9   TERMS OF REFERENCE FOR THE EIA STUDIES

9.1   INTRODUCTION

In this Chapter, the Terms of Reference are set out for each of the specialist studies recommended as a basis for the EIA process for this Project. The following specialist studies are proposed to be undertaken:

> ➢ Air Quality;
> ➢ Onshore and Offshore Noise;
> ➢ Hydrology, Surface and Groundwater Quality;
> ➢ Soils and Geology;
> ➢ Terrestrial, Aquatic and Nearshore Ecology;
> ➢ Marine and Coastal Ecology (including dugongs, turtles and marine mammals);
> ➢ Ecosystem Services;
> ➢ Community Health;
> ➢ Social and Socio-Economic;
> ➢ Archaeology and Cultural Heritage;
> ➢ Tourism;
> ➢ Fisheries;
> ➢ Visual Illumination;
> ➢ Onshore and Offshore Traffic; and
> ➢ Qualitative Risk Assessment.

The subsections below describe the methodology for each specialist study and the assessment of impacts for each study. The specialist study reports, which will be appended to the EIR, will only include a description of the baseline environment for the Project Area. After the completion of the baseline reports, the specialists will attend a specialist workshop and conduct an assessment of the impacts based on the impact assessment methodology presented in Chapter 4. The results of this specialist workshop will be included in the Impact Assessment Section of the EIR.

The initial assessment of impacts will be undertaken by the specialist task team leaders on the EIA team (representing social, biodiversity, soils and water and marine components) using the methodology presented in *Chapter 4*. This will be done in collaboration with the relevant specialists who undertook the fieldwork and compiled the baseline reports. An integrated team workshop will be held to present and discuss the draft impacts and mitigation requirements to ensure all relevant impacts are identified and assessed using a standardised approach. The workshop will also facilitate coordinated sharing of information and alignment of the specialist team on overlapping issues. After the workshop, the impact assessment will be finalised and the assessed impacts will be integrated into the EIR. Note: by following this collaborative approach, impacts will be described and assessed only in the EIR and will not be provided within the separate specialist reports.

A brief description of the objectives, methods and outputs of each study is provided. Most of the specialist studies involve baseline field research, which is described in the text. In some instances, such as the water studies, there is seasonal baseline work required, and the methodology includes for repeated surveys.

9.2 AIR QUALITY

Table 9.1   Air Quality Baseline and Impact Assessment

Aspect	Methodology
Dust Emissions	**Baseline** • Describe existing sources of dust emissions in the Project Area; and • Describe the sources of dust emissions from the proposed advanced works and construction activities associated with the Project. • Prepare baseline report. **Impact Assessment** • Assess impacts by comparing predicted ambient concentrations resulting from emissions from the FSO, with Mozambique standards and other relevant guidelines, including the cEMP for the PSA Development and the IFC/WHO guidelines. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Recommend any mitigation measures.
Atmospheric emissions	**Baseline** • Review available desktop data for air quality and meteorological data for the Project Area based on secondary data. • Quantify of the contribution of the export pump emissions at the LPF. • Prepare an emission inventory of all expected pollutants and Green House Gases (GHG) resulting from venting emissions and power generation at the FSO and other Project vessels. • Prepare of baseline report. **Impact Assessment** • Model dispersion of pollutants from the FSO using the US EPA, using the recommended SCREEN-3 dispersion model. Undertake the modelling using the emission inventory and built-in default meteorological data in order to estimate likely ambient concentrations of pollutants resulting from emissions from the FSO. • Assess impacts by comparing with Mozambique standards, the IFC/WHO guidelines and other relevant air quality guidelines. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Qualitatively assess the resultant ambient concentrations of air pollutants from the emissions at the FSO using the Standard US-EPA emission inventory methodologies. • Assess the contribution of the Project to Sasol existing emissions in the area and Mozambique GHG emission by comparing the Project GHG emissions with Sasol's current emissions inventory and the country GHG emissions reported to the United Nations Framework Convention on Climate Change. • Recommend any mitigation measures.

