TotalEnergies E&P South Africa B.V.

OFFSHORE PRODUCTION RIGHT AND ENVIRONMENTAL AUTHORISATION APPLICATIONS FOR BLOCK 11B/12B

Social Impact Assessment Report

REPORT NO. 41105306-358644-8
SEPTEMBER 2023

PUBLIC

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CONTENTS

TABLES

FIGURES

APPENDICES

Acronyms and Abbreviations

Abbreviation	Explanation
ALARP	As Low as Reasonably Practicable
ANC	African National Congress
BA	Basic Assessment
BAT	Best Available Technology
BOCP	Blowout Contingency Plan
CA	Competent Authority
CBD	Central Business District
CBOs	Community Based Organisations
CHIA	Cultural Heritage Impact Assessment
CR	Critically Endangered
CRR	Comment and response register
DA	Democratic Alliance
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries, and the Environment
DTI	Department of Trade and Industry
DTPW	Department of Transport and Public Works
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ELSA	Early Later Stone Age
EPFI	Equator Principles Finance Institution
ESA	Earlier Stone Age
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GDP	Gross domestic product
GLM	George Local Municipality
GN	Government Notice
GRDM	Garden Route District Municipality
GTL	Gas-To-Liquids
HDI	Human Development Index
HDP	Historically Disadvantaged Person
I&AP	Interested and affected parties
IBA	Important Bird Areas
ICH	Intangible cultural heritage
IDP	Integrated Development Plan
IEC	Independent Electoral Commission

Abbreviation	Explanation
IFC	International Finance Corporation
IOPP	International Oil Pollution Prevention
ISPPC	International Sewage Pollution Prevention Certificate
IUCN	International Union for Conservation of Nature
IZoI	Immediate Zone of Influence
KLM	Knysna Local Municipality
LC	Least Concern
MBLM	Mossel Bay Local Municipality
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
NMBM	Nelson Mandela Bay Metropolitan Municipality
NPA	National Ports Authority
NT	Near Threatened
OSCP	Oil Spill Contingency Plan
PASA	Petroleum Agency South Africa
POPI	Protection of Personal Information Act
PR	Production right
RSA	Republic of South Africa
SAMSA	South African Maritime Safety Authority
SBS	Social Baseline Study
SDF	Spatial Development Framework
SIA	Social impact assessment
SLP	Social Labour Plan
SOPEP	Shipboard Oil Pollution Emergency Plan
TB	Tuberculosis
TEEPSA	TotalEnergies Exploration and Production South Africa B.V.
TEU	Twenty-foot Equivalent Unit
TH	Tangible cultural heritage
TL	Transmission Loss
UNESCO	The United Nations Educational, Scientific and Cultural Organisation
UNGP	United Nations Guiding Principles on Business and Human Rights

Units of Measure

Unit	Explanation
km	Kilometre
km^2	Square Kilometre
m	Metre
%	Percentage

Details of the lead specialists

CVs are included in Appendix A.

Details of Specialist	
Name:	David de Waal
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Email:	David.dewaal@wsp.com
Company name:	WSP

Qualifications

Specialist Qualifications	
Education:	Doctor of Literature and Philosophy, University of South Africa Masters in Community Development, University of Stellenbosch, South Africa Bachelor of Arts (Honours), Development Administration, University of Stellenbosch, South Africa Bachelor of Arts, Development Administration, University of Stellenbosch, South Africa
Professional affiliations:	Member of the International Association of Impact Assessment Reg No: 10530210
Summary of experience:	Dr David de Waal has over 35 years of experience in his practice field. David is the WSP Social Management Services Lead for Africa, based in Midrand, South Africa. His Project exposure includes mining, mine closure, oil and gas, large-scale physical and social infrastructure, linear projects (pipelines, rail and road networks, electricity lines) and social development processes. David's experience is largely with international lenders' best practices and guidelines, notably the IFC, World Bank, European Reconstruction and Development Bank and other international lenders, including SACE, the Italian export credit agency. He has worked on projects located in Albania, Botswana, Cameroon, the Democratic Republic of the Congo, Ethiopia, Gabon, Georgia, Ghana, Jamaica, Kenya, Kosovo, Liberia, Mozambique, Romania, Rwanda, Seychelles, South Africa, Swaziland, Turkey, Uganda, and Zambia.

DECLARATION OF INDEPENDENCE BY LEAD SPECIALIST

I, David de Waal declare that I –

- Act as the independent specialist for the undertaking of a specialist section for the TEEPSA Offshore Production Right and Environmental Authorisation Applications for Block 11B/12B;
- Do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed;
- Do not have nor will have a vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity; and
- Undertake to disclose, to the competent authority, any information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document.

SPECIALIST REPORT REQUIREMENTS IN TERMS OF NEMA

This report is compiled to adhere to the EIA Regulation requirements detailed in Appendix 6 of the amended NEMA EIA Regulations of 2014.

Section	Requirements	Section addressed in the report
(a)	Details of	
	(i) the specialist who prepared the report; and	Details of the specialist
	(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	Appendix A
(b)	A declaration that the specialist is independent in a form as may be specified by the competent authority;	Declaration of independence by specialist
(c)	An indication of the scope of, and the purpose for which, the report was prepared, the quality and age of base data used for the specialist report and a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 1.3
(d)	The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	NA
(e)	A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 3 Appendix B
(f)	Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 3
(g)	An identification of any areas to be avoided, including buffers (if and where applicable);	NA
(h)	A map superimposing the activity, including the associated structures and infrastructure on the environmental sensitivities of the site, including areas to be avoided, including buffers (if and where applicable);	NA
(i)	A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3
(j)	A description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 7 Section 8
(k)	Any mitigation measures for inclusion in the EMPr;	Section 7 Section 8
(l)	Any conditions for inclusion in the environmental authorisation;	NA
(m)	Any monitoring requirements for inclusion in the EMPr or environmental authorisation;	NA
(n)	A reasoned opinion—	

Section	Requirements	Section addressed in the report
	(i) whether the proposed activity, activities or portions thereof should be authorised regarding the acceptability of the proposed activity or activities; and	Refer Section 10
	(ii) if the opinion is that the proposed activity, activities, or portions thereof should be authorised, and avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Refer Section 10
(o)	A description of any consultation process that was undertaken while preparing the specialist report;	Refer Section 3
(p)	A summary and copies of any comments received during any consultation process and, where applicable, all responses thereto; and	Refer to ESIA CRR
(q)	Any other information requested by the competent authority.	NA

EXECUTIVE SUMMARY

TotalEnergies EP South Africa B.V. (TEEPSA), together with its joint venture partners, QatarEnergy, Canadian Natural Resources International South Africa Limited, and a South African consortium, MainStreet 1549, held an Exploration Right (Exploration Right Ref. No.: 12/3/067) over Block 11B/12B, located offshore from the Southern Cape coast, South Africa, which expired in September 2022. TEEPSA has now applied for a Production Right (PR) which was submitted in September 2022. If a PR is granted and if commercial agreements for the sale of the gas onto the domestic market can be achieved, TEEPSA is planning to develop Block 11B/12B.

The Block 11B/12B application area is located offshore the south coast of South Africa and covers approximately 12 000 km^2. The closest north-eastern point of the application area is about 75 km offshore from Cape St Francis, whereas the closest north-western point is about 120 km offshore from Mossel Bay (Figure 1-1). Development and production-related activities are proposed for the western portion of Block 11B/12B, in the Project Development Area. TEEPSA proposes to conduct further investigations in the eastern portion of the block, referred to as the Exploration Priority Area, including exploration and appraisal drilling, to enable further refinement of the geological and reservoir understanding, as is typical of developments of this nature.

In accordance with the regulatory requirements, TEEPSA must conduct an Environmental and Social Impact Assessment (ESIA) process for undertaking the proposed development and production-related activities in Block 11B/12B. WSP Group Africa (Pty) Ltd (WSP) was appointed by TEEPSA to undertake the ESIA pro) to cess in support of an environmental authorisation (EA) application. The Final Scoping Report was accepted by the CA on 18 May 2023, indicating that the Impact Assessment Phase could commence, and the specialist studies completed.

As part of the ESIA, a social impact assessment (SIA) (this report) has been conducted. This SIA has been informed by the scoping phase public consultation process and will be made available to the public for comment and inputs as part of the impact assessment phase public consultation process.

Approach and Method

The Social Impact Assessment has been prepared using both primary and secondary data to understand the social dynamics of coastal communities within the Project area of influence.

The primary data sources included:

- The meetings held with I&APs during the Scoping Phase, including municipal representatives, Government officials, technical specialists, business interests, NGO and civil society representatives and the public.
- Discussions held with First Nations/Indigenous Peoples as part of the I&AP consultation process.
- The interviews conducted along the south coast for the study of Intangible and Tangible Cultural Heritage resources.
- Submissions made in response to the Draft Scoping Report.

The secondary data sources included:

- Relevant national legislation and regulations relevant to the management of marine resources.
- A review of published literature, including academic papers and articles.
- The Social Baseline Survey report prepared by Golder Associates Africa (Pty) Ltd in 2022.

