GFI provides guidance to Staatsolie staff in promoting and managing HSE performance of Contractors.
Section 2 JOB SAFETY INSTRUCTIONS		
GFI 210(N)	Handling of Hazardous Chemicals. English/Dutch	This instruction describes the management system for the selection, handling and disposal of all hazardous chemicals used by Staatsolie.
Procedure PTW	Permit to Work (PTW)	This procedure describes the management system managing work activities that have inherently higher risks or unique aspects that could lead to a higher level of risk than routine or daily work activities. It is supported by other procedures and processes to regulate all work activities and manage risk.
Procedure MOC	Management of Change Procedure English	This procedure manages all proposed changes that might have adverse economic, health and safety or environmental consequences within the Upstream Operations, by defining the steps used to identify and manage change-associated risks and their effects within the operations.
GFI 225(N)	Storage, Transportation and handling of Compressed, liquefied and pressurized gasses. English/Dutch	This GFI handles the general guidelines for safe storage, transportation and the handling of gas bottles. The most common industrial gasses, which are used by Staatsolie, are oxygen, acetylene, nitrogen, propane (LPG), butane and carbon dioxide.

Procedure Abrasive Blasting	Abrasive Blasting Procedure. English/Dutch	This procedure provides guidelines for the protection of personnel engaged in abrasive blasting and others who may be in the surrounding areas where abrasive blasting is conducted.
Procedure Spray Painting	Spray painting Procedure. English/Dutch	This procedure provides guidance for the safe use of spray painting whereby care must be taken to protect the workers involved, other personnel in the vicinity, nearby equipment and the environment.
Housekeeping	Housekeeping Guidelines English	This guideline provides guidance to employees to ensure that proper housekeeping is maintained.
GFI 232	Job Safety Analysis English	Job Safety Analysis is a proven method that evaluates a sequence of job steps or tasks to identify and document potential hazards and to take countermeasures to protect workers' health and safety against those hazards. This instruction provides guidance for conducting a Job Safety Analysis.
Procedure Safety Color Codes	Safety Color Codes Procedure	This procedure establishes the requirements for a uniform visual system for marking potential hazards and provides an effective means of communicating hazard information to the employees & contractors, in order to reduce the likelihood of injury from potential hazards in the work environment. It defines the color codes of signs, tags and barricades to be used in controlling exposure to potential hazards and specifies requirements for design uniformity to promote employee's recognition and avoidance of hazards.
Section 3 EMERGENCY RESPONSE		
Emergency Response plan	Emergency Response Plan Upstream Saramacca	This plan describes the procedure that needs to be followed when an emergency situation at the Staatsolie Saramacca Location turns up.
Section 4 EQUIPMENT STANDARDS AND SPECIFICATIONS		
GFI 400	Inspection of Fire Protection and Emergency Equipment. English	This GFI provides departments and divisions of the Saramacca Operations with procedures for the inspection of Fire protection and Emergency Equipment, which must be in good condition at all time.

Procedure Scaffolding Rules	Scaffolding Rules Procedure English	This procedure provides the guidelines of erecting tubular scaffolding.
Section 5 ENVIRONMENT PROTECTION		
Waste Management Plan	Waste Management Plan Onshore	This plan provides guidance for solid waste handling and disposal requirements for waste listed in the appendix of this field instruction.

Appendix 1E: Method Statement

SOM DEPARTMENT:.....

DATE:.....

PROPOSED ACTIVITY (give title of method statement and reference to Environmental specification):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works):

WHERE ARE THE WORKS TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF WORKS FOR WHICH METHOD STATEMENT IS REQUIRED:

Start Date:

End Date:

HOW ARE THE WORKS TO BE UNDERTAKEN (provide as much detail as possible, including annotated maps and plans where possible):

In case on private land: include signature of owner/user to show that he/she is aware

Please attach extra pages if more space is required

Appendix 1F: Pro Forma Land Use Agreement

Contractnummer:

OVEREENKOMST

TOEGANG TERREINEN VOOR HET VERRICHTEN VAN MIJNBOUWWERKZAAMHEDEN

De ondergetekenden:

Staatsolie Maatschappij Suriname N.V., gevestigd aan de Dr. Ir. H.S. Adhinstraat 21 te Paramaribo, hierna te noemen “**Staatsolie**”

en

aan de _____, houder van ID kaart nummer en wonende te _____, hierna te noemen “**Gerechtigde**”

In overweging nemende:

- dat bij Decreet E-8B (S.B. 1981 nr. 59) aan Staatsolie concessie is verleend tot het verrichten van werkzaamheden verband houdende met de opsporing en ontginning van koolwaterstoffen,
- dat in gevolge het Decreet Mijnbouw (S.B. 1986 no. 28), Gerechtigde en derde-belanghebbende werkzaamheden die hiermee verband houden moeten gedogen,

Verklaren het volgende overeen te komen:

Artikel 1

Gerechtigde is _____ het perceelland aan de _____, gelegen in het district _____. Gerechtigde zal een deel van dit perceelland ter beschikking stellen aan Staatsolie voor het verrichten of doen verrichten van werkzaamheden voortvloeiende uit het recht verkregen door Staatsolie vanwege Decreet E-8B, gedurende de periode _____.

Artikel 2

Staatsolie zal Gerechtigde indien van toepassing vergoeden de schade onmiddellijk veroorzaakt door de bovengenoemde werkzaamheden. Deze vergoeding is, afhankelijk van het geval, gebaseerd op taxatie van LVV of andersoortige uit te voeren taxaties, en zal indien van toepassing in een nadere overeenkomst vastgelegd worden.

Artikel 3

Partijen zullen indien nodig tijdens de uitvoering van de werkzaamheden met elkaar in overleg treden voor nadere afspraken met betrekking tot de uitvoering van bovengenoemde werkzaamheden.

Artikel 4

Visuele oriëntatie van de staat van bovengenoemd perceelland vóór de aanvang van de werkzaamheden heeft het navolgende doen constateren:

Artikel 5

Staatsolie zal ten behoeve van de mijnbouwwerkzaamheden de volgende aanpassingen plegen op bovengenoemd perceelland:

- Er zullen geen aanpassingen .

Artikel 6

Staatsolie is gehouden om conform de door het Nationaal Instituut voor Milieu en Ontwikkeling in Suriname (NIMOS) goedgekeurde Environmental management Plan bij beëindiging van de werkzaamheden het perceelland te rehabiliteren, zulks in overleg met Gerechtigde.

Artikel 7

Na het verrichten van de werkzaamheden zal Staatsolie het terrein als volgt overdragen:

- Het terrein zal met de verbeteringen die door Staatsolie zijn aangebracht ten behoeve van de werkzaamheden worden overgedragen.

Aldus overeengekomen en in tweevoud opgemaakt en ondertekend te Paramaribo op

.....

Staatsolie Maatschappij Suriname N.V. Gerechtigde

Managing Director

Datum:

Appendix 1G: Weekly Checklist*To be submitted to the HSSE-U Division**Area:**Coordinates:*

Mitigation measure	Compliance Yes/No	Responsible	Remarks
A copy of the following documents is available onsite: EMMP, WMP, OSRP and ERP			
A traffic management plan is developed and implemented			
All personnel on site are aware of the contents of the EMMP and were made aware of environmental issues			
All personnel on site are aware of the ERPs (spill response, medevac, fire contingency plan)			
Have any drills been held?			
MSDS's are available for all hazardous substances on site			
All equipment is regularly maintained and are kept in optimum condition			
All equipment has been certified			
Fuel is stored in tanks within a bunded area (with 110% of the stored fuel volume) and storage tanks are leaking proof			
All containers and storage tanks are leaking proof			
There are no spills or leakages			
Drip trays are being used where there is a risk of spillage (i.e. fueling of equipment).			
Spill response equipment and materials are present, functional and accessible			
Firefighting equipment is functional and accessible			

There are no signs of oil pollution observed on water surface in trails, canals, etc.			
Visible increased turbidity is confined to active trails, active drilling sites and areas near discharge points and does not extend to the wider swamp.			
Waste handling conform WMP: no waste lying around, waste bins available, etc.			
Minimal clearance of vegetation, and clearing of high forest is limited to the minimum.			
Trails are located according to planning (relevant for Black Mangrove Forest and ridge forest)			
Sings for noise buffer zone placed and visible			
No breeding colonies present within 1 km during activities in noise buffer zone (relevant for AOI C)			
Have any encounters with wildlife (e.g. jaguars, snakes) been reported. Please describe and provide date/time.			
Any accidents registered, including snake bites, bee stings?			
No increased dust (during dry periods) observed along the Gangaram Pandeyweg during transport.			
All received complaints about project activities have been registered and are being addressed			
Any other observations or comments			

Department Delegate

Completed by:

Date:

Sign:

Project Manager or his delegate

Received and checked by:

Date:

Sign:

Appendix 2 Impact Assessment Methodology

The significance of all potential impacts that would result from the proposed project is determined to assist managers.