9.3   ONSHORE AND OFFSHORE NOISE

Table 9.2   Noise Baseline and Impact Assessment

Aspect	Methodology
Onshore	**Baseline** Review available data from the PSA Development and LPG Project EIR on the noise environment in rural areas similar to those along the pipeline ROW. **Impact Assessment** • Assess the impacts on surrounding communities of the predicted increase noise footprint of the CPF/LPF extending further from the CPF boundary by comparing the noise footprint with the existing guidelines in the oEMP. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Recommend mitigation and monitoring measures.
Offshore	**Baseline** • Review available desktop data for offshore noise for the Project Area • Prepare the baseline and modelling reports. **Impact Assessment** • Model underwater acoustic dispersion including noise generated during construction of the offshore export pipeline and the installation of the subsea infrastructure and operation of the FSO, including shuttle tankers. • Assess the impacts of noise and vibration on local fish catches and on sensitive receptors such as marine mammals and turtles, as well as on coral reef species and recreational divers in and around the Bazaruto Archipelago. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Recommend mitigation and monitoring measures.

9.4   HYDROLOGY, SURFACE AND GROUNDWATER QUALITY

Table 9.3   Hydrology and Surface Water Quality Baseline and Impact Assessment

Aspect	Methodology

Hydrology and surface and groundwater quality	**Baseline**
	• Conduct fieldwork, collect and analyse samples.
	• Collect available information on surface water, groundwater quality, aquifer properties and hydrological information.
	• Gather primary information on water features, water supply sources and sources of potential water pollution in the Project Area.
	• Gather primary information on groundwater features, groundwater supply sources (eg: boreholes and hand-dug wells) and existing sources of potential groundwater pollution in the Project Area
	• Prepare a watershed model for the Govuro River to predict the transport of contaminants in the river and floodplain resulting from a possible spill from the pipeline.
	• Prepare baseline and modelling reports.
	Impact Assessment
	• Numerically model surface water in the Project Area in order to assess the impacts of the Project activities, using:
	   • A Govuro River watershed model to estimate river flow rates;
	   • A hydraulic model of Govuro River from the River Crossing to the estuary to predict transport of contaminants to the river and floodplain; and
	   • A hydrocarbon spill fate and transport model for groundwater spill (e.g. Bioscreen).
	• Consider waste generation and water use and sediment impacts on the Govuro River during construction in assessment of impacts;

Aspect	Methodology
	• Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Recommend any mitigation and monitoring measures.

9.5 SOILS AND GEOLOGY

Table 9.4 Soils and Geology Baseline and Impact Assessment

Aspect	Methodology
Soils and geology	**Baseline** • Review available desktop data on soils in existing reports for the Project Area. • Survey the onshore export pipeline route corridor to understand broad soil zones and identify potential sample locations based on the Project infrastructure, identified land uses and potential impacts of the Project. • Collect soil samples (shallow and deep samples) along the footprint of the proposed infrastructure. • Log (according to an acceptable soil profiling methodology) any observations of layer depth, grain size, texture, colour, structure. • Analyse samples for pH, organic matter, total nitrogen, phosphorus, metals (Ca, Mg, Na, As, Cu, Zn, Ni, Cd, Fe, Mn, extractable Hg and Pb), aliphatic hydrocarbons, aromatics (BTEX), poly aromatic hydrocarbons, chlorinated hydrocarbons, sulphides and total sulphur. • Comment on the potential suitability of the land for crop farming. • Prepare baseline report. **Impact Assessment** • Assess the potential for erosion of the soils resulting from the Project activities. • Assess the land capability for crop sustainability. • Assess the erosion risks to the dunes from HDD. • Assess the potential impact of chemical pollution of the soils. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Recommend any mitigation measures.