- The ESIA technical studies on marine ecology and fisheries and economic effects.
- Online articles and data websites

Area influence

The location of Block 11B/12B offshore the south coast with Mossel Bay as the nearest coastal town, together with the preliminary area of influence to measure the potential socio-economic impacts of the Project is delineated as follows:

- Immediate zone of influence (IZoI) – the local area where onshore Project activities will occur represents the directly affected community. The logistics hub for the Project will be located within the Mossel Bay port where activities such as loading and unloading vessels, storing equipment, and providing supplies for drilling rig operations and crew changes will occur. Helicopter transport required by the Project will be based at the airport in George.
- Primary study area - includes the towns and cities where most goods required during development will be fabricated and assembled. The primary study area comprises the IZoI and adjacent coastal towns and cities that have well established marine servicing and manufacturing activities that could supply goods and services during the Project phases. The key cities are Cape Town and Gqeberha.
- Secondary study area - includes the provinces in which the IZoI and primary study area are located, namely the Western Cape and the Eastern Cape. While the Project activities are primarily within the Western Cape, the proximity of the Eastern Cape creates the potential for the economy to benefit.
- Tertiary study area - the rest of South Africa is considered the tertiary area. In addition to possible procurement benefits, an increase in local gas production may have downstream effects on the national economy. If required skills are not available locally, employment opportunities could extend to a national level.

Social Baseline Conditions

Garden Route District Municipality Data

- The towns of Mossel Bay and George are the coastal towns most likely affected by the Project. They are located within the Garden Route District Municipality (GRDM). The GRDM extends across 23 331 km² and has approximately 627,917 residents. Approximately 80% of the district's population lives in urban areas along the coast. The largest ethnic group in the GRDM is Coloured (52%), followed by Black/African (30%) citizens. 33% of GRDM's population live below the poverty line. The 2021 unemployment rate in Mossel Bay was 20.7, with evidence that the job losses from PetroSA exacerbated this scenario. Escalating unemployment, particularly among women, youth, and vulnerable people, is challenging.

Mossel Bay Port

- The Mossel Bay Port mainly caters for the import and export of petroleum products. Mossel Bay is the only port in South Africa with two offshore berths within the port's limits and can accommodate passengers and Project ships. Mossel Bay is a popular cruise destination.

Fishing and Tourism

- Fishing and tourism sectors are important components of the local economy in the GRDM and many people rely on these industries for income. Offshore, there is some overlap of fishing grounds with the Block 11B/12B Application Area. The large pelagic longline fishing sector has the greatest spatial overlap with and pipeline routing area, with a small overlap with offshore

demersal trawl fishery and the Chokka squid fishery effort to the north and northeast of the Block, respectively.

- There will be limited overlap between small-scale fishers that operate mostly close to the shore with the Block 11B/12B Application Area. However, there may be a handful of small-scale rights holders that operate further from shore, accessing offshore fishing grounds either through cooperative means or as crew on existing commercial linefish or squid fishing vessels. There is no overlap of Project activities with recreational fishing and mariculture activities.

Coastal Heritage

- The coastal areas of the IZoI has a rich history in terms of cultural heritage, which includes the history of the Khoi-San, ships that had foundered along the coastline and the colonial history of Mossel Bay and surrounding areas. Research on rock shelters and sea caves in the IZoI have interested several archaeologists and professionals over the past years. It has been indicated that Mossel Bay was recently placed on the international map as a critical research area. Pinnacle Point is a proposed World Heritage Site.
- Most of the Block 11B/12B Project activities will be located offshore. Furthermore, onshore logistical related activities such as laydown areas, equipment storage facilities, manufacturing and maintenance activities, etc. will make use of existing support facilities at the port of Mossel Bay. Coastal heritage sites are therefore unlikely to be affected by the Project, under normal operations.

Cross-cutting Themes

Offshore Archaeology, Maritime Heritage and Palaeontology

- The seabed within Block 11B/12B would never have been occupied by early humans and no archaeological sites or material can be expected within the Block. According to available records, there are no known historical ship wrecks within Block 11B/12B; however, research indicates that a wreck (Kiani Satu that sank in 2013) may be located within the Production Development Area of the Block. There is a high possibility that important fossils occur within Block 11B/12B. This has been demonstrated by the recovery of fossilised whalebone during a scientific demersal trawl in Block 11B/12B in 1993, and by the recent finds of apparently fossilised whalebone and possible fossilised wood made during the TEEPSA environmental baseline surveys in late 2022.
- In respect of palaeontological heritage resources, fossil material could be disturbed and/or damaged by Block 11B/12B Project activities such as the well drilling or the installation of the production pipeline. The potential for fossil (and/or shipwreck) related material in or on the seabed will be further investigated as part of the geophysical and ROV surveys and seabed sampling that will be done in the Block. Should any fossils (or shipwreck) related material be identified, this information will need to be recorded and passed on to an appropriate specialist and SAHRA must be notified through the implementation of the Chance Finds Procedure. The implementation of a buffer of at least 50 m around such a site or material will serve to ensure that it not impacted by the activities in Block 11B/12B.

Intangible Cultural Heritage

Any site that is coastal or where people make use of the sea has spiritual significance. The waters along the coast are considered as ‘living’ waters. These waterways are believed to play a critical role in spiritual and health management in indigenous and Nguni groups specifically. Any impact on the integrity of the coastal and marine ecosystem through disturbance, pollution, noise, etc. from the

various Project phases could negatively impact various aspects which make up people's intangible cultural heritage. In particular:

- Project activities, such as helicopters, could disturb rituals.
- Project activities in Block 11B/12B, specifically maritime safety zones, may affect the livelihood of coastal communities, especially small-scale fishers. For small-scale fishers, fishing is not merely for food; it is part of culture. Other livelihood uses of the sea (i.e., seaside restaurants, sporting use of the sea, tourism) also advance cultural heritage.
- Natural and cultural heritages are interdependent; people use nature in their cultural and ritual practices. Any pollution or other form of negative impact on the sea arising from Project activities, such as air emissions, light and noise from the drill unit and supply and specialised vessels, may impact on natural phenomena (i.e., fish, shellfish, fynbos, mangroves, penguins, beach), which in turn may form part of cultural heritage practices.
- The sea is used for health purposes. The water is ingested or used for bathing for ritual cleansing purposes. Although Project activities will largely take place far from shore, any pollution or other form of negative impact on the sea, arising from Project activities (e.g. routine discharges to sea, drill cuttings discharges, etc.) might affect health uses of the sea.

It has been recommended that TEEPSA engage with relevant communities to undertake a gender-sensitive ritual event/s that supports communities' engagement with ancestral spirits and with living communities/indigenous peoples to allow for the usage of the sea. Appropriate cultural sites and heritage research within IZoI should also be identified for consideration in the TotalEnergies Corporate Social Investment programme (CSI).

Vulnerable Groups

- Vulnerable groups within the IZoI are the poor, the unemployed, women, youth (substance abuse among young people was mentioned as a specific concern), indigenous peoples (Khoi-San and Nguni peoples), and small-scale fishers. Gender-based violence has been reported as a big concern in the Project area, one that does not receive adequate attention. Victims of gender-based violence can therefore also be seen as a vulnerable group.
- The Social and Labour Plan (SLP) developed for the Project has identified various initiatives that could support vulnerable groups in the IZoI, such as youth development programmes and programmes to empower women and vulnerable people. TEEPSA is committed to creating a culture of equity and building upon the strengths that diversity brings. To achieve this, one of the initiatives is to increase the number of women as well as other historically disadvantaged persons (HDPs) in management positions.
- Furthermore, as part of TotalEnergies Corporate Social Investment programme, TEEPSA will invest in programmes focused on substance abuse and gender-based violence by connecting with relevant NGOs and CBOs to ascertain where assistance is needed.

Human Rights

- The rights of vulnerable populations such as indigenous groups, including the Gourikwas and the Koi-San group (which claims coastal areas) and the rights and impacts on small-scale fishers (including informal and subsistence fishers) are of relevance to this study. For these groups, it is important for them to have opportunities to express their views about the Project.
- Small-scale fishers argue that offshore oil and gas extraction negatively affects their livelihoods and way of life. Concerns can be linked to the displacement of fishers from fishing grounds due to increasing coastal traffic and infrastructure, designated safety zones, and the effects of oil and

gas extraction activities on fish populations. Such displacement can potentially impact the livelihoods of small-scale and subsistence fishers and their right to provide sustenance for themselves and their family.

- TEEPSA will therefore need to take these aspects into consideration through the implementation of the Block 11B/12B Project. It has been recommended that TEEPSA establish a stakeholder engagement forum to facilitate ongoing engagement with indigenous people, coastal communities and fisheries associations / organisations, while carrying out its business in the IZoI; and encourage communities to document and report any adverse health effects, incidents, or concerns related to the Project operations.

Sustainable Development

- According to the latest Sustainability Development Report (2023), South Africa is failing to meet its target of providing quality education. The SLP developed for the Project has identified various initiatives that could contribute positively to education in the IZoI, in the form of adult education and training, portable upskilling, learnerships and bursaries, and a graduate development programme.

Social impacts and opportunities

The identified social impacts and opportunities associated with the proposed Project were assessed, for both normal operations and for unplanned event scenarios.

Normal operations

For normal operations, the following key impacts have been assessed:

Employment opportunities

- The Project's construction phase will support 5 547 direct jobs, the majority of which will be created by PetroSA for the re-commissioning of the F-A Platform and refurbishment / modifications. The Project construction phase, excluding the F-A Platform upgrade, is expected to support 634 direct jobs.
- The main sectors estimated to benefit from employment during construction include manufacturing, trade and accommodation, and general government and community services.
- The drilling of the production, appraisal and exploration wells, installation of the production pipeline and subsea production system, and subsequent decommissioning will create fewer local, direct jobs, given the specialised nature of the work to be done.
- In conjunction with the economic benefits linked to Project activities, there will be investment into local economic development initiatives through the Social and Labour Plan (SLP) prepared as a requirement of the PR application.
- The positive impacts linked to employment opportunities have been assessed as low(+) but could be increased to medium(+), should TEEPSA implement options for local procurement for the production pipeline construction.