Key issues identified during scoping require further studies to determine whether they are likely to occur and to assess how they will manifest themselves.

For key potential impacts identified by the scoping study, it will be necessary to determine the significance of each impact, based upon qualitative or quantitative assessment of the following attributes:

- magnitude
- geographical scale
- duration
- probability of occurrence

The resulting impact will be indicated by their significance class, which classes are defined as:

Table 1: Classes of impact significance

< Impact significance >
Major (significant) effect: effect expected to be permanent or continuous and non-reversible on a national scale and/or have international significance.
Moderate (significant) effect: long-term or continuous effect, but it is reversible and/or it has regional significance.
Minor (not significant) effect: effect confined to the local area and/or of short duration, and it is reversible.
Negligible (not significant) effect: effect not detectable.
Unknown effect: insufficient data available to assess the significance of the effect.

In addition, impacts have been classified as:

- Positive: indicating whether the impact will have a positive (beneficial) effect; or
- Negative: indicating whether the impact will have a negative (adverse) effect on the environment, including affected people.

The degree of detail will enable the determination of required mitigation and possible enhancement measures, respectively to prevent or reduce significant negative impacts and to promote any positive impacts already in the planning phase. The implementation of mitigation measures will reduce negative environmental impacts to an acceptable level as much as possible.

After implementation of mitigation/enhancement measures the significance of the impacts will again be determined. The impact assessment methodology is described below.

The **significance** of an impact is defined as a combination of the **severity** of the impact occurring and the **probability** that the impact will occur. The significance of each identified impact will be rated according to the methodology set out below:

First the **intensity/magnitude/size, scale and duration** of the impact are determined according to below tables (**Table 2** or **Table 3** and

Table 4).

Table 2: Defining the intensity / magnitude / size of the negative impacts

Rating	Description of Rating for		
	Natural environment	Socio-cultural	Health/safety
High	Irreversible damage to highly valued species, habitats or ecosystems	Irreparable damage to highly valued items of cultural significance, or social functions or processes are severely altered	Event resulting in loss of life, serious injuries or chronic illness; hospitalization required
Medium	Reversible damage to species, habitats or ecosystems	Repairable damage to items of cultural significance, or impairment of social functions and processes	Event resulting in moderate injuries or illness; may require hospitalization
Low	Limited damage to biological or physical environment	Low-level damage to cultural items, or social functions and processes are negligibly altered (nuisance)	Event resulting in annoyance, minor injuries or illness, not requiring hospitalization
Negligible	No relevant damage to biological or physical environment	No damage is done to cultural items and social functions and processes are not altered	Event is not experienced by receptors or only occasional minor annoyance

Table 3: Defining the intensity / magnitude / size of the positive impacts

Rating	Description of Rating for		
	Natural environment	Socio-cultural	Health/safety
High	Direct benefits to species, habitats and resources with significant opportunities for sustainability	Benefits to local community and beyond	Health and safety will be significantly improved
Medium	Moderate benefits to species, habitats and resources with some opportunities for sustainability	Benefits to many households or individuals	Health and safety will be improved
Low	Minor benefits to species, habitats and resources with possible opportunities for sustainability	Benefits to few households or individuals	Health and safety will be slightly improved

Table 4: Defining duration and scale of the impact

Rating	Definition of Rating
Duration – the time frame for which the impact will be experienced	
Short-term (ST)	Up to 2 months (construction time)
Medium-term (MT)	2 to 6 months (drilling time)
Long-term (LT)	More than 6 months
Scale – the area in which the impact will be experienced	
Small (SS)	Localized spot - project site (AOI A, B, C and D)
Medium (MS)	Tambaredjo and Uitkijk area
Large (LS)	Outside Tambaredjo and Uitkijk area

Then the **Severity Rating** of the impact is determined by combining the **magnitude** of the impact with **duration** and **scale** of the impact as set out below (**Table 5**).

Table 5: Defining the severity of the impact

Magnitude	High	Medium	Low	Negligible
Duration and/or Scale				
LT-LS, LT-MS or MT-LS	High	High	Medium	Negligible
LT-SS, MT-MS, MT-SS, ST-MS or ST-LS	High	Medium	Low	Negligible
ST-SS	Medium	Low	Negligible	Negligible

The next step is to define the **probability** of an impact to occur, as defined below (**Table 6**).

Table 6: Defining the probability of the impact

Probability– the likelihood of the impact occurring	
High	Sure to happen, or happens often
Medium	Could happen, and has happened in Suriname
Low	Possible, but only in extreme circumstances

Finally, the overall **significance** of the impact is determined as explained below (**Table 7**).

Table 7: Determination of the overall Significance of the impact

Severity	High	Medium	Low	Negligible
Probability				
High	Major	Moderate	Minor	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible

Appendix 3: Stakeholder Consultation

Appendix 3A: Minutes of Meetings

Minutes of Meeting

Project:	Environmental Management and Monitoring Plan (EMMP) for the Appraisal Drilling Program in the areas adjected to Tambaredjo, Tambaredjo North-West and Uitkijk Area
Project Code:	IS-432
Onderwerp:	Project bijeenkomst
Aanwezigen:	ILACO: Fortune, M./ Koenjbiharie, S. NIMOS: Tjon-Akon, Q.
Locatie:	Online via Microsoft Teams
Datum:	27 februari 2023
Tijd:	15:00- 15:15
Opgesteld door:	Rodjan, R./Fortune, M

Onderwerp	Discussie/Opmerkingen
Agenda	<ul style="list-style-type: none"> - Opening en introductie - Project achtergrond - Aanpak en methodiek - Project tijdlijn - Vragen en feedback
Opening en introductie	<p>Fortune M. van ILACO opent de bijeenkomst, gevolgd door een korte inleiding en het doel van de bijeenkomst:</p> <ol style="list-style-type: none"> 1. Het NIMOS informeren over de aanpak en methodologie die ILACO zal hanteren; en 2. Om feedback van NIMOS in te winnen.
Project achtergrond	<p>Samenvatting van het project:</p> <ul style="list-style-type: none"> - Staatsolie is van plan een Appraisal Drilling Program (ADP) uit te voeren in de gebieden Tambaredjo, Tambaredjo Noord-West en Uitkijk in het district Saramacca. - Het project is geclassificeerd als een Categorie-B project door het NIMOS, wat betekent dat een beperkte ESIA moet worden opgesteld. Het NIMOS heeft aangegeven dat in deze een EMMP voldoende is voor dit project.
Aanpak en methodiek	<p>Het onderzoek zal worden uitgevoerd als een desktopstudie waarbij data niet ouder dan 5 jaar gebruikt zal worden.</p> <p>Daarnaast zal er ook beperkt veldwerk worden uitgevoerd, bestaande uit:</p> <ul style="list-style-type: none"> - Veldwerk om alleen de sociale baseline bij te werken; - Stakeholder consultaties (één-op-één-) met bewoners, landeigenaren, andere relevante partijen in het studiegebied; en - Eén (1) publieke consultatie bijeenkomst.
Project tijdlijn	<p>De hoofdactiviteiten zijn gepresenteerd, namelijk:</p> <ul style="list-style-type: none"> - Projectplanning en logistiek: <ul style="list-style-type: none"> o Consultatie gesprek met NIMOS o Indienen werkplan bij Staatsolie - Opmaak Draft EMMP <ul style="list-style-type: none"> o Consultaties met stakeholders o Indienen Draft EMMP voor review door NIMOS - Publieke consultatie - Finale EMMP
Vragen en feedback	<p>Tjon-Akon Q.: Zal er naast de bestaande ESIA-rapporten, ook gebruik worden gemaakt van de monitoringsrapporten?</p> <p>Fortune M.: Ja, de monitoringsrapporten van Staatsolie zullen ook gebruikt worden, zoals de waterkwaliteit monitoringsrapporten.</p> <p>Koenjbiharie, S.: Zijn er monitoringsrapporten ingediend bij het NIMOS.</p>