9.6 TERRESTRIAL ECOLOGY

Table 9.5 Terrestrial Ecology Baseline and Impact Assessment

Aspect	Methodology
Terrestrial ecology	**Baseline** **Habitat Mapping:** • Review available desktop data and conduct field-based ground-truthing of existing maps of vegetation and land use classifications for the onshore export pipeline route corridor to the beach, including coastal habitats (eg estuary and mangroves). Use maps and field surveys to determine the presence of high conservation value habitats which will also be categorised into modified, natural and potential critical habitats following IFC categorisation. • Conduct field surveys to record vegetation types and collect information on flora and habitats along the onshore export pipeline corridor and surrounding accessible areas at defined GPS locations. . **Terrestrial Flora:** • Review available previous flora survey data in order to confirm priority species and habitats that may be present in the Project Area.

Aspect	Methodology
	• Survey flora along pre-identified survey points and walked transects located in representative habitats along the pipeline route to confirm representative flora composition of habitats and identify species of conservation concern. Flora data will be correlated with relevant landscape attributes. **Terrestrial Mammals:** • Record mammals present in habitats along the pipeline route along walked transects in all representative habitats along the pipeline route. • Record all mammal signs, including footprints, scats, den sites, burrows, hairs, scrapings and diggings use to identify mammal species present. **Birds (Avifauna):** • Review previous survey data in order to confirm key priority species and habitats that are expected to be present in the Project Area. • Survey a dry and wet season field for birds and record all observed or birds calls in representative habitats along the pipeline route. • Survey coastal wetlands present in the Project Area will be undertaken to confirm if these habitats are suitable to host threatened migratory birds. **Reptiles and Amphibians (Herpetofauna)** • Review previous survey data and herpetofauna records for the Project Area to confirm priority species and habitats that may be present in the Project Area. • Record sightings of reptiles and amphibians to support the findings of the desktop review. **Terrestrial Invertebrates:** • Review previous survey data on terrestrial invertebrates in the broader Project Area. The small direct footprint of the linear pipeline is not expected to have a significant impact on insects that warrants an insect field survey. **Specialist Baseline Reporting:** • Compile a single integrated baseline report covering vegetation, flora, birds, mammals, herpetofauna and insects. **Impact Assessment** • Assess the impacts of the Project with particular reference to impacts on areas of high biodiversity or threatened plant species, and habitats with known or expected breeding sites of threatened faunal species. • Assess the risk of habitat destruction and increased hunting of fauna and removal of vegetation as a result of changes in human access and settlement that may result from the Project. Indirect impacts will be contextualised against field evidence of habitat impacts from previous exploration and development projects in the area. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Mitigation measures to minimise and monitor impacts on biodiversity features will be described. • Recommend mitigation and monitoring strategies.

9.7 *AQUATIC ECOLOGY*

Table 9.6 *Aquatic Ecology Baseline and Impact Assessment*

Aspects	Methodology
Aquatic ecology	**Baseline** **Habitat Mapping:** • Obtain available land use and aquatic habitat mapping, review and conduct ground-truthed during field surveys. • Use field surveys and imagery analysis to delineate wetlands and other aquatic features in and near the pipeline corridor. • Collect information on habitat types along the onshore export pipeline corridor and surrounding accessible areas at defined GPS and update the available aquatic habitat mapping.

Aspects	Methodology
	• Use maps and field surveys to determine the presence of high conservation value habitats which will also be categorised into modified, natural and potential critical habitats following IFC categorisation. **Aquatic Ecology:** • Review previous aquatic survey data in order to confirm key priority aquatic species and habitats likely to be present in the Project Area. • Sample aquatic habitats for fish, aquatic invertebrates, molluscs and amphibians (where caught) using fishing nets, direct observation, and interviews with local fishers to look at fish catch etc. Collect and identify macro-invertebrates using hand nets. • Measure water parameters (eg, pH, electrical conductivity) using a portable multi-meter. • Document the diversity and status of different aquatic habitats and their component fauna and flora in the pipeline corridor in a baseline report. **Specialist Baseline reporting:** • Prepare a single integrated baseline report covering type, distribution and status of aquatic habitats, fish, macroinvertebrates and other fauna collected during field surveys. **Impact Assessment** • Identify and describe direct and indirect impacts on aquatic habitats and specific aquatic fauna, including potential impacts of an unplanned event in the Govuro floodplain. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Recommend mitigation measures to avoid, minimise and monitor impacts on aquatic biodiversity will be described.