Impact on fishing activities

- There is no overlap between Block 11B/12B and fishing grounds for inshore hake trawling, demersal longline fishing, mid-water trawl fishing, traditional/commercial line fishing, small pelagic purse seine fishing and south coast rock lobster fishing.
- There is an overlap of Block 11B/12B with established fishing grounds for deep-sea hake trawling but this is outside of the Project Development Area and the overlap with the Exploratory Priority Area is limited to a small area along the northern boundary. There is an overlap with large pelagic

longline fishing grounds and Block 11B/12B; however, the assessment indicated that this area is fished 38.5% of the time, on average, per annum. There is also limited overlap in the north-east corner of Block 11B/12B with squid jig fishing, and the intensity of fishing is described as 'high' in this area.

- The establishment of temporary and permanent safety zones within areas of Block 11B/2B is limited to a 500 m radius around the specific locations where Project activities take place. During the exploration, construction and closure phases and while survey work is undertaken, TEESPA will notify SAMSA who will issue a Notice to Mariners regarding the establishment of temporary safety zones for the duration of activities, prior to the commencement of works.
- The permanent safety zone around the production wells, subsea infrastructure installation and pipeline will possibly prevent large pelagic longline fishing and squid jig fishing in certain areas of Block 11B/12B.
- The reduction in fish catch due to disruption to the abundance of valuable fish species will increase the effort required by fishers to fill quotas. This may result in fishers abandoning the fishing ground altogether or fishers having to leave the industry due to fewer fishing licenses being issued due a reduction in the total allowable catch.
- The impact significance of safety zones on commercial, recreational, small-scale fisheries and mariculture fisheries is assessed as very low to negligible. However, the impact significance of reduction in fish habitat is assessed as medium.
- A key mitigation measure for this impact is for TEEPSA to conduct pre-screening surveys to identify the most appropriate location for well drilling and installation of subsea infrastructure and the pipeline to minimise disturbance to benthic habitat.

Community, heath, safety and security

- The potential for anti-social behaviour within communities, including an increase in communicable diseases resulting from Project workers spending leisure time in local communities, even if the opportunity for interaction with the local community is limited. Local communities are aware that security and safety issues are linked to the lack of work opportunities for unskilled or low-skilled job seekers and the anti-social behaviour of criminal activity and substance abuse are linked to the lack of constructive alternatives.
- A lack of understanding of local culture and traditions may result in tensions between Project personnel who are newcomers to the community and established community members. The potential for this is limited by the low number of local personnel required for most Project phases. However, the production phase over a 25-year period has the greatest potential for community health, safety and security issues to arise as newcomers seek opportunities associated with the Project.
- The emissions from support and supply vessels while they are in port and utilise diesel-powered on-board generators for power supply will potentially increase emissions in the local airshed. There is not sufficient information to confirm the anecdotal attribution of poor health to exceedances of ambient air quality limits, but communities are concerned that Project activities may result in a decrease of ambient air quality with consequent health effects.
- These impacts in the absence of mitigation measures are considered to be medium. It has been recommended that TEEPSA engage with communities, government agencies, and other stakeholders throughout the Project process to understand community concerns regarding health, safety and security issues. TEEPSA should also ensure that Project personnel are made aware of local customs and traditions and the need to respect cultural norms.

Unplanned events

In the unplanned event scenario, several impacts were assessed. All of these were assessed as adverse.

Impact on household livelihood

- In the case of the unlikely event of a well blowout or pipeline rupture, oil spills could lead to loss of access to fishing grounds with consequent loss of revenue to the fisheries. For small-scale and recreational fishers, and mariculture activities, a disruption to fishing resulting from a spill could compromise the food security for coastal communities. Furthermore, should an oil spill come to shore, this could have a negative impact on tourism in the IZoI. If tourists' access to the shoreline is restricted or if there is a perception that their experience will be affected, fewer tourists may choose to visit the area. Cruise tourism to the Port of Mossel Bay may be halted. The tourism industry is an important component of the local economy in the IZoI and many people rely on the tourism industry for income.

Impact on community health, safety and security

- A large oil spill from a well blowout or pipeline rupture could make fish and shellfish unsafe for humans to eat. It could also become unsafe to swim or undertake any other recreational activities in the affected coastal waters. Should a large oil spill occur, it is likely that the local authority's emergency response plan would include restricting access to affected beaches and banning fishing and collection of shellfish in certain areas. Should a large oil spill occur, this could also potentially result in emissions through evaporation and from fire on vessels, drill unit or ignition of the highly combustible gas and condensate (from loss of well control). These emissions could impact on human health. Conflict could arise between fishers and authorities if fishers are asked to leave restricted fishing areas. The same would apply to community members accessing beaches for recreational activities.

Impact on community health, safety and security

- There is an expected increase in vessel traffic during all phases of the Project. Block 11B/12B is located within the main vessel traffic routes that pass around southern Africa. The overlap of some fishing areas with the subsea production system (SPS), including the production wells, may result in accidents related to trawling gear.

Mitigation Measures

- To reduce the probability and significance of the impacts arising from a well blowout or pipeline rupture, a "multi-barrier" approach will be implemented to deal with the risk of oil spills. This approach involves defining multiple barriers (avoidance / technical barriers / mitigation measures) to manage environmental risk. The first step and most important priority in applying the mitigation hierarchy to manage the risk of an oil spill is avoidance (or prevention). If these preventive technical and control barriers fail or are not effective under certain conditions, then control and response capabilities (emergency response system, Oil Spill Contingency Plan, Blowout Contingency Plan, etc.) will be in place.
- In the unlikely event of oil spill occurring, a process of determining the economic effects and related compensation would be initiated including engagement and consultation with affected parties. This process typically involves government, insurers, the organisation responsible for the incident, industry organisations and the applicable legal system.

- All claims will be submitted to DFFE, who will take the necessary steps to establish that the claim is adequately substantiated and reasonable. These claims could include loss or damage to property, grazing lands, livestock, fishing nets, loss of livelihood etc., in South Africa, resulting from the discharge of oil from an offshore installation and also damage or loss caused by methods used to clean up polluted areas during a spill.
- Once the details of each claim have been verified, it will be forwarded to the SAMSA Administration Officer for processing. The claims are paid from insurance cover to financially manage the consequences of any unplanned event.
- TEEPSA will seek to work with the relevant local authorities and civil society organisations with regard to the development and implementation of the emergency response plan in the unlikely event of a large oil spill.
- To reduce the probability and significance of the impacts arising from vessel collisions, Project vessel transit speed between the survey/drill area and port will be managed, and safety zones established around drilling / construction areas. After installation the location of the production wells, subsea infrastructure and pipeline will be surveyed and marked on bathymetric and navigation charts as a hazard. Maritime shipping, commercial and small-scale fishing sectors will be notified of the presence of the infrastructure. TEEPSA will support sea rescue services to ensure that the organisation has sufficient resources and training to deal with vessel-on-vessel collision, should it occur.

Cumulative impacts

A number of proposed / planned projects have been identified which could the following have potential for cumulative impacts to occur with Block 11B/12B. Of these, the following have been identified as potential social cumulative impacts:

- If the PetroSA F-A Platform is re-commissioned, the timing of these activities may coincide with the activities of the Block 11B/12B drilling and construction phases. Although Block11B/12B is approximately 40 km to the south of the F-A Platform, there is potential for cumulative impacts due to a loss in fishing grounds resulting from the construction activities and greater number of vessels manoeuvring within and around the Project Development Area and the F-A Platform. The cumulative economic impacts are considered to be a significant impact to the economy of the IZoI, in terms of spending on local goods, services and labour, hereby translating to an increased economic output and GDP; increased employment opportunities and household income.
- Construction related safety zones associated with the Project may impact on fisheries operating within Block 11B/12B and the pipeline corridors, especially Large Pelagics and Squid fisheries. While the CGG 3D Seismic Survey Project is underway and fisheries are excluded from the area where seismic survey activities are taking place, at the same time as drilling and construction works in Block 11B/12B, disruption to fisheries in terms of access to fishing grounds could be extensive.

Recommendation

It is recommended that the proposed Project be approved. This recommendation is based on consideration of the potential positive impacts on household livelihoods, during normal operations. In addition, the adverse impacts can largely be mitigated to medium significance (in the case of impacts on intangible cultural heritage) or low to very low significance for the other adverse impacts.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

TotalEnergies EP South Africa B.V. (TEEPSA), together with its joint venture partners, QatarEnergy, Canadian Natural Resources International South Africa Limited, and a South African consortium, MainStreet 1549, held an Exploration Right (Exploration Right Ref. No.: 12/3/067) over Block 11B/12B, located offshore from the Southern Cape coast, South Africa, which expired in September 2022. TEEPSA has now applied for a Production Right (PR) which was submitted in September 2022. If a PR is granted and if commercial agreements for the sale of the gas onto the domestic market can be achieved, TEEPSA is planning to develop Block 11B/12B.