	<p>Tjon-Akon Q.: Ja, er zijn ingediende monitoringsrapporten. Die kunnen nagevraagd worden bij de Monitoring afdeling van NIMOS.</p> <p>Tjon-Akon Q.: Wordt de het werk plan bij Staatsolie ingediend?</p> <p>Koenjbarie, S.: Ja, dit is een interne deliverable.</p> <p>Tjon-Akon Q.: Wanneer zal het draft EMMP worden ingediend bij het NIMOS?</p> <p>Fortune M.: Volgens planning zal het Draft EMMP in de week van 16 juni 2023 worden ingediend bij het NIMOS.</p> <p>Het NIMOS had verder geen opmerkingen.</p>
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Minutes of Meeting

Project: Environmental Management and Monitoring Plan (EMMP) for the Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area

Project no.: IS-432

Betreft: Stakeholder consultatie

Aanwezigen: ILACO: Fortune, M./ Naigi, A.
Districtscommissariaat Saramacca: Audhram, V. (Beleidscoordinator)/
Jubithana, S. (Adjunct-Secretaris)

Locatie: Kantoor Districtscommissariaat Saramacca

Datum: 5 april 2023



Samengesteld door: Naigi, A.

Tijd: 09:00- 09:30u

Onderwerp	Discussie/Opmerkingen
Agenda	<ul style="list-style-type: none"> - Opening en introductie - Achtergrondinformatie Exploration Drilling Project - Achtergrondinformatie EMMP - Vragenronde
Opening & Introductie	<p>Dhr. Audhram van het Commissariaat Saramacca opende de vergadering met een welkomstwoord en excuses voor afwezigheid van de Districtscommissaris (DC). Vervolgens gaf Mw. Fortune van ILACO een korte inleiding en het doel van de vergadering. Het doel van de bijeenkomst was:</p> <ol style="list-style-type: none"> 1. De Districtscommissaris (DC) te informeren over de projectactiviteiten en 2. Om informatie en feedback in te winnen over het projectgebied. <p>Na de introductie hadden de vertegenwoordigers van de DC de mogelijkheid om vragen te stellen omtrent het project. Vervolgens is er door middel van een vragenlijst, input en feedback ontvangen van de vertegenwoordigers van de DC.</p>
Samenvatting besproken punten	<p><u>Samenwerking tussen Staatsolie en het Districtscommissariaat</u> Het Districtscommissariaat heeft een goede samenwerking met Staatsolie en er is reguliere onderhoud, maandelijks tenminste één keer met Staatsolie. Het commissariaat wordt door Staatsolie geïnformeerd wanneer project gerelateerde activiteiten binnen het district moeten worden uitgevoerd. Verder heeft Staatsolie ook contact met de buurtorganisaties in de gebieden Tambaredjo-Uitkijk (TAM-UIT) (A), Tambaredjo West (TAM-West) (B) en Tambaredjo Noord-West Zuid (TNW Zuid) (D) areas.</p> <p><u>Landgebruik in het projectgebied</u></p> <ul style="list-style-type: none"> - Het gebied nabij Tambaredjo-Uitkijk (TAM-UIT) (A), wordt gebruikt voor landbouw en veeteelt doeleinden. - Het gebied langs de Gangaram Pandayweg (nabij Tambaredjo West (TAM-West) (B) en Tambaredjo Noord-West Zuid (TNW Zuid) (D)) wordt gebruikt voor landbouw, veeteelt en visserij (aquacultuur). Er zijn geen commerciële visgaten. Verder wordt het gebied (percelen die langs de rivier liggen) ook voor industriële doeleinden, namelijk hout- en zandtransport. Er zijn enkele zandopslag locaties aan de Ganganram pandayweg. <p><u>Projectontwikkelingen in het gebied</u> Het commissariaat is niet bekend met significante projectontwikkelingen in het gebied. Voor het voorgesteld ontwateringsproject (kanaal graven vanuit Pomona richting Saramaccarivier) worden er momenteel bestekken voorbereid door het Ministerie van Openbare Werken. Voor de uitvoering zal er worden gekeken naar</p>

	<p>stakeholders die willen voorfinancieren. Het zal nog een poos duren voor de uitvoering.</p> <p><u>Klachten uit het gebied</u> Bewoners kunnen hun klachten melden bij het commissariaat, afdeling Burger Informatie Centrum (BIC). Relevante klachten worden tijdens reguliere onderhoud met Staatsolie besproken. Indien nodig vindt er directe communicatie plaats met de afdeling Public relations. Enkele klachten die in het verleden zijn gemeld zijn:</p> <ul style="list-style-type: none"> • Verstoring van de waterhuishouding (aan de Gangarampanday weg, circa 7-8 jaren), waarbij zoals bekend een rechtszaak nog gaande is. • Onderhoud van de Gangaram pandayweg gebeurt niet meer regelmatig, tijdens de droge tijd wordt de weg niet meer zo frequent wordt natgemaakt door Staatsolie. <p><u>Zorgpunten en feedback van het commissariaat</u></p> <ol style="list-style-type: none"> 1. Wat zal de aanpak van Staatsolie zijn zodat de nabijgelegen percelen niet onder water komen te liggen? Beheer van de waterhuishouding is belangrijk. 2. Indien een boorlocatie op perceel van derden komt te liggen, wordt verzocht dat er duidelijke schriftelijke afspraken wordt gemaakt tussen Staatsolie en de landeigenaar.
Sluiting	De meeting werd afgesloten met een dankwoord voor de ontvangst en verstrekte informatie.

Project: IS-432 EMMP for the Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area**Datum:****Tijd :****Locatie:****Subject: Stakeholder consultatie**

No.	Naam	Organisatie/Functie	Contactnummer/Email	Paraaf
1	Audhram Vinay	Commissarisat Saramacca	8660224	
2	Subdiana Sharon	↳ Beleid. Coördinator	vinayaudhram@gmail.com	
3		↳ Commissariaat Saramacca	8667195	
4		ADS	sharonsubdiana2503@hotmail.com	
5				
6				
7				
8				
9				
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11				

Minutes of Meeting

Project: Environmental Management and Monitoring Plan (EMMP) for the Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area

Project no.: IS-432

Betreeft: Stakeholder consultatie

Aanwezigen: ILACO: Fortune, M./ Naigi, A.
Ministerie van Landbouw, Veeteelt en Visserij (LKV)- Ressort Groningen: Sardjoe, R (wnd. ressort leider)/ Poeran, R (wnd. Rayonleider) - Zie presentielijst

Locatie: Kantoor LKV-Groningen



Datum: 5 april 2023

Samengesteld door: Naigi, A.

Tijd: 10:00 – 10:30u

Onderwerp	Discussie/Opmmerkingen
Agenda	<ul style="list-style-type: none"> - Opening en introductie - Achtergrondinformatie Exploration Drilling Project - Achtergrondinformatie EMMP - Vragenronde
Opening & Introductie	<p>Mw. Fortune van ILACO opende de vergadering, gevolgd door een korte introductie en het doel van de vergadering. Het doel van de bijeenkomst was:</p> <ol style="list-style-type: none"> 1. Het Ministerie van Landbouw, Veeteelt en Visserij (LKV)- Ressort Groningen te informeren over de projectactiviteiten, en 2. Om informatie en feedback in te winnen van de vertegenwoordigers van LKV-Groningen. <p>Na de introductie is er door middel van een vragenlijst, input en feedback ontvangen van de vertegenwoordigers van LKV-Groningen.</p>
Samenvatting besproken punten	<p><u>Betrokkenheid/ rol LKV-Groningen in het projectgebied</u></p> <p>De projectgebieden Tambaredjo West (B) en Tambaredjo Noordwest-Zuid (D) vallen onder het werkgebied van LKV-Groningen. De projectgebieden Tambaredjo-Uitkijk (A) en Tambaredjo Noord-Oost (C) vallen onder LKV-Wanica. Activiteiten van LKV-Groningen in het gebied zijn o.a. het ondersteunen van de boeren middels het verzorgen van trainingen over teelttechnieken en bestrijden van ziekte van planten en verbouwde gewassen.</p> <p>Voor wat betreft communicatie met de DC ivm aanpak problemen is er een goede samenwerking. De DC geeft wel gehoor aan de boeren die met of in een probleem zitten waarbij LKV als instantie ook altijd erbij wordt betrokken.</p> <p><u>Landgebruik in het projectgebied</u></p> <ul style="list-style-type: none"> - De gebieden nabij projectgebied Tambaredjo West (B) en Tambaredjo Noordwest-Zuid (D) zijn agrarische gebieden en worden gebruikt voor landbouw (rijst-, bananen- en kokosteelt en groente soorten) en veeteelt (koeien en pluimvee). Vroeger werd ongeveer 1000-2000 ha gebruikt voor rijstteelt maar momenteel wordt slechts 300 ha voor rijstteelt gebruikt. - Er is ook sprake van visserij, deels voor ontspanning en deels commercieel op de rivier en via Huwelijkszorg richting zee. - Nabij Tambaredjo Noordwest-Zuid (D) gebied wonen er aantal gezinnen en in de in the Gangga Rampandeyweg is er 1 school (O.S.Huwelijkszorg).