9.8   *MARINE AND COASTAL ECOLOGY*

Table 9.7   Marine and Coastal Ecology Baseline and Impact Assessment

Aspect	Methodology

Marine baseline, including fauna, flora, seabed sediment and marine water quality	**Baseline**
	• Conduct primary data collection (marine baseline survey).
	• Review secondary data sourced from existing studies in the Project Area.
	• Collect primary and secondary data on the following receptors present in the Project Area:
	  • Intertidal, rock shores and beach ecology and beach sediment types;
	  • Coral reefs and reef fish;
	  • Fish;
	  • Seagrass;
	  • Marine mammals (including separate study on Dugongs);
	  • Marine turtles;
	  • Marine water quality;
	  • Seabed sediments;
	  • Macrobenthos community; and
	  • Metocean (wind, wave and climate) data.
	• Review available desktop data of distribution and status of coastal habitats such as shoreline habitats, sea grass, and coral reefs.
	• Review available desktop data of distribution and status of coastal habitats such as shoreline habitats, sea grass, and coral reefs
	• Prepare an integrated baseline report.
	Impact Assessment
	• Assess the predicted increase of marine activities and shore crossing during the advanced works and construction phases on sensitive marine fauna.

	• Assess historical and forecasted trends of the dugong and turtle population, size and viability in the Project Area in order to place potential Project impacts into context.
	• Assess the potential impact of the Project on coastal and marine habitats, in the context of the local and regional conservation importance of the affected habitats and species
	• Model the generation and fate of the sediment plumes, including settling, deposition, resuspension, transport and dispersion and assess the impact seabed sediment disturbance on marine fauna.
	• Model the worst-case scenario for an oil spill using the MIKE 3 Oil Spill Model and assess the impact on marine fauna including the sensitive species.
	• Assess any cumulative impacts of this Project in relation to planned activities in the Project Area.
	• Identify specific mitigation and monitoring measures.

9.9   *ECOSYSTEM SERVICES*

Table 9.8   Ecosystem Services Baseline and Impact Assessment

Aspects	Methodology
Ecosystem services	**Baseline** • Review desktop information to identify the full range of ecosystem services to be considered. • Obtain relevant information on use of natural resources; fisheries, tourism, socioeconomics, health and cultural heritage from relevant specialist reports • Document and assess the dependence of local stakeholders and the Project on ecosystem services in the Project Area. • Compile an ecosystem services report using IPIECA guidance documents. **Impact Assessment** • Assess Project impacts on ecosystem services. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Identify specific mitigation and monitoring measures.

9.10   *COMMUNITY HEALTH*

Table 9.9   Community Health Baseline and Impact Assessment

Aspect	Methodology
Community health	**Baseline** • Review available data on health and health facilities from existing EIA reports and other health research/reports in the Project Area. • Review secondary statistics from the national, provincial and district health reports; health statistics, including (but not limited to) the Annual Performance Reports (Balanço do Plano Económico e Social Provincial), the District Health Catchment´s Area Profiles (Reconhecimento da Área de Saúde) developed by each district; the National Health Policy Declaration (MISAU, 2007) and the National Strategic Framework for the Health Sector 2004 – 2019 (MISAU, 2014). • Conduct Fieldwork: Incorporate health questions into the Focus Group Discussions, Key Informant Interviews and Household Surveys. **Impact Assessment** • Critically assess the potential impacts of the construction and operation of the Project on the health of communities in the Project Area drawing on the findings of previous assessments. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Recommend measures to minimise negative and enhance positive impacts.

Aspect	Methodology
	• Recommend monitoring requirements for the construction and operational phases of the Project.