The Block 11B/12B application area is located offshore the south coast of South Africa and covers approximately 12 000 km^2. The closest north-eastern point of the application area is about 75 km offshore from Cape St Francis, whereas the closest north-western point is about 120 km offshore from Mossel Bay (Figure 1-1). Development and production-related activities are proposed for the western portion of Block 11B/12B, in the Project Development Area. TEEPSA proposes to conduct further investigations in the eastern portion of the block, referred to as the Exploration Priority Area, including exploration and appraisal drilling, to enable further refinement of the geological and reservoir understanding, as is typical of developments of this nature.

In accordance with the regulatory requirements, TEEPSA must conduct an Environmental and Social Impact Assessment (ESIA) process for undertaking the proposed development and production-related activities in Block 11B/12B. WSP Group Africa (Pty) Ltd (WSP) was appointed by TEEPSA to undertake the ESIA pro) to cess in support of an environmental authorisation (EA) application. The Final Scoping Report was accepted by the CA on 18 May 2023, indicating that the Impact Assessment Phase could commence, and the specialist studies completed.

As part of the ESIA, a social impact assessment (SIA) (this report) has been conducted. This SIA has been informed by the scoping phase public consultation process and will be made available to the public for comment and inputs as part of the impact assessment phase public consultation process.

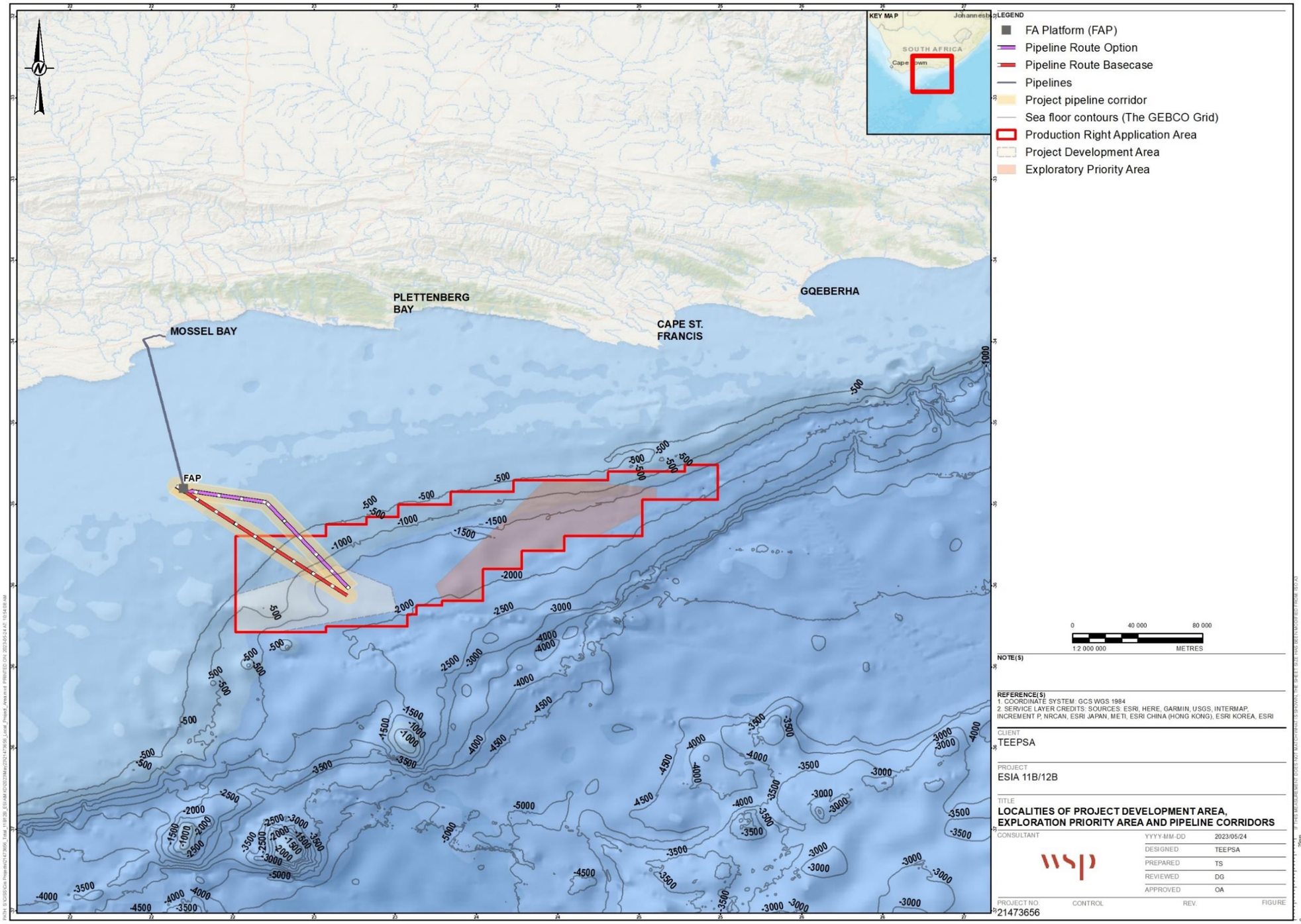

Figure 1-1 - Project location map

1.2 PROJECT DESCRIPTION

Within the western portion of Block 11B/12B, in the Project Development Area (Figure 1-1), the following development and production-related activities are proposed:

- Drilling of up to six development and appraisal wells;
- Laying of deep-water subsea manifolds and flowlines connecting wells within the Project Development Area; and
- These manifolds and flowlines are connected to the existing PetroSA FA platform at Block 9 Offshore Field via a subsea production pipeline of approximately 109 km.

The gas and associated condensates produced by the subsea wells would be exported to the PetroSA existing FA platform via a subsea production pipeline of approximately 109 km. The gas will be processed using the existing FA platform processing facilities, and the gas and associated condensates will be exported via two existing pipelines connecting the platform to the shore. Production is expected to last approximately 20 years.

Furthermore, TEEPSA proposes to conduct further investigations in the eastern portion of the block, referred to as the Exploration Priority Area, including exploration and appraisal drilling and related activities within Block 11B/12B, to enable further refinement of the geological and reservoir understanding, as is typical of developments of this nature. The following activities are proposed:

- Additional drilling of up to four (4) exploration and appraisal wells, including vertical seismic profiling in areas where drilling may take place, and well testing, where necessary, to improve the understanding of the potential oil and gas-bearing geology within the block;
- Bathymetry and sonar surveys;
- Seafloor sampling surveys; and
- Metocean surveys.

The outcome of the ongoing commercial negotiations (including agreements for the sale of the gas) should determine the use of the gas. Some possible use scenarios include Gas-to-Liquids or Gas to Power. Any construction, modification or upgrades at the FA platform or any onshore facility, if required by the off taker of gas or condensates, will be subjected to a separate EA application. Offshore support to the exploration and production-related activities will be by support vessels departing from the ports of Mossel Bay, Gqeberha and Cape Town. Helicopters will operate from George Airport to support offshore activities. Logistics, laydown areas and support will be undertaken from Mossel Bay Port using port infrastructure and facilities for all offshore activities. Beneficiation of the product and handling of waste streams will occur on the existing FA platform and permits.

1.3 SPECIALIST STUDY SCOPES

Social impacts consider both actual and perceived impacts experienced by humans (at the individual and higher aggregation levels) because of social change processes caused by planned interventions. Social impacts relate to the social and cultural effects to human populations of any public or private actions that alter how people live, work, play and relate to one another (Becker, H.A. and Vanclay, F.,

2003). According to Becker (2001), a SIA identifies the potential effects of current or proposed actions related to individuals, organisations and social macro-systems (Becker, H.A., 2001).

In the context of the TEEPSA Block 11B/12B development, the SIA will identify the relevant stakeholders and stakeholder groups potentially being impacted by the development, identify the future consequences/impacts of the development on identified stakeholders and stakeholder groups, and propose mitigation or enhancement measures. The mitigation hierarchy is of specific relevance here where the objective is to firstly avoid negative impacts, then minimise where possible. The next steps after minimisation of impacts are to restore, offset and/or contribute.

The SIA will:

- Provide a summary/brief description of the baseline social environment within the Project's area of influence;
- Identify anticipated social aspects and potential impacts associated with the proposed Licence Block 11B/12B development;
- Undertake a rating/assessment of the significance of these social impacts in line with the specified impact assessment rating methodology; and
- Propose mitigation measures to minimise and manage potential negative social impacts and enhance potential positive social impacts. Avoidance should be the first priority as per the mitigation hierarchy.

2 APPLICABLE POLICIES, LEGISLATION, GUIDELINES AND STANDARDS

The SIA for this Project considers relevant South African legislative requirements as defined in the General Specification Documents of TotalEnergies (GS EP SDV 101 and GS EP SDV 102). Table 2-2 below summarises the appropriate guiding regulations, legislation, and best practices considered for the SIA.