	<p><u>Projectontwikkelingen in het gebied</u> LVV-Groningen is niet op de hoogte van nieuwe projectontwikkelingen in het gebied. Het Min. van LVV stimuleert wel het telen van nieuwe gewassen in het gebied.</p> <p><u>Communicatie tussen Staatsolie en LVV-Groningen</u> Er is geen regelmatige/ frequente communicatie tussen Staatsolie en LVV-Groningen. Bij grote projecten wordt LVV-Groningen wel betrokken en voor het opmaken van schadetaxatie rapporten over incidenten die plaatsvinden in de omgeving waarbij een boer of landbouwer benadeeld is. Zo een rapport wordt ingediend bij Staatsolie voor het verkrijgen van compensatie/schadevergoeding.</p> <p><u>Klachten uit het gebied</u></p> <ul style="list-style-type: none"> - Verstoorde waterhuishouding waardoor gebieden in het noordelijk deel onder waterlopen (o.a. bij springvloed). De rijstteelt is hierdoor achteruitgegaan gezien men bang is om investeringen te doen. - Door een afgesloten dam nabij Staatsolie in de omgeving van Tambaredjo-Uitkijk gebied (A) was een Citrus aanplant onder water gelopen. Deze klachten wordt geregistreerd bij de desbetreffende ressort LVV die gaat over het gebied maar ook bij het commissariaat kantoor. - Door weggerukte stroomkabel van Staatsolie is een kudde koeien gestorven omgeving het Tambaredjo West (B) gebied. <p><u>Zorgpunten en feedback van LVV-Groningen</u></p> <ul style="list-style-type: none"> - Er moet rekening worden gehouden met de gemeenschap nabij de projectgebieden en de school bij Huwelijkszorg. - Er moeten bindende afspraken worden gemaakt tussen landbouwen (landeigenaren) en Staatsolie zodat beide partijen zich eraan houden en dat er gevolgen zijn als ze dat niet doen. Dit zorgt voor een bepaalde mate van zekerheid en verantwoordelijkheid bij het nakomen van afspraken. - Goede communicatie vanuit Staatsolie zodat de bewoners op de hoogte zijn van de activiteiten.
Sluiting	De meeting werd afgesloten met een dankwoord voor de ontvangst en verstrekte informatie.

No.	Naam	Organisatie/Functie	Contactnummer/Email	Paraaf
12	pdraan R	Wvd Raaypleider	8172775	
13	Sardjoe P.	Wvd Resord Leider	8581639	
14				
15	Kesarie	OD Landbouw LVV	08756443 - Contact opnemen	
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Minutes of Meeting

Project:	Environmental Management and Monitoring Plan (EMMP) for the Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area
Project Code:	IS-432
Onderwerp:	Consultatie meeting met LBB
Aanwezigen:	ILACO: Koenjibharie S./ Fortune M./ Kishoen Misier S./ Rodjan R. LBB: Sakimin C./ Esajas V./ Somaroe K./ Sanredjo A.
Locatie:	Online via Zoom
Datum:	26 april 2023
Tijd:	9:30 – 11:00
Opgesteld door:	Naigi A.

Onderwerp	Discussie/Opmerkingen
Agenda	<ul style="list-style-type: none"> - Opening - Project achtergrond - Aanpak en methode - Vragen en feedback - Sluiting
Opening en introductie	<p>De meeting werd geopend door Fortune M. van ILACO. Vervolgens werden de agendapunten bekend gemaakt en het doel van de consultatie:</p> <ol style="list-style-type: none"> 1. Dienst Lands Bosbeheer (LBB) te informeren over het project en de projectactiviteiten en 2. Om informatie en feedback in te zamelen over de huidige situatie in het projectgebied. <p>Hierna werd een korte presentatie gegeven van het project.</p>
Vragen	<p>Esajas V.: Uit de getoonde kaart blijkt dat het project in het Noord Saramacca MUMA uitgevoerd zal worden. Zijn de aspecten uit het update MUMA Management plan ook meegenomen in dit project?</p> <p>Fortune M.: Is deze plan beschikbaar en dan deze worden gedeeld?</p> <p>Easajas V.: Het plan is gedeeld met de Staatsolie gezien zij een belangrijke stakeholder zijn. LBB kan het ook delen met ILACO. Ten aanzien van de drilling activiteiten is er een schriftelijke toestemming van het hoofd van LBB vereist voor het uitvoeren van activiteiten in de MUMA.</p> <p>Fortune M.: Wij nemen deze mee en zullen dit verder ook communiceren met Staatsolie.</p> <p>Easajas V.: Het gebied aan de noordelijke zijde heeft een overlapping met het Coppename Monding natuurreservaat. Binnen een MUMA mogen er wel economische activiteiten met toestemming van LBB worden uitgevoerd. Bij een natuurreservaat mag er geen enkel activiteit worden uitgevoerd; het verboden om activiteiten te ontplooiën.</p> <p>Fortune M.: De feedback wordt meegenomen en de kaart zal worden geverifieerd met Staatsolie.</p> <p>Esajas V.: Tijdens stakeholder consultaties voor de update MUMA Management Plan, is er reeds duidelijke communicatie geweest met Staatsolie. Over de Coppename Monding natuurreservaat is er duidelijk aangegeven dat er daar geen enkel activiteit uitgevoerd mag worden.</p> <p>Koenjibharie S.: De gedeelde informatie nemen we mee in ons onderzoek. Is het bekend indien er gevist wordt in de Noord-Saramacca MUMA?</p> <p>Esajas V.: Er wordt gevist en worden ook andere activiteiten gedaan in het MUMA-gebied. In het update MUMA Managementplan is dit beschreven. Ook over flora en fauna van het gebied.</p>

Sluiting	De meeting werd afgesloten met een dankwoord voor de ontvangst en verstrekte informatie en dat de besproken aandachtspunten meegenomen zullen worden.
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Minutes of Meeting

Project: Environmental Management and Monitoring Plan (EMMP) for the Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area

Project no.: IS-432

Betreft: Stakeholder consultatie

Aanwezigen: ILACO: Fortune, M./ Naigi, A.
Ministerie van Landbouw, Veeteelt en Visserij (LVV), Directoraat Landbouw: Dr. Kesharie