9.11 SOCIAL AND SOCIO-ECONOMIC

Table 9.10   Social and Socio-Economic Baseline and Impact Assessment

Aspect	Methodology

Socio-economic	**Baseline**
	Desktop Studies:
	• Review available data from existing EIA reports and other socio-economic research/ reports for the Project Area.
	• Prepare study protocols:
	   • Household Questionnaires;
	   • Scripts for Focus Groups Discussion with Local Leaders;
	   • Scripts for Focus Groups Discussion with Men;
	   • Scripts for Focus Groups Discussion with Women; and
	   • Checklists for interviews with local government officials and NGOs.
	   • Preparations for the primary logistical aspects of the study, including selection of enumerators and enumerators training day in Vilanculos.
	Fieldwork:
	Collect both primary and secondary data with local government, local communities, private sector and NGOs, making use of participatory and qualitative data collection methods (focus group discussions, key informant interviews and participatory rural assessments) as well as quantitative methods (household survey questionnaire).
	Interviews:
	• Conduct interviews with government institutions and NGOs at Provincial and District levels. The baseline investigations will aim at the identification and analysis of the socio-economic trends in the Project Area, as a basis for impact assessment and long term monitoring.
	• Conduct semi-structured and key informant interviews with members of the local government such as the Administrator, Permanent Secretary, Heads of District Services, Head of Localities and Administrative Posts, Local Village Leaders and Fishermen in the Bazaruto Archipelago, Inhassoro, Nova Mambone and Machanga communities which were not assessed previously.
	Household Survey:
	• Administer the Household (HH) Survey Questionnaire to a number of households within the Project Area, in order to collect information regarding the composition of the households; their social and demographic characterization, the main infrastructure they own and the use of natural resources such as land, water, forests, the sea, primary strategies for maintenance and development of the households, perceptions and expectations about the Project.
	Focus Groups:
	• Conduct focus groups with men, women and local leaders in the Project Area in order to obtain a more detailed qualitative understanding of issues such as access to land, use of natural resources, household livelihood strategies, vulnerable groups, local cultural practices and traditions, local and area history, as well as expectations related to the Project.
	Impact Assessment
	• Critically assess the potential impacts of the construction and operation of the Project on the socio-economic status (including noise, traffic, fisheries, tourism, health, visual, cultural heritage and loss of crops) of communities in the Project Area.
	• Recommend measures to minimise negative and enhance positive impacts.

Aspect	Methodology
	• Assess any cumulative impacts of this Project in relation to planned activities in the Project Area.
	• Recommend monitoring requirements for the construction and operational phases of the Project.

9.12 ARCHAEOLOGY AND CULTURAL HERITAGE

Table 9.11 Archaeology and Cultural Heritage Baseline and Impact Assessment

Aspect	Methodology
Archaeology and Cultural Heritage	**Baseline** • Identify, map, classify and assess of the significance of archaeological and historical heritage in the Project Area. • Review available information on cultural heritage, historical and cultural value attributes, shipwrecks and other marine archaeology in the Project Area. • Examine by observation on foot the onshore section of the pipeline corridor and immediately surrounding area in order to identify structures and artefacts of archaeological and historical value and to collect lithic raw materials, with georeferenced locations to create a reference collection. Excavate test pits will be excavated, if necessary. • Collect and record the material on data sheets. The archaeological remains from each collection unit will be separated and packed according to the type of raw material (stone, bone, ceramic, metal). **Impact Assessment** • Critically assess the potential impacts of the construction and operation of the Project on cultural heritage in the Project Area. • Recommend measures to minimise impacts to cultural heritage. In cases where sites could be damaged or destroyed during the advanced works and construction phases assess the impact on the site and recommend preferred management options, including: • Record of site (no excavation/ artefact removal required) • Surface scatterings to be remove prior to construction • Site to be fenced to prevent construction damage (if off the construction alignment) • Site of high conservation significance and alignment of infrastructure to be relocated • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Recommend monitoring requirements for the construction and operational phases of the Project. • Recommend a 'Chance Find Procedure' protocol in accordance with the IFC guidelines in this regard.