Table 2-1 – Applicable policies, legislation, guidelines and standards - national

Policy, Legislation, Guideline or Standard	Relevance to Project
National Legislation	
Constitution of the Republic of South Africa, Act 108 of 1996, Chapter 2: Bill of Rights	The Bill of Rights guarantees that every citizen is equal and has the right to human dignity, an environment that is not harmful, property, housing, healthcare, education, food, and water. The Constitution provides for freedom of expression, association, movement, religion, belief, language, and culture.
Immigration Act, 13 of 2002	The Act governs the admission of persons, residence, and departure from South Africa. It recognises that economic growth may be promoted by employing needed foreign labour. The entry of exceptionally skilled or qualified people is enabled while ensuring that the South African labour market is not adversely affected.
Marine Living Resources Amendment Act, Act 5 of 2014	The Marine Living Resources Amendment Act, 2014 (Act 5 of 2014) defines a 'small-scale fisher' as "a member of a small-scale fishing community engaged in fishing to meet food and basic livelihood needs, or directly involved in processing or marketing of fish, who— (a) traditionally operate in near-shore fishing grounds; (b) predominantly employ traditional low technology or passive fishing gear; (c) undertake single day fishing trips; and (d) is engaged in consumption, barter or sale of fish or otherwise involved in commercial activity, all within the small-scale fisheries sector." The 2014 amendment to the Act deleted the definition of 'subsistence fisher'.
Marine Spatial Planning Act, 16 of 2018	The Act intends to provide for developing marine spatial plans with institutional arrangements for using the ocean by multiple sectors.
Maritime Zones Act 15 of 1994	The Act provides for the maritime zones of the Republic and matters connected therewith.
Mine Health and Safety Act, 29 of 1996 (MHSA) and regulations	This Act protects the health and safety of employees and other people at the mine, including offshore installations. This Act is relevant for the production phase of the Project.
Mineral and Petroleum Resources Development Act, 28 of 2002 (MPRDA)	This Act aims to provide for access to the nation's mineral and petroleum resources (including gas and oil), sustainable development, and all related matters.
Mine Health and Safety Act, 29 of 1996 (MHSA) Regulations	Standards of Accuracy at Sea - Minimum Standards of the International Hydrography Organisations Standards, 2008. Plans must be drawn as defined by the International Organisation for Standardisation.

Policy, Legislation, Guideline or Standard	Relevance to Project
	Internationally recognised standards for environmental management systems for holders of a prospecting permit or mining authorisation whose prospecting and mining operations have been certified in terms of internationally recognised standards for environmental management systems.
National Environmental Management Act, 107 of 1998 (NEMA)	The legislative framework for integrating good environmental management practices into all development activities in South Africa. Additionally, this Act protects workers who refuse to perform work that will result in an imminent and severe environmental threat and provides emergency incidents. This Act is relevant for the production phase of the Project. The National Environmental Management Act broadly states that the participation of all interested and affected parties in environmental governance must be promoted, achieving equitable and effective participation and that the involvement of vulnerable and disadvantaged persons be ensured.
National Environmental Management: Integrated Coastal Management Act 24 of 2008	The Integrated Coastal Management Act ensures that the development and the use of natural resources within the coastal zone are socially and economically justifiable and ecologically sustainable and define rights and duties concerning coastal areas.
National Environmental Management: Protected Areas Act, 57 of 2003	The Act protects and conserves ecologically viable areas representing South Africa's biological diversity, natural landscapes, and seascapes.
National Heritage Resources Act, 1999 (Act 25 of 1999)	The NHRA gives legal definition to the range and extent of what are considered to be South Africa's cultural heritage resources and provides for their protection and management under the overall direction of the national heritage agency, SAHRA, as well as provincial heritage authorities. Any person who discovers archaeological objects or material in the course of a development must immediately report the find to SAHRA. In accordance with the NHRA, no person may destroy, damage, excavate, alter, deface, or otherwise disturb any cultural heritage resource without obtaining a permit from responsible heritage authority. Provincial heritage authorities are primarily responsible for the administration of the afore-mentioned permits, except where a resource is located in territorial waters and the maritime cultural zone and/or if the resource is considered to be Grade I. As such the management of maritime and underwater cultural heritage resources under the NHRA is the responsibility of SAHRA. SAHRA's marine jurisdiction extends across the territorial waters and the contiguous or maritime cultural zone but may under certain circumstances also extend to the Exclusive Economic Zone. According to Section 2(xvi) of the NHRA, a heritage resource is "any place or object of cultural significance". Together these resources are known at the National Estate, the composition of which is defined in Section 3 of the NHRA. Of the heritage resource types forming part of the National Estate, maritime and underwater cultural heritage generally includes the following sites and/or materials: ▪ Submerged pre-colonial archaeological sites and materials. ▪ Maritime and underwater cultural heritage sites and material, which are principally historical shipwrecks. ▪ Palaeontological features and material, which are defined by the NHRA as the fossilised remains or fossil trace of animals or plants which lived in the geological past.

Policy, Legislation, Guideline or Standard	Relevance to Project
	▪ Other categories of heritage resources which can be encountered in or associated with the marine space include places to which oral traditions are attached or which are associated with living heritage, and submerged landscapes and natural features of cultural significance.
National Ports Act, 2005 (Act 12 of 2005)	"The objects of this Act are to (a) promote the development of an effective and productive South African ports industry that is capable of contributing to the economic growth and development of our country." "(b) establish appropriate institutional arrangements to support the governance of ports; (c) promote and improve efficiency and performance in the management and operation of ports; (d) enhance transparency in the management of ports; (e) strengthen the state's capacity to- (i) separate operations from the landlord function within ports; (ii) encourage employee participation, to motivate management and workers (iii) facilitate the development of technology, information systems and managerial expertise through private sector involvement and participation; and (f) promote the development of an integrated regional production and distribution system in support of government's policies" (National Ports Act, 2005).
Promotion of Administrative Justice Act, Act 3 of 2000 (PAJA)	Under the provisions of the Public Administrative Justice Act, 3 of 2000 (PAJA), an administrative action also includes a decision made by an organ of the state or by a person or body exercising a public power or performing a public function that adversely affects the rights of any person. Therefore, the public has a right to a lawful, reasonable, and procedurally fair administrative process and to be given the reasons for administrative actions.
Protection of Personal Information Act, 4 of 2013 (POPI)	Promotes the protection of personal information and balances the right of privacy recognised by the Constitution with various needs and interests, like economic and social progress. POPI regulates how personal information may be processed and establishes voluntary and compulsory measures, including an Information Regulator. POPI is concerned with collecting, storing, using, and destroying personal information. Unless part of a regulatory process that requires the rightful notification of interested and affected parties or to protect the rights of third-parties, personal information may be used only with stakeholders' expressed permission.
Protection, Promotion, Development and Management of Indigenous Knowledge Act, 2019 (Act 6 of 2019)	The Act aims to provide for the protection, promotion, development and management of indigenous knowledge; to provide for the establishment and functions of the National Indigenous Knowledge Systems Office; to provide for the management of rights of indigenous knowledge communities; to provide for the establishment and functions of the Advisory Panel on indigenous knowledge; to provide for access and conditions of access to knowledge of indigenous communities; to provide for the recognition of prior learning; to provide for the facilitation and coordination of indigenous knowledge-based innovation; and to provide for matters incidental thereto.
South Africa Human Rights Commission Act, 2013 (Act 40 of 2013)	This Act provides for the composition, powers, functions and functioning of the South African Human Rights Commission; the repeal of the Human Rights Commission Act, 1994; and for matters connected therewith. The proposed Project will need to ensure that no human rights are infringed upon during the implementation of the proposed Project, in compliance with the Act.
Traditional and Khoi-San Leadership Act, 2019 (Act 3 of 2019) (invalidated in May	The Traditional and Khoi-San Leadership Act aims to: ▪ provide for the recognition of traditional and Khoi-San communities, leadership positions and for the withdrawal of such

Policy, Legislation, Guideline or Standard	Relevance to Project
2023, suspended for a period of 24 months)	recognition. It also provides for the functions and roles of traditional and Khoi-San leaders; ▪ provide for the recognition, establishment, functions, roles and administration of kingship or queenship councils, principal traditional councils, traditional councils, Khoi-San councils and traditional sub-councils, as well as the support to such councils; ▪ provide for the establishment, composition and functioning of the National House of Traditional and Khoi-San Leaders; ▪ provide for the establishment of provincial houses of traditional and Khoi-San leaders; ▪ provide for the establishment and composition of local houses of traditional and Khoi-San leaders; ▪ provide for the establishment and operation of the Commission on Khoi-San Matters; ▪ provide for a code of conduct for members of the National House, provincial houses, local houses and all traditional and Khoi-San councils; ▪ provide for regulatory powers of the Minister and Premiers; ▪ provide for transitional arrangements; ▪ amend certain Acts; ▪ provide for the repeal of legislation; and ▪ provide for matters connected therewith. Although the validity of this Act has been suspended, the rights of the Khoi and San descended groups are covered by the Act and the proposed Project will need to ensure that the rights of these groups of people are respected and not infringed upon by the proposed Project activities.
World Heritage Convention Act, 1999 (Act 49 of 1999)	The act aims to provide for the incorporation of the World Heritage Convention into South African law; the enforcement and implementation of the World Heritage Convention in South Africa ;the recognition and establishment of World Heritage Sites; the establishment of Authorities and the granting of additional powers to existing organs of state; the powers and duties of such Authorities, especially those safeguarding the integrity of World Heritage Sites; where appropriate, the establishment of Boards and Executive Staff Components of the Authorities; Integrated management plans over World Heritage Sites; land matters in relation to World Heritage Sites; financial, auditing and reporting controls over the Authorities; and to provide for incidental matters. There are ten World Heritage Sites located within South Africa. In addition to these sites, South Africa has also listed two groups of properties on its tentative list, both nominated in 2015, namely The Emergence of Modern Humans: The Pleistocene Occupation Sites of South Africa. The Emergence of Modern Humans: The Pleistocene Occupation Sites of South Africa is a series of six sites related to the emergence of modern humans. Three of these sites are located in off the South Coast of South Africa and in close proximity to the proposed Project, near Cape St. Francis, Mossel Bay and Groot Jongensfontein. In this regard, the proposed Project will need to ensure that these sites are not disturbed and/or damaged as a result of Project activities.
Policies and Guidelines	
National Development Plan (2030)	South Africa's long-term plan is to achieve inclusive growth, prosperity, and a better quality of life for the country's citizens.