Locatie: Hoofdkantoor LVV

Datum: 9 juni 2023

Samengesteld door: Naigi, A

Tijd: 09:30 – 10:00u

Onderwerp	Discussie/Opmerkingen
Agenda	<ul style="list-style-type: none"> - Opening en introductie - Achtergrondinformatie Exploratie Drilling Project - Achtergrondinformatie EMMP - Vragenronde
Opening & Introductie	<p>Mw. Fortune van ILACO opende de vergadering, gevolgd door een korte introductie en het doel van de vergadering. Het doel van de bijeenkomst was:</p> <ol style="list-style-type: none"> 1. De afdeling Landbouw Onderdirectoraat te informeren over de projectactiviteiten; en 2. Om informatie en feedback in te winnen over het projectgebied. <p>Na de introductie is er door middel van een vragenlijst, input en feedback ontvangen van de vertegenwoordiger van LVV-Onder directoraat Landbouw</p>
Samenvatting besproken punten	<p><u>Betrokkenheid/ rol LVV- Directoraat Landbouw in het projectgebieden</u> Het directoraat heeft minimale directe betrokkenheid in het projectgebied gezien de depandances van LVV eerder betrokken zijn in de desbetreffende gebieden.</p> <p><u>Landgebruik in het projectgebied</u> De gebieden nabij projectgebied Tambaredjo West (B) en Tambaredjo Noordwest-Zuid (D) zijn agrarische gebieden en worden gebruikt voor landbouw (groente soorten) en veeteelt (koeien en pluimvee).</p> <p><u>Projectontwikkelingen in de gebieden</u> LVV is niet op de hoogte van nieuwe projectontwikkelingen in het gebied.</p> <p><u>Communicatie tussen Staatsolie en LVV</u> Er is geen regelmatige/ frequente communicatie tussen Staatsolie en LVV. Bij grote projecten wordt LVV wel geïnformeerd door Staatsolie.</p> <p><u>Klachten uit het gebied</u> De voornamelijke klacht uit het gebied is dat sinds 2020 de gebieden in de omgeving onder water lopen. Het gaat meer om de waterhuishouding in het noordelijk deel van het gebied. De kleine kreken in de omgeving zijn dicht wat ertoe leidt dat de landbouwgronden onder water komen te liggen. Dit zorgt voor heel wat schade en vertraging in de productie van de boeren.</p> <p><u>Zorgpunten en feedback van LVV</u> Er moet rekening worden gehouden dat de waterhuishouding van het gebied. Verder ook flora en fauna in de gebieden en andere milieuaspecten.</p>

Project: IS-432 EMMP for the Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area**Datum: 09 juni 2023****Tijd : 09:30u am****Locatie: LVV-Kantoor****Subject: Stakeholder consultatie**

No.	Naam	Organisatie/Functie	Contactnummer/Email	Paraaf
1	Ch. Kesharie	L.V.V.	keshariechan@gmail.com	<i>Kesharie</i>
2				
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Minutes of Meeting

Project: Environmental Management and Monitoring Plan (EMMP) for the Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area

Project no.: IS-432

Betreft: Stakeholder consultatie

Aanwezigen: ILACO: Fortune, M./ Naigi, A.
Grondeigenaar: Van Dijk R.

Locatie: Telefonisch

Datum: 28 Juli 2023

Samengesteld door: Rodjan, R

Tijd: 11:30 – 12:00u

Onderwerp	Discussie/Opmerkingen
Agenda	<ul style="list-style-type: none"> - Opening en introductie - Achtergrondinformatie Exploration Drilling Project - Achtergrondinformatie EMMP - Vragenronde
Opening & Introductie	<p>Mw. Fortune van ILACO opende de vergadering, gevolgd door een korte introductie en het doel van de bijeenkomst. Het doel van de bijeenkomst was:</p> <ol style="list-style-type: none"> 1. De grondeigenaar te informeren over de projectactiviteiten, en 2. Om informatie en feedback in te winnen van de grondeigenaar. <p>Na de introductie is er door middel van een vragenlijst, input en feedback ontvangen van de grondeigenaar.</p>
Samenvatting besproken punten	<p><u>Landgebruik in het projectgebied</u> Het perceel wordt momenteel deels gebruikt voor veeteelt activiteiten door de broer van Mr. Van Dijk. De veeteeltactiviteiten vinden plaats tot ongeveer 500m vanuit de Wayamboweg. Voor overige delen van het terrein zijn er op kort termijn geen plannen. Indien Staatsolie gebruik wenst te maken van de dam, moet worden nagegaan indien deze toegankelijk is. Door veel water in de omgeving zijn delen onderwater gelopen en daardoor moeilijk toegankelijk.</p> <p><u>Communicatie en samenwerking tussen Staatsolie en grondeigenaar</u> Mr. Van Dijk heeft voldoende ervaring en goede communicatie met Staatsolie. Zodra hij tenminste 1-2 weken voor de start van de activiteiten gemeld wordt, is dat voldoende. Staatsolie kan per e-mail of telefonisch contact met opnemen.</p> <p><u>Klachten uit het gebied</u> Er zijn geen klachten. Mocht er zich iets voordoen, gaat Mr. Van Dijk ervan uit dat Staatsolie hem op de hoogte zal stellen en hoe dit aangepakt zal worden.</p> <p><u>Zorgpunten en feedback van grondeigenaar</u> Er zijn momenteel geen directe zorgpunten met betrekking tot het project. Staatsolie moet de schriftelijk overeenkomst met afspraken blijven hanteren en regelmatige communicatie onderhouden.</p>

Minutes of Meeting

Project: Environmental Management and Monitoring Plan (EMMP) for the Appraisal Drilling Program in the areas adjacent to Tambaredjo, Tambaredjo North-West and Uitkijk area

Project no.: IS-432

Betreft: Stakeholder consultatie

Aanwezigen: ILACO: Fortune, M./ Naigi, A.
Grondeigenaar: Poeran, P.

Locatie: Saramacca

Datum: 1 Augustus 2023

Samengesteld door: Rodjan, R

Tijd: 09:15 – 10:15u

Onderwerp	Discussie/Opmerkingen
Agenda	<ul style="list-style-type: none"> - Opening en introductie - Achtergrondinformatie Exploration Drilling Project - Achtergrondinformatie EMMP - Vragenronde
Opening & Introductie	<p>Mw. Fortune van ILACO opende de vergadering, gevolgd door een korte introductie en het doel van de bijeenkomst. Het doel van de bijeenkomst was:</p> <ol style="list-style-type: none"> 1. De grondeigenaar te informeren over de projectactiviteiten, en 2. Om informatie en feedback in te winnen van de grondeigenaar. <p>Na de introductie is er door middel van een vragenlijst, input en feedback ontvangen van de grondeigenaar.</p>
Samenvatting besproken punten	<p><u>Landgebruik in het projectgebied</u></p> <p>Het perceel is 600 ha en wordt geheel gebruikt voor landbouw (rijstteelt) en voor veeteelt (koeien). De voorkant van het perceel is eigendom en de achterkant van het perceel is grondhuur. Vissen wordt gedaan in vriendenkring voor ontspanning.</p> <p><u>Communicatie en samenwerking tussen Staatsolie en grondeigenaar</u></p> <p>Bij de vorige boringen (ongeveer 10 jaar geleden) was er geen schriftelijke afspraken gemaakt. Voor het huidige project heeft Staatsolie telefonisch contact opgenomen, maar nog geen fysieke afstemming gehad. Tot nu toe is er niet een directe goede samenwerking ervaren, gezien Staatsolie zich niet helemaal aan de afspraken houdt.</p> <p><u>Klachten uit het gebied</u></p> <p>De volgende klachten werden aangehaald:</p> <ul style="list-style-type: none"> - Slechte onderhoud van de wegen naar de huidige boorlocatie op het terrein van Mr. Poeran. - Slechte onderhoud van de Gangaram Pandeyweg (vooral het weggedeelte na 5 km vanuit de Wayamboweg) wat voor veel stof opwaaiing zorgt. Mr. Poeran stelt voor dat Staatsolie samen met de overheid moeten kijken om de Gangaram Pandeyweg te asfalteren. - De aanwezigheid van een aardolie geur dichtbij de school te Huwelijkszorg. <p>Deze klachten zijn aan alle partijen doorgegeven, zowel Staatsolie als de DC middels brieven, maar er is geen reactie ontvangen.</p>