9.13 TOURISM

Table 9.12 Tourism Baseline and Impact Assessment

Aspect	Methodology
Tourism	**Baseline** • Collate available baseline tourism data for Inhassoro relating to tourist operators (ie accommodation, diving and recreational fishing operators, restaurants, and other service providers); occupancy and revenues generated.

Aspect	Methodology
	• Conduct a questionnaire survey of tourism operators (lodges and other service providers) in Inhassoro to determine activities offered, occupancy, revenues, seasonality; trends in, and perceived threats to, tourism, and perceptions of tourism' • Analyse tourism data and preparation of baseline tourism report incorporating an analysis of future trends in Mozambique. **Impact Assessment** • Assess potential impacts of the Project on tourism (lodge occupancy; tourism services, and recreational fishing and diving; and altered 'sense of place'. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Identify appropriate mitigation and monitoring strategies including the potential requirement for compensation to operators.

9.14   *FISHERIES*

Table 9.13   Fisheries Baseline and Impact Assessment

Aspect	Methodology
Fisheries	**Baseline** • Review available information in existing reports for the Project Area and local statistical data and information pertaining to the Project Area, relevant policies and legislation, etc. • Conduct key informant interviews and focus group discussions with key stakeholders (eg local fishermen, tourism operators and fisheries institutions). • Map the main artisanal fishing zones and routes used by fisherman between the fishing centres and the fishing zones using participatory techniques with local fishermen. • Obtain additional data on primary fishing areas from observations by the marine survey team to illustrate the intensity of use of the area for fishing. • Review the value chain associated with fishing activities, including those involved in processing and trading fish across the Project Area. • Obtain data on livelihoods obtained from fishing for different types of fishermen. • Conduct a trend analysis related to catch rates, fishing effort and revenues by comparing data collected during this study with data from previous studies. **Impact Assessment** • Critically assess the potential impacts (disruption and loss of artisanal fishing, exclusion of semi and industrial fishing from FSO area) of the construction and operation of the Project on fishing communities in the Project Area with a particular focus on impacts to livelihoods. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Recommend measures to minimise negative and enhance positive impacts. • Recommend monitoring requirements for the construction and operational phases of the Project. • Identify appropriate mitigation and monitoring strategies including the potential requirement for compensation to operators.

9.15   *VISUAL ILLUMINATION*

Table 9.14   Visual Illumination Baseline and Impact Assessment

Aspect	Methodology
Visual illumination	**Baseline** • Identify landscape resources within the Project Area and determine the relative importance of these landscapes. • Identify the Zone of Visual Influence and Key Observation Points within the Project Area. • Understand the FSO components, activities and embedded controls relevant to illumination which may affect important or sensitive receptors. **Impact Assessment** • Assess the impacts of illumination and the Project's appearance on important or sensitive receptors and their significance relying on desktop research and modelling through computer visualisations. • Develop visibility/ viewshed analysis mapping of the FSO and other key infrastructure; lighting footprint map for the FSO indicating the extent of the impact. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Visual Assessment report • Recommend mitigation and monitoring strategies.

9.16   *ONSHORE AND OFFSHORE TRAFFIC*

Table 9.15   Traffic and Impact Assessment

Aspect	Methodology
Onshore Road Traffic	**Baseline** • Desktop review of the available information of onshore traffic for the Project Area based on secondary data. • Observe traffic movements during field work. **Impact Assessment** • Assess the predicted increase of traffic generated on existing transport infrastructure and existing transport infrastructure and other road users and surrounding communities. • Recommend measures to minimise negative and enhance positive impacts. • Recommend monitoring requirements for the construction and operational phases of the Project.

Aspect	Methodology
Offshore Vessel Traffic	**Baseline** • Review the statutory requirements for vessel operations in the Project Area. • Describe shipping activities in and around the Project Area, including the number and type of vessels, type of cargo transported and analysis of the vessel traffic flow in the Project Area including the forecast vessel traffic required for the proposed vessel operations. • Conduct a navigation assessment to determine the likely vessel trajectories for the proposed vessel operations and the typical trajectories for the transiting vessel traffic within the Project Area. • Identify the marine risk on the basis of general shipping risks and on the risks associated specifically with the proposed vessel operations. **Impact Assessment** • Assess the predicted increase of traffic generated on existing marine traffic and other users of the sea. • Assess any cumulative impacts of this Project in relation to planned activities in the Project Area. • Recommend measures to minimise negative and enhance positive impacts. • Recommend monitoring requirements for the construction and operational phases of the Project.