Policy, Legislation, Guideline or Standard	Relevance to Project
National Energy Efficiency Strategy (2005)	The strategy is geared towards developing and implementing energy efficiency practices in South Africa.
National Poverty Alleviation Strategy	Aims to develop the skills of the South African workforce, increase investment in education and training in the labour market and the return, encourage employers to provide employees with various opportunities for learning and skills development and provide opportunities for new entrants, encourage workers to participate in learning programmes, improve the employment prospects of historically disadvantaged individuals and assist worker seekers and retrenched workers to find work, employer to find qualified employees and to provide and regulate employment services. This Act is relevant to training programmes that maximise the Project's local content.
Department of Trade and Industry Codes of Good Practice (DTI Codes)	The codes provide aspirational targets and guidance for various social and labour plan elements such as human resource, socio-economic and local economic development.
Industrial Policy Action Plan (2018-2021)	Ensure the Project enhances the economy's productive capabilities and increases the economy's ability to produce more complex, efficient, and high-value-added products.
NEMA Gas Pipeline Corridors	The document is a Generic Environmental Management Programme (EMPr) for Gas Transmission Pipeline Infrastructure (2020), relevant to an application for EA for gas transmission pipeline infrastructure located below or above ground.
One Cape (2040)	The strategy aims at ensuring a more inclusive and resilient economic future for the Western Cape.
Policy for the Small-scale Fishers in SA 2012	The policy includes preferential access to fishing communities traditionally dependent on marine living resources for their livelihood. The diversity within the fishing sector enhances its potential contribution to poverty alleviation and food security.
Reconstruction and Recovery Plan (2020)	Ensures that the Project contributes to building a sustainable, resilient, and inclusive economy and stimulates equitable and inclusive growth.
Re-Imagining Industrial Strategy (2019)	The strategy promotes investments in offshore oil and gas exploration and production.
Western Cape Provincial Strategic Plan (2019-2024)	The strategy aims to create an open opportunity for all in the province and provide an enabling environment for the private sector and markets to drive growth and create jobs.

Table 2-2 – International policies, legislation, guidelines and standards relevant to the Project

Policy, Legislation, Guideline or Standard	Relevance to Project
International Finance Corporation	Although the Block 11B/12B is not seeking finances from lenders, the following IFC principles have been considered as part of this SIA: Performance Standard 1 (Assessment and Management of Environmental and Social Risks and Impacts) is mainly relevant to this ISBS Project. ■ IFC Performance Standard 2 (Labour and Working Conditions). ■ IFC Performance Standard 4 (Community Health, Safety & Security). ■ IFC Performance Standard 6 (Biodiversity, Conservation and Sustainable Management of Living Natural Resources).

Policy, Legislation, Guideline or Standard	Relevance to Project
	■ IFC Performance Standard 8 (Cultural Heritage). Additional IFC guidelines have been consulted in preparing this study. These guidelines include the following: ■ IFC Guidance Note F - Guidance for Preparation of a Public Consultation and Disclosure Plan ■ Stakeholder Engagement: A good practice handbook for companies doing business in emerging markets ■ Good Practice Note: Addressing Grievances from PACs
Archaeology and Cultural Heritage	
Convention concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)	This Convention provides for the identification, protection and conservation of the cultural and natural heritage for future generations.
Convention for the safeguarding of the Intangible Cultural Heritage	The main goal of the Convention is to safeguard the practices, representations, expressions, knowledge, and skills that communities, groups and, in some cases, individuals recognize as part of their cultural heritage
UNESCO Convention on the Protection of the Underwater Cultural Heritage, 2001	The 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage was adopted in November 2021 and provides a common legally binding framework for States Parties on how to better identify, research and protect their underwater heritage, while at the same time ensuring its preservation and sustainability. The Convention considers the preservation of underwater cultural heritage in situ as a priority option and contains obligations on the prevention of commercial exploitation, looting and trafficking of underwater cultural property and commits. The Convention also commits States to cooperate in the conservation and protection of underwater cultural heritage.
Marine Safety	
Convention on the International Regulations for Preventing Collisions at Sea, 1972	This Convention sets an international standard for shipping and navigation. It deals with safety at sea issues and prescribes international standards for shipping, particularly to reduce the risk of collisions at sea. The rules for the prevention of collisions at sea apply to all vessels using the high seas.
International Atomic Energy Agency Regulations for the Safe Transport of Radioactive Material, 1984	The International Atomic Energy Agency is an international organisation that seeks to promote the peaceful use of nuclear energy, and to inhibit its use for any military purpose, including nuclear weapons. These regulations provide international standards and approaches to safety promote consistency, help to provide assurance that nuclear and radiation related technologies are used safely, and facilitate international technical cooperation and trade.
International Commission on Radiological Protection	The International Commission on Radiological Protection is an independent, international non-governmental organisation providing recommendations and guidance on radiation protection.
International Convention for the Safety of Life at Sea, 1974 with its protocol of 1978	This Convention is an international maritime treaty which requires signatory flag states to ensure that ships flagged by them comply with minimum safety standards in construction, equipment and operation.
International Convention on Load Lines, 1966 and its protocol of 1988	This Protocol was adopted to harmonise the survey and certification requirement of the 1966 Convention with those contained in the International Convention for the Safety of Life at Sea, 1974 and MARPOL

Policy, Legislation, Guideline or Standard	Relevance to Project
	73/78. All assigned load lines must be marked amidships on each side of the ships engaged in international voyages.
Human Rights and Labour	
International Labour Convention	The main aims of the International Labour Convention are to promote rights at work, encourage decent employment opportunities, enhance social protection and strengthen dialogue on work-related issues.
Convention on the Elimination of All Forms of Discrimination Against Women	Convention on the Elimination of All Forms of Discrimination Against Women. In 1974, the Commission on the Status of Women began drafting the Convention on the Elimination of All Forms of Discrimination Against Women. Described as an international bill of rights for women, it was instituted on 3 September 1981 and has been ratified by 189 states.
International Convention on Human Rights	The International Convention on Human Rights provides guidelines for the three types of human rights: ■ Civil and political rights (right to life, peace, and religious freedom). ■ Economic, social, and cultural rights (the right to work and education). Rights of the third generation (the right to a clean and healthy environment).
UN Declaration on the Rights of Indigenous Peoples	The 46 articles of the declaration acknowledge the historic treatment of indigenous peoples and recognise that individuals are entitled to all rights recognised in international law.
UN Guiding Principles on Business and Human Rights	The United Nation Guiding Principles (UNGP) give a framework for companies to respect human rights through two main principles: (1) avoid causing or contributing to adverse human rights impacts through their own activities (directly or through their contractors) and in case of adverse impacts, (2) provide remediation through a grievance mechanism at operational level. Thus, outside the ESIA public participation process, TEEPSA will put in place prior to its operations a grievance procedure detailing how to manage stakeholder grievances related to negative or perceived negative impacts caused by Project-related activities.
Labour Rights	
International Labour Organisation (ILO)	Ensure the instilment of Labour rights is protected by many international conventions, including the eight fundamental conventions that focus on forced labour, child labour, non-discrimination, freedom of association, and collective bargaining.

Table 2-3 – TEEPSA Policies and Guidelines

Policy	Relevance to Project
TotalEnergies Ambition	TotalEnergies' ambition as a world-class player in the energy transition is to "Reinventing the production and use of energy to get to net-zero carbon by 2050, together with society, and meeting the climate challenge."
TotalEnergies Human Rights Guide	The Group is committed to respects internationally recognised human rights standards in the countries where TotalEnergies work, with a focus on: • Respect for human rights in the workplace; • Addressing potential impact of operations on local communities; and

Policy	Relevance to Project
	• Ensuring that the security of people and facilities is managed in a responsible way.
TotalEnergies Code of Conduct	Describes TotalEnergies' values in practise.
TotalEnergies General Specification, Sustainable Development, GS EP SDV 102, Social Impact Assessment	Defines the guidelines for conducting a SIA. A basic standard is required and sets out the study content phases and expected results. Local laws and rules must be respected if necessary, and further specific conditions must be added.
TotalEnergies GS offshore living quarters	The document defines the minimum requirements for the design and construction of living quarters and ancillary areas general arrangement of offshore fixed platforms or floating units.
TotalEnergies GS offshore transfer boat	This general specification defines the rules and conditions required to transfer personnel offshore, between watercraft or between watercraft and offshore structures.
TotalEnergies GS offshore transfer helicopter	This document focuses on operational topics related to the Helicopter Air Operator. This document covers passenger and cargo transportation, aerial work, and medical evacuation. Search and rescue operations are not included within this scope.
TotalEnergies Health Policy	Describes TotalEnergies' constant drive to take its standards of preventive health care and people protection to higher levels, in complete transparency, both locally and at the Group level.
TotalEnergies Leaflet Sustainability	Provides guidelines regarding TotalEnergies' business principles and drivers for positive change in the societies and regions where TotalEnergies operates.
TotalEnergies Safety, Health, Environment, Quality Charter	Following its Code of Conduct, it sets out TotalEnergies' principles concerning safety, security, health, the environment, quality, and societal commitment.
TotalEnergies Sustainable Development, GS EP SDV 101, Social Baseline Study	Defines the requirements for establishing an SBS. It is the basic standard required and sets out the study content, phases and expected results. Local laws and rules must be respected if necessary, and further specific conditions must be added.
TotalEnergies Charter of Principles and Guidelines regarding Indigenous and Tribal Peoples	As stated in the Code of Conduct, and in accordance with the principles of the 'Total Attitude', Total respects within its sphere of activities, the culture, values and lifestyle of the local communities and contributes to the economic development while carrying out its business.

3 SOCIAL IMPACT ASSESSMENT METHOD

The Social Impact Assessment has been prepared using both primary and secondary data to understand the social dynamics of coastal communities within the Project area of influence.

The primary data sources included:

- The meetings held with I&APs during the Scoping Phase, including municipal representatives, Government officials, technical specialists, business interests, NGO and civil society representatives and the public.
- Discussion held with First Nations/Indigenous Peoples as part of the I&AP consultation process.
- The interviews conducted along the south coast for the study of Intangible and Tangible Cultural Heritage resources.
- Submissions made in response to the Draft Scoping Report.

The secondary data sources included:

- Relevant national legislation and regulations relevant to the management of marine resources
- A review of published literature, including academic papers and articles
- The Social Baseline Survey report prepared by Golder Associates Africa (Pty) Ltd in 2022
- The ESIA technical studies on marine ecology and fisheries and economic effects, and
- Online articles and data websites

3.1 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations have informed the social assessment:

Assumptions

- Differing stakeholder values, interests, perspectives and priorities regarding the representativeness or inclusiveness of stakeholders or stakeholder groupings are considered equal.
- Social impacts can vary significantly depending on culture, community, and context and generalised findings or methodologies applied to specific contexts may lead to an underappreciation of cultural factors unique within a specific context;

Limitations

- Accurate and up-to-date data on social indicators, demographics, and other relevant variables may not be publicly available;
- In some cases, the same data is referenced differently. Occasionally, references use the same base data but with different dates. Source dates typically fall between 2020 and 2021. However, even though this factor may have a negative impact in some instances, it is not considered to affect the overall trends of the baseline; and
- Data sources may differ in reliability, accuracy, and consistency. Bias can arise due to the underrepresentation of specific populations, systemic inequalities, or sampling biases in data collection. Even though this factor may slightly influence reporting bias, it is not considered to affect the baseline's overall trends.

3.2 AREA OF INFLUENCE

The location of Block 11B/12B offshore the south coast with Mossel Bay as the nearest coastal town, together with the preliminary area of influence to measure the potential socio-economic impacts of the Project is delineated as follows (Figure 3-1):

- Immediate zone of influence (IZoI) – the local area where onshore Project activities will occur represents the directly affected community. The logistics hub for the Project will be located within the Mossel Bay port where activities such as loading and unloading vessels, storing equipment, and providing supplies for drilling rig operations and crew changes will occur. Helicopter transport required by the Project will be based at the airport in George.
- Primary study area - includes the towns and cities where most goods required during development will be fabricated and assembled. The primary study area comprises the IZoI and adjacent coastal towns and cities that have well established marine servicing and manufacturing activities that could supply goods and services during the Project phases. The key cities are Cape Town and Gqeberha.
- Secondary study area - includes the provinces in which the IZoI and primary study area are located, namely the Western Cape and the Eastern Cape. While the Project activities are primarily within the Western Cape, the proximity of the Eastern Cape creates the potential for the economy to benefit.
- Tertiary study area - The rest of South Africa is considered the tertiary area. In addition to possible procurement benefits, an increase in local gas production may have downstream effects on the national economy. If required skills are not available locally, employment opportunities could extend to a national level.

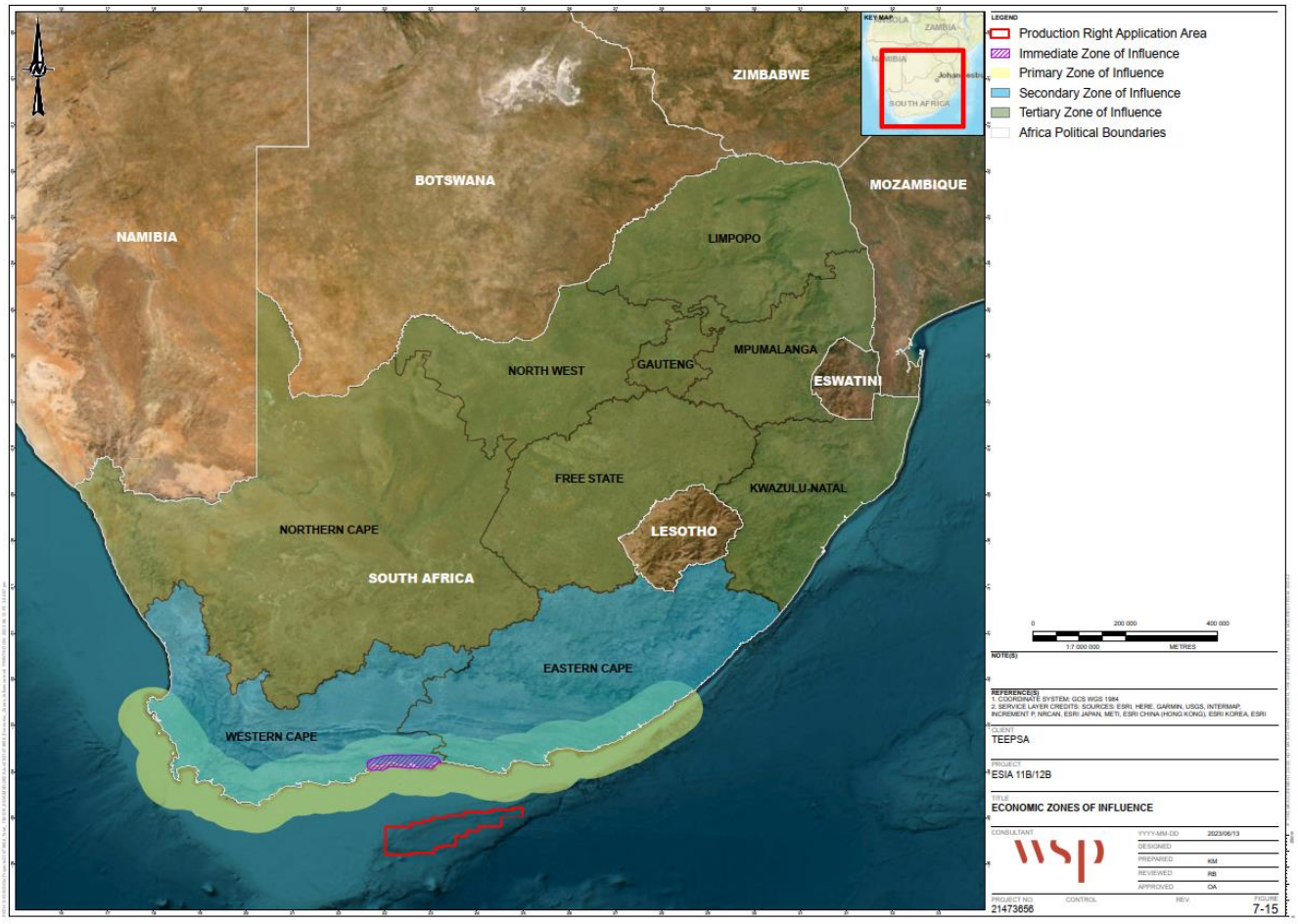

Figure 3-1 - Project area of influence map

4 SOCIAL BASELINE CONDITIONS

The description of baseline conditions within the zones of influence serves to present prevailing social risks and impacts in the communities potentially affected by Project activities.

4.1 WESTERN CAPE

The Western Cape Province is located on the southern end of the African continent between the Indian and Atlantic Oceans, bordered inland by the Northern Cape and Eastern Cape Provinces. The province is divided into five district municipalities and subdivided into 24 local municipalities. The Garden Route District Municipality (GRDM), Mossel Bay Local Municipality and George Local Municipality have significance for this SIA.

4.1.1 Garden Route District Municipality

The Project area of influence falls within the GRDM, one of six district municipalities in the Western Cape Province. The GRDM runs up to the Eastern Cape Provincial boundary in the east. The municipality comprises seven local municipalities, all of which fall within the boundaries of the GRDM.

A rural setting with dispersed farming communities and small towns characterises the inland areas of the GRDM. Some of these settlements are isolated due to transport and social service delivery costs. Approximately 80% of the district's population lives in urban areas along the coast.

The largest ethnic group in the GRDM is Coloured (52%), followed by Black/African citizens (30%). Therefore, it is unsurprising that the most spoken language in GRDM is Afrikaans, followed by isiXhosa (Wazimap.co.za, 2023a, n. Garden Route District Municipality Demographics).

The main economic sectors in the Garden Route are finance and business services (23.4%), manufacturing (17.3%), wholesale and accommodation (17%), general government (12.1%), construction (9.5%), transport and communication (7.8%), community services (5.5%), agriculture, forestry, and fishing (5.5%) (Western Cape Government, 2020b).

In the GRDM, approximately 79% of households have piped water inside the dwelling, and 92% of households have electricity for lighting and other purposes. In terms of healthcare, there are six district hospitals, one regional hospital and 69 primary healthcare clinics. GRDM’s functional literacy rate is 87%. 33% of GRDM’s population live below the poverty line.

4.1.2 Mossel Bay Local Municipality

The MBLM is situated within the GRDM in the Western Cape Province. The MBLM is bordered by the local municipalities of Oudtshoorn to the north, George to the east, and Langeberg to the west. It has a geographical area of 2,007 km² (MapQuest, 2021; Mossel Bay Municipality GIS Viewer, 2021) and is approximately halfway between Cape Town and Gqeberha, close to the N2 highway.

4.1.2.1 Institutional Governance

The MBLM is a Category B municipality, and executive functions are delegated to the Executive Mayor and the Mayoral Committee. There are Standing/Portfolio Committees whose functions include, among other things, formulation of policies for their respective functional areas, monitoring and evaluation of performance in their respective functional areas, public interface and making recommendations to the Executive Mayor and Council (Mossel Bay Local Municipality, 2022, p. 42).

The Mossel Bay Municipal Administration consist of the municipal manager, supported by executive managers who head the service delivery directorates. The municipal manager is responsible for implementing the IDP, a plan aimed at the integrated development and management of a municipal area as contemplated in the Municipal Structures Act 117 of 1998 (Mossel Bay Local Municipality, 2022, p. 45). The IDP directs the municipality's socio-economic development plans over the short, medium, and longer term.

The MBLM is considered functional (low risk) but with room for improvement. Financially, the municipality has also been rated as low risk. The MBLM received three consecutive clean audit outcomes for the Auditor General (Mossel Bay Local Municipality, 2022, p. 16). In addition to ensuring the long-term financial sustainability of the municipality, this position provides MBM with the ability to provide quality services to residents, upgrade infrastructure, and address infrastructure backlogs in a financially sustainable manner (Mossel Bay Local Municipality, 2022, p. 156).

4.1.2.2 Civil Society

Civil society is vital to the country's development and anti-poverty drive, especially in disadvantaged communities. Civil society organisations (including non-governmental organisations (NGOs) or non-profit organisations), pursue activities to relieve suffering, promote the interests of the poor and marginalised, protect the environment, provide essential social services, or undertake community development. Civil society organisations are typically independent of government control and are formed by groups of individuals or communities with a common interest. The activities of civil society organisations are spread across many sectors and address a wide range of issues.

The following civil society organisations are active in the MBLM:

- ACV: A non-profit organisation representing vulnerable groups in the social services sector.
- Association for People with Disabilities: Provides purposeful social services development to people with disabilities and their families.
- BADISA: Is a child and family welfare organisation that performs statutory work where neglected and abused children are removed from their parents to foster care.
- Creating Effective Families: A non-profit organisation working with families in Mossel Bay impacted by dependencies.
- Ikhaya Community Development Forum: Focus on keeping the youth occupied with healthy sporting, musical, and cultural activities after school. The focus area is to minimise substance abuse and crime in the community.
- Agulhas Offshore Forum: Monitor offshore activities along the south-eastern coast of South Africa.
- Mossel Bay Environmental Forum: Facilitate increased tourism and sustainable employment opportunities for the greater Mossel Bay area.
- National Khoi-San Council: The Council aims is to unite the Khoi-San communities in South Africa and raise issues in the community to formal government structures so to better living conditions for their people.

4.1.2.3 Human Development Index

The Human Development Index (HDI) is a standard measure determining whether an area is developed or developing. HDI is a composite indicator used by the United Nations to assess the relative level of socio-economic development in countries and measure people's ability to live a long

and healthy life and afford a decent standard of living. HDI includes education levels, health, and income. HDI is represented as a value between 0 and 1, with 1 indicating a high level of human development and 0 meaning no human development.

During the 2012 – 2018 period, the HDI of Mossel Bay increased from 0.69 to 0.75. According to the United Nations, the HDI is considered high when it is 0.8 and higher; medium when it ranges between 0.5 to 0.8; and an index value of 0.5 and lower will be regarded as a low rating. The lower the HDI score range, the more it indicates that improvements are required in literacy, life expectancy and per capita income (Western Cape Government, 2021d, pp. 11).

4.1.2.4 Basic Service Delivery

As part of its service excellence programme, the municipality has established minimum service standards to ensure the equitable delivery of essential services to all communities at the same pace and level of quality. The Constitution of South Africa stipulates that every citizen has the right to housing and includes access to potable water, basic sanitation, safe energy sources, and refuse removal services to ensure that households enjoy a decent standard of living. Mossel Bay has an approved indigent policy to provide free basic service delivery to those most in need who cannot afford these services. The services are paid for through an equitable share that the municipality receives annually.

4.1.2.5 Energy

Electricity is purchased from Eskom at seven intake substations. The notified maximum demand is 82MVA. At this stage, the maximum peak demand is 68,1MVA, and there is a spare capacity of 13,9MVA for future growth. The municipal electricity supply is at voltages ranging from 230V to 66,000V. The electricity is distributed under a NERSA licence to various industrial, commercial, and domestic customers Mossel Bay Local Municipality, 2021, p. 197).

The electricity supply from the South African parastatal Eskom is unstable for various reasons. The Municipality of Mossel Bay was announced as one of six candidate municipalities in the Western Cape to participate in the Municipal Energy Resilience project. It is a three-year project to support municipalities to take advantage of the new energy regulations to generate, procure and sell their power so that the Western Cape can become more energy secure. According to the Provincial Minister of Finance and Economic Opportunities in the Western Cape, David Maynier, this project should enable municipalities to buffer residents and businesses from load shedding. They will continue to be connected to the national grid, as they will not meet 100 % of energy demand with renewable energy at this stage.

A total of 93.4 % of households in Mossel Bay use electricity as their primary lighting source. The municipality also saw an increase in the number of indigents receiving basic services free of charge. Free basic electricity was supplied to 33,947 households in 2020 (Mossel Bay Local Municipality, 2022).

In addition, the MBLM adopted a policy on 25 February 2016 to guide all forms of small-scale embedded generation, such as photovoltaic solar systems, wind turbines or biomass reactors, to the municipality's electricity network. Eleven of the 14 municipal wards indicated that solar water geysers are a priority.

4.1.2.6 Water Supply

Water services infrastructure consists of several raw water sources, such as the Wolwedans, Klipheuwel, Hartebees Kuil, and Ernst Robertson Dams. Additionally, boreholes are used. There are

seven water purification plants located throughout the municipal area that receive raw water. Thirty pump stations pump the treated water from the various water purification plants and a desalination plant into 55 reservoirs.

Some 95.5% of dwellings in Mossel Bay has piped water inside the dwelling, or within 200m of the dwelling. The MBLM provided 26,771 households with free water in 2029. Mossel Bay Local Municipality, 2023, pp. 37, 100).

The municipality is implementing several high impact interventions that will contribute toward the objectives of the National Water Conservation and Water Demand initiatives currently underway throughout the country to support the protection of scarce water supply resources. Short-, medium- and long-term water augmentation plans were identified for the supply schemes of Mossel Bay, Mid-Brak and Great Brak River (Western Cape Government, 2020b, pp. 12, 13; Mossel Bay Local Municipality, 2021, pp. 86, 90).

4.1.2.7 Waste Management

The municipality is committed to providing a clean, healthy environment with good hygiene for its communities. However, there are some challenges, and the municipality intends to initiate programmes to improve waste education and awareness and increase waste minimisation and recycling. There are three operational landfill sites, eight mini drop-off facilities and two transfer stations. Refuse removal is available to 92.6 % of households (2018-2019). Some rural areas still need waste collection services, and the municipality still faces challenges with illegal dumping (Mossel Bay Local Municipality, 2022, p. 90; Western Cape Government, 2021d, pp. 12).

The Waste Act requires municipalities to reduce the amount of waste generated and, where appropriate, measures to ensure that it is reused, recycled, and recovered. Only about 7.5 % of household, commercial, and industrial waste is recycled within the MBLM, and only about 40 % of households participate in the source separation programme.

Most of the organic waste generated in MBLM is disposed of at landfill sites. A small portion (32 tonnes/month) is diverted to the pilot composting facility. The MBLM has no large-scale facilities for organic compost waste (Mossel Bay Local Municipality, 2022, p. 39).

4.1.2.7.1 Sewerage

Consumer wastewater flows through more than 500 km of sewer pipes to 73 pumping stations throughout the municipal area. Wastewater is pumped through approximately 40 km of uplift mains from the pumping stations to seven wastewater treatment plants located throughout the municipal area. The total design capacity of the seven wastewater treatment plants is 22,54 Mℓ per day. The average combined daily intake for the seven wastewater treatment facilities is 10.72 Mł daily. The municipality's main challenges are ageing infrastructure, sewerage blockages, vandalism, and septic tanks. The illegal dumping of foreign matter into municipal sewer systems creates unnecessary blockages and negative impacts on the operation of wastewater treatment plants (Western Cape Government, 2020b, p. 12; Mossel Bay Municipality, 2021a, p. 30).

The municipality has prioritised replacing the 110-mm diameter main sewerage lines in D'Almeida and KwaNonqaba with 165-mm diameter lines. The upgrading of these lines has already commenced in certain areas. Other sewerage projects have been identified for replacements within the next two financial years Mossel Bay Local Municipality, 2022, p. 104. These are:

- The supply of a main sewerage line connection between Glentana and Little Brak Rivier.

- Replacement of sewer pipelines between Mossel Bay and Hartenbos.
- The launching of public awareness campaigns to educate the community not to throw foreign objects into the sewerage system.
- Upgrading of main sewerage purification plants to increase capacity and extend plant useful life.

4.1.2.7.2 Demography

Mossel Bay had a population of 96,114 in 2021 and is the second most populated area in the GRDM