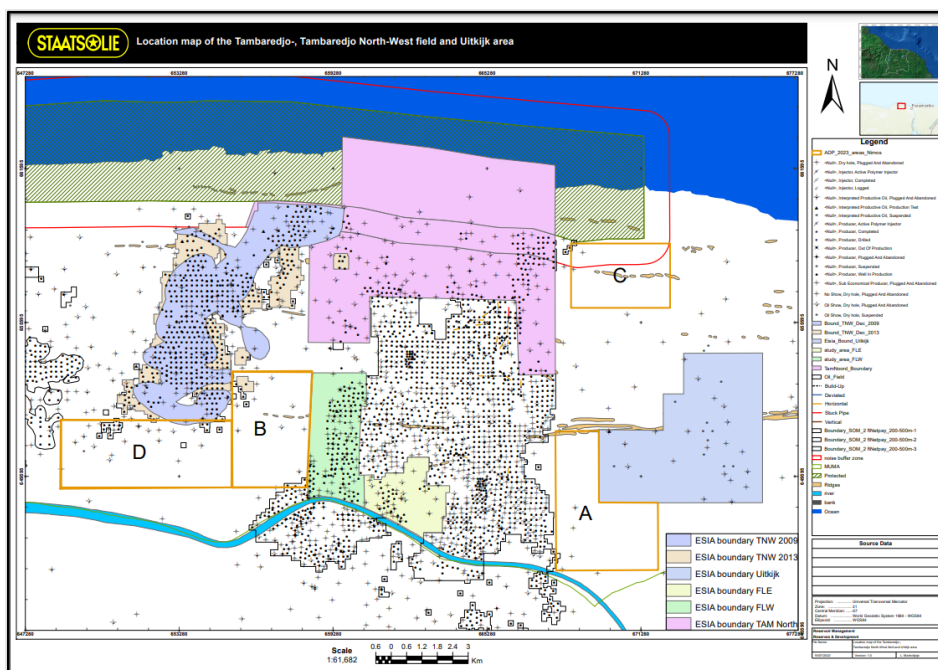
	<p><u>Zorgpunten en feedback van grondeigenaar</u></p> <ul style="list-style-type: none">- Er is geen bezwaring tegen het project, alleen moet er goed overleg, via zijn raadsman, plaats vinden.- Zowel de weg als dammen die gebruikt zullen worden om de boorlocaties te bereiken, moeten goed onderhouden worden (niet met klinkzand of klei) en begaanbaar zijn.- Een zorgpunt is hoe Staatsolie om zal gaan met het dumpen/ storten van afval en chemicaliën.- Staatsolie moet samen met de overheid kijken om de Gangaram Pandeyweg te asfalteren.
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Appendix 3B: BID Document

Informatie Brochure

Milieu Management en Monitoring Plan voor het Appraisal Drilling Programma (ADP) in de gebieden Tambaredjo-Uitkijk (TAM-UIT) (A), Tambaredjo West (TAM-West) (B), Tambaredjo Noordoost (TAMNE) (C) en Tambaredjo Noordwest-Zuid (TNW South) (D)

juli 2023



Samengesteld ten behoeve van Staatsolie Maatschappij Suriname N.V.

door



ISO 9001:2015 certified

Inleiding

Staatsolie Maatschappij Suriname N.V. (Staatsolie) heeft als een van de strategische doelen het op lang termijn behouden van haar jaarlijkse olieproductie van minimaal zes (6) miljoen stocktankvaten. Ten einde hierin te helpen voorzien, heeft Staatsolie het voornemen om een Appraisal Drilling Programma (ADP) uit te voeren om de aanwezigheid van produceerbare reservoirs vast te stellen, geologische risico's in deze gebieden in kaart te brengen en de reserves te vergroten.

Het ADP zal worden uitgevoerd in vier (4) verschillende gebieden die grenzen aan de bestaande producerende olievelden in de Saramacca-operatie. De gebieden worden onderscheiden in de eerste prioriteitsgebieden, die volgens de planning in het vierde kwartaal van 2023 geboord zullen worden, en de tweede prioriteitsgebieden, die in 2024 geboord zullen worden.

De eerste prioriteitsgebieden omvatten Tambaredjo-Uitkijk (TAM-UIT) (A) en Tambaredjo West (TAM-West) (B). De tweede prioriteitsgebieden omvatten Tambaredjo Noordoost (TAMNE) (C) en Tambaredjo Noordwest-Zuid (TNW South) (D), zie *Figuur 1*.

Volgens de procedure is er voor een dergelijk project een Milieu- en Sociale Effectenbeoordeling of -analyse (Environmental and Social Impact Assessment, ESIA) vereist. In het genoemde projectgebied en in de naastgelegen gebieden zijn echter al meerdere ESIA-studies verricht, ook voor soortgelijke boorprogramma's. Het Nationaal Instituut voor Milieu en Ontwikkeling in Suriname (NIMOS) heeft besloten dat er in dit geval kan worden volstaan met een Milieu Management- en Monitoringsplan (Environmental Management and Monitoring Plan, EMMP).

Voor de samenstelling hiervan is het advies- en ingenieursbureau ILACO Suriname N.V. (ILACO) aangetrokken. Deze brochure verschaft informatie over het project en de samenstelling van het EMMP ten behoeve van de stakeholders.

Korte project beschrijving

Het programma in het eerste prioriteitsgebied kan naar schatting 7 – 8 maanden duren en zal volgens huidige planning worden uitgevoerd in het 4^e kwartaal van 2023. Dit behelst de volgende gebieden:

- Tambaredjo-Uitkijk (TAM-UIT) (A): dit studiegebied ligt tussen het Tambaredjo-olieveld en het Uitkijk-gebied (voorheen bekend als het Wayambo-blok). Er zijn vijf (5) boorlocaties voorgesteld in dit gebied, waarbij één (1) locatie afhankelijk is van de resultaten van de eerste vier (4) putten.
- Tambaredjo West (TAM-West) (B): dit studiegebied ligt tussen de olievelden Tambaredjo en Tambaredjo Noord-West. Er zijn vier (4) boorlocaties voorgesteld in dit gebied.

In geval van succesvolle appraisal putten in de TAM-UIT en TAM-West gebieden, zullen de geboorde appraisal putten worden getest op hun productiegedrag. Afhankelijk van het resultaat van de productie testprogramma, kan er worden overgegaan tot het identificeren en boren van andere appraisal boorlocaties en/of zelfs verdere ontwikkeling van het gebied middels productie bronnen.

Van de in totaal negen (9) boorlocaties, bevinden zich vier (4) locaties in het zwampgebied en vijf (5) locaties in het drooglandgebied. De verdeling per gebied is namelijk:

- Tambaredjo-Uitkijk (TAM-UIT) (A): vier (4) locaties in het zwampgebied en een (1) locatie in het drooglandgebied.
- Tambaredjo West (TAM-West) (B): 4 locaties in het drooglandgebied.

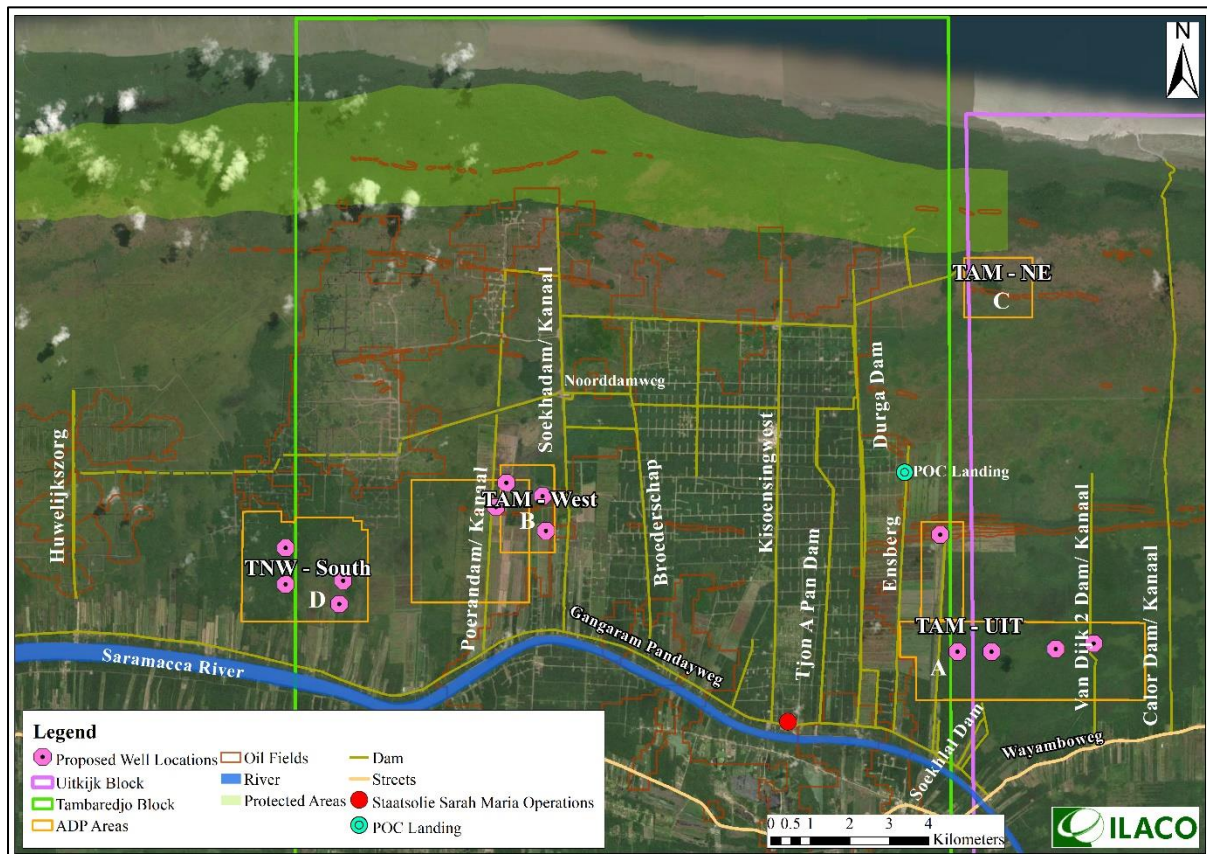
Het programma in het tweede prioriteitsgebied zal worden uitgevoerd in 2024. Dit behelst de volgende gebieden:

- Tambaredjo Noord-Oost (TAMNE) (C): dit studiegebied ligt in het noordoostelijk deel van het Tambaredjo-olieveld. Er zijn vier (4) locaties gepland in dit gebied

- Tambaredjo Noordwest-Zuid (TNW South) (D): dit studiegebied ligt in het zuidelijk deel van het Tambaredjo Noordwest-olieveld. Er zijn vier (4) boorlocaties voorgesteld in dit gebied voor 2024.

Ook in de TAMNE en TNW South gebieden, kan er in geval van succesvolle appraisal putten overgegaan worden tot het uitvoeren van productie testprogramma's met het oog op het boren van meerdere appraisal putten in het gebied of zelfs ontwikkeling van het gebied middels productie bronnen.

Van dit boorprogramma bevinden alle acht (8) locaties zich in het zwampgebied. **Figuur 1:** geeft een overzicht van de voorgestelde boorlocaties waar het ADP zal worden uitgevoerd.



Figuur 1: Overzicht ADP studiegebieden en voorgestelde

De project gebieden zijn bereikbaar via de bestaande infrastructuur, namelijk:

- TAM-West gebied, via het bestaande boerenland bekend als Debi-Tewarie en is te bereiken via:
 - 1. Gangaram Pandayweg
 - 2. Broederschapweg TA41 (3N17) en
 - 3. TNW, de Soekhadam naar het zuiden.
- TNW Zuid gebied, via de aanlegsteigers TNW en is bereikbaar via PKW, Kisoensingh West weg, TA58 cluster 2, Broederschap weg en Noordam (weg).
- TAM-UIT gebied, via POC Landing (TA53). De POC Landing is te bereiken via de Kisoensingh Westweg, TA58 cluster 1 oost, TAP weg, 3O24 cluster 3 richting POC Landing.

Het boorprogramma zal in drie (3) fasen worden uitgevoerd, namelijk een constructie-, een operationele- en een ontmantelingsfase.

In de constructiefase zullen bij gebieden die toegankelijk zijn via de weg, de bestaande wegen worden hersteld en waar nodig zullen nieuwe wegen worden aangelegd. Op de plaatsen waar de wegen elkaar kruisen met een waterafvoer, worden duikers geplaatst met een diameter van minimaal 1 meter.

Voor locaties in zwampgebieden zullen de bestaande waterwegen (trails) worden schoongemaakt. Voor het TNW Zuid gebied zal er een nieuwe trail van 100m worden aangelegd. Ook in het UIT-TAM gebied zal er een nieuwe trail van 1000m vanuit de Doerga landing worden aangelegd. Schoonmaak en/of aanleg van nieuwe toegangsroutes (10 – 12m breed), serviceroutes (6m breed) en de boorlocaties (60m x 70m) zal gebeuren met een zwampgraafmachine.

In de operationele fase kunnen kleinschalige testen worden uitgevoerd. Op basis van de testresultaten kunnen de boringen worden omgezet in productieputten of kunnen deze worden afgesloten en verlaten.

In de ontmantelingsfase zullen de boorputten worden afgesloten, toegangswegen worden gebarricadeerd en zal er een close-out inspectie worden uitgevoerd alvorens de projectgebieden zullen worden verlaten.

Voor de boringen in de zwamp zullen materialen en goederen met een boorplatform worden getransporteerd. Personeelsleden zullen met voertuigen over land en met zwampboten (air-boten) in het zwampgebied worden vervoerd en dat via bestaande en nieuwe service routes door het Staatsolie terrein. Materialen en goederen voor landboringen zullen met voertuigen via de wegen worden getransporteerd.

Korte beschrijving van het studiegebied

Het studiegebied voor het EMMP omvat het projectgebied en de toegangsroutes, waar potentiële effecten kunnen optreden. Dit gebied maakt deel uit van het Multiple Use Management Area (MUMA) Noord-Saramacca.

Tambaredjo gebied

Het Tambaredjo gebied ligt ongeveer 55 km ten westen van Paramaribo en ongeveer 15 km landinwaarts vanaf de kust. Het gebied wordt gedomineerd door een zone van zout tot brakke zwampen (4 – 5 km breed) langs de kust met uitgestrekte zoetwater zwampen ten zuiden ervan. Deze zoetwaterzwamp staat bekend als de Buruzwamp. Het Tambaredjo Noordwest gebied is een wetland operatie die zich ook in de Buruzwamp bevindt. De belangrijkste ecosystemen binnen dit gebied zijn de mangrovebossen, brakke en zoetwater kruidachtige zwampen en struikgewas van de zwamp en laag en hoog zwamp hout (NEC, 2014).

Uitkijk Blok

Het noordelijke gedeelte van het Uitkijk Blok ligt ongeveer 15 – 25 km ten westen van de westelijke grens van Paramaribo en direct ten oosten van het door Staatsolie geëxploiteerde olieveld Tambaredjo. Het Uitkijk Noord gebied ligt in de Wayambo zwamp. In dit gebied zijn vier (4) belangrijke ecosystemen te onderscheiden van zuid (Wayambo weg) naar noord (Atlantische Oceaan) in de volgende volgorde:

- Zwampbos en zwamphout
- Zoetwater gemengd met kruidachtige zwampen (open zwamp)
- Brak water Typha (Langa grasi) zwamp
- Mangrove zone

De bewoonde delen binnen het studiegebied zijn gelegen langs de Wayamboweg en de Gangaram Pandayweg. De belangrijkste bekende commerciële activiteit in de buurt van de projectomgeving zijn landbouwactiviteiten.

De Milieu en Sociale Analyse

Over het studiegebied is er veel informatie beschikbaar bijvoorbeeld via monitoringprogramma's van Staatsolie. Verschillende specialistische milieustudies zijn uitgevoerd binnen het project gebied of in de naastgelegen gebieden. Voor de samenstelling van het EMMP zal ILACO gebruik maken van voorgaande studies die betrekking hebben op het projectgebied:

1. Milieu en Sociale Effecten Analyse voor Productieontwikkeling van het Tambaredjo North-West olieveld in Suriname (2010)
2. Review Milieu en Sociale Effecten Analyse opgesteld in 2000 voor de Uitkijk/Wayambo exploratieboring en validatie met betrekking tot voorgestelde exploratieboringen en testen in het Uitkijk-Noord Blok (2011)
3. Voorbereiding Milieu en Sociale Effecten Analyse voor exploratieboringen en testen in het Uitkijk-Noord Blok voor additionele bronnen (2011)
4. Milieu en Sociale Effecten Analyse voor exploratieboringen in het Uitkijk-Noord Blok voor additionele bronnen (2013)
5. Milieu en Sociale Effecten Analyse voor de productieontwikkeling in het Farmersland gebied in Suriname (2014)
6. Milieu en Sociale Effecten Analyse voor de uitbreiding van het Tambaredjo North West olieveld (2016)
7. Update Milieu en Sociale Effecten Analyse voor het Uitkijk Appraisal Drilling Program (ADP) (2018)
8. Update Milieu en Sociale Management Plan (ESMP) voor de exploratieboringen in het Uitkijk gebied (2023)

Daarnaast zal er ook additionele data in het veld worden verzameld om de sociale baseline bij te werken. De effecten en voorgestelde maatregelen uit de verschillende studies zullen worden geëvalueerd om eventuele tekortkomingen te identificeren en waar nodig bijwerken. Uiteindelijk zullen de resultaten worden gebruikt voor opmaak van het EMMP. Het doel van dit EMMP is om de beheer- en monitoringmaatregelen vast te stellen die nodig zijn om de mogelijke milieueffecten tijdens de constructie, operationele en ontmantelingsfase van het ADP te minimaliseren.