9.17 QUANTITATIVE RISK ASSESSMENT

Table 9.16   ***Quantitative Risk Assessment and Impact Assessment***

Aspect	Methodology
Quantitative Risk Assessment	**Baseline** • Review available risk information in the Project Area based on secondary data. • Conduct a Risk Assessment of Pipeline involving: • Hazard Identification; • Evaluation of consequences of potential incidents involving major hazards. • Calculation of frequencies associated with potential major hazard events. **Impact Assessment** • Conduct a major accident Quantitative Risk Assessment (QRA) of the onshore portion of the pipeline route. This assessment focuses on incidents that could result in fatalities or serious injury to the population rather than environmental impact. • This assessment will be based on International best practices using the UK's HSE Land Use Planning (LUP) methodology. • The gas plant, subsea pipeline and FSO are excluded from this assessment. • Generate risk isopleths and risk transects for the pipeline servitude.

9.18   PROPOSED SPECIALIST TEAM

Table 9.17   Proposed Specialist Team for the EIR

Activity	Name	Company and Location
Terrestrial and estuarine habitats, Flora & Mammals	Warren McCleland	EcoRex- South Africa
Avifauna & Mammals (terrestrial/ coastal)	Duncan McKenzie	EcoRex- South Africa
Herpetofauna	Luke Verburgt	Enviro-Insight - South Africa
Aquatic ecosystems	Rob Palmer	Nepid, South Africa
Mangroves & estuarine flora	Warren McCleland	Ecorex, South Africa
Marine turtles & Conservation Initiatives	Eduardo Videira	Impacto - Mozambique
Marine Ecology and Water Quality: Marine Scientist	Laura Weston	Lwandle
Coral Reefs, Sea Grass, Beach Ecology	Nina Steffani	Lwandle
Coral Reefs, Sea Grass, Beach Ecology	Andrea Pulfrich	Lwandle
Marine mammals (dugongs, whales and dolphins)	Almeida Guissamulo	Impacto - Mozambique
Socio-economic Studies	Paula Santos	Impacto – Mozambique
Socioeconomic Studies Assistant	Joyce Maguivanhane	Impacto – Mozambique
Marine Traffic	Eugenio Muianga	Impacto - Mozambique
Fisheries Study	Atanásio Brito	Impacto – Mozambique
Tourism and Resource Economist (Sea Fisheries and Tourism)	Jane Turpie	Anchor – South Africa
Resettlement/ Compensation	Victor Hugo Nicolau	Impacto - Mozambique
Archaeology and Cultural Heritage	Marta Langa	Impacto – Mozambique
Visual Impacts Specialist	Peter Austin	ERM, South Africa
Stakeholder Engagement Specialist	Mia Couto	Impacto - Mozambique
Stakeholder Engagement	Felicidade Munguambe	Impacto, Mozambique
Public Consultation Assistant	Sandra Fernandes	Impacto - Mozambique
Soils & Geology & Surface and Ground Water Quality Support	Justin Kmelisch	ERM, South Africa
Hydrology (Model)	George Krallis	ERM USA
Hydrogeology	Andreas Stoll	ERM South Africa
Sediment Dispersion & Oil Spill Modelling	Stephen Luger	PRDW, South Africa
Air Quality Modelling	Mark Zunckel	uMoya-NILU (Pty) Ltd, South Africa
Noise Modelling (Marine)	Michael Fraser	ERM, UK
Maritime Traffic	Eugénio Muianga	Impacto – Mozambique
Quantitative Risk Assessment Study	Gary McFadden	ERM South Africa
GIS Specialist	Andrew Thurlow	ERM South Africa
GIS Specialist	Doug Park	ERM SA