Overleg met het publiek en de relevante autoriteiten is fundamenteel voor het EMMP-proces. Hierbij worden belanghebbenden en geïnteresseerde partijen in de gelegenheid gesteld om onduidelijkheden en bezorgdheden over het project naar voren te brengen. Na het indienen van het conceptrapport zullen de resultaten worden gepresenteerd in een publieke vergadering. Op basis van de feedback, ontvangen tijdens de publieke vergadering, wordt het concept EMMP-rapport aangepast en vervolgens ingediend bij het NIMOS ter verkrijging van een advies voor de uitvoering van het ADP.

Voor nadere informatie kunt u altijd contact opnemen met:

ILACO Suriname N.V.
S.V. Voorwaartslaan 18-Paramaribo
Tel no: +597-431270
Email: info@ilaconv.com

Appendix 3C: Advertisement for landowners

Advertisement in Times of Suriname 02 Augustus 2023. This was also published in De Ware Tijd and Dagblad Suriname

advertentie



Vertrouwen in eigen kunnen

Oproep voor landeigenaren

Staatsolie Maatschappij Suriname N.V. is van plan binnenkort met boringen in het gebied ten noorden van de Gangaram Pandayweg te starten. Als onderdeel van de voorbereidingen willen wij graag in contact treden met de landeigenaren, rechthebbenden en belanghebbenden van percelen in de volgende gebieden:



Gebied 1: het gebied ongeveer 4 km ten noorden van de wegstreking Gangaram Pandayweg KM 1,4 - Winkel Koendjiharie - Wayamboweg KM 16,1 (zie kaartaanduiding 1)

Gebied 2: het gebied ongeveer 4 KM ten noorden van de wegstreking Gangaram Pandayweg KM 17,7 - Gangaram Pandayweg KM 19,7 (zie kaartaanduiding 2)

Landeigenaren (of hun wettelijke vertegenwoordigers) kunnen tot uiterlijk 11 augustus 2023 contact opnemen via het:

- telefoonnummer 0375222 tst. 66359/ 66356
- e-mailadres: info@staatsolie.com met als onderwerp "Oproep landeigenaren ADP".

Wij danken u bij voorbaat voor uw medewerking.

Appendix 3D: Questionnaire

Vragen landowners:

	Naam	
	Contact gegevens	
1	<p>Ligt uw perceel binnen een van de project gebieden? Welke?</p> <p>Op de kaart zijn de geplande boorlocaties aangegeven. Ligt een boorlocatie misschien op uw perceel?</p> <p><input type="checkbox"/> Ja, namelijk boorlocatie</p> <p><input type="checkbox"/> Nee</p>	
2	<p>Voor welke doeleinden wordt uw perceel momenteel gebruikt?</p> <p><input type="checkbox"/> Woonlocatie</p> <p><input type="checkbox"/> Landbouw</p> <p><input type="checkbox"/> Veeteelt</p> <p><input type="checkbox"/> Anders,</p>	
3	<p>Zijn er derden die gebruik maken van uw terrein bijv. voor vissen, jagen etc.?</p> <p>Zijn er toekomstplannen voor het gebied?</p>	
4	<p>Welke ontwikkelingen zijn er geweest in de voorgestelde projectgebieden in de afgelopen jaren?</p>	
5	<p>Bent u op de hoogte van het onder waterlopen van gebieden tijdens de regentijd en waar? Wanneer?</p>	
6	<p>Wat vindt u van het voorgesteld project (boorprogramma Staatsolie)?</p> <ul style="list-style-type: none"> ○ Hoe kijkt u ertegen aan dat Staatsolie uw terrein wilt gebruiken voor de uitvoering van werkzaamheden? 	

7	<p>Heeft u zorgpunten omtrent het project?</p> <p>Heeft u speciale verzoeken m.b.t. dit project?</p>	
8	<p>Wanneer Staatsolie nieuwe activiteiten wil uitvoeren en gebruik wil maken van uw terrein, worden deze activiteiten tijdig met u besproken?</p> <ul style="list-style-type: none"> ○ Hoe wordt u op de hoogte gesteld? ○ Hoe lang van tevoren wordt u op de hoogte gesteld? ○ Is de informatie die u krijgt van Staatsolie duidelijk en voldoende? 	
9	<p>Heeft Staatsolie al afspraken gemaakt met u omtrent de uitvoering van de werkzaamheden?</p>	
10	<p>Hoe is de samenwerking en communicatie tussen u en Staatsolie?</p> <ul style="list-style-type: none"> ○ Zijn er lopende afspraken tussen u en Staatsolie? ○ Houdt Staatsolie zich aan al de gemaakte afspraken? 	
11	<p>Heeft u in het verleden hinder/ last gehad als gevolg van voorgaande projecten van Staatsolie in de nabije gebieden?</p> <ul style="list-style-type: none"> ○ Zo ja, wat waren de klachten? 	
12	<p>Heeft u de klachten doorgegeven en aan wie (Staatsolie, DC, anders)?</p> <p>Zijn de klachten (naar tevredenheid) behandeld?</p>	
13	<p>Draagt Staatsolie bij aan de ontwikkeling van uw woongebied?</p> <ul style="list-style-type: none"> ○ Zo ja, op welke manier? ○ Zo niet, wat zou Staatsolie volgens u kunnen of moeten doen voor uw woongebied? 	

Vragen Residents

	Naam	
	Leeftijd	
	Huishouden grootte (Uit hoeveel leden bestaat uw huishouden?)	
	Hoelang woont u al op dit adres	
	Waar werkt u?	
	Contact gegevens:	
1	Ligt uw perceel binnen een van de project gebieden? Welke? Op de kaart zijn de geplande boorlocaties aangegeven. Ligt een boorlocatie misschien op uw perceel? <input type="checkbox"/> Ja, namelijk boorlocatie <input type="checkbox"/> Nee	
2	Voor welke doeleinden wordt uw perceel momenteel gebruikt? <input checked="" type="checkbox"/> Woonlocatie <input checked="" type="checkbox"/> Landbouw <input checked="" type="checkbox"/> Veeteelt <input type="checkbox"/> Anders,	
3	Zijn er toekomstplannen (gebruik) voor het terrein?	
4	Heeft u last gehad van onderlopen van uw perceel tijdens de regentijd, wanneer voor het laatst, en waar denkt u dat het aan ligt?	
5	Wanneer Staatsolie nieuwe activiteiten gaat uitvoeren, worden deze activiteiten tijdig met u en met de andere bewoners besproken? <input type="checkbox"/> Hoe wordt u op de hoogte gesteld? <input type="checkbox"/> Hoe lang van tevoren wordt u op de hoogte gesteld? <input type="checkbox"/> Is de informatie die u krijgt van Staatsolie duidelijk en voldoende?	
6	Heeft u zorgpunten omtrent het project? Heeft u speciale verzoeken m.b.t. dit project?	

7	<p>Heeft u in het verleden hinder/ last gehad als gevolg van voorgaande projecten van Staatsolie in de nabije gebieden?</p> <ul style="list-style-type: none">○ Zo ja, wat waren de klachten?	
8	<p>Heeft u de klachten doorgegeven en aan wie (Staatsolie, DC, anders)?</p> <p>Zijn de klachten (naar tevredenheid) behandeld?</p>	
9	<p>Draagt Staatsolie bij aan de ontwikkeling van uw woongebied?</p> <ul style="list-style-type: none">○ Zo ja, op welke manier?○ Zo niet, wat zou Staatsolie volgens u kunnen of moeten doen voor uw woongebied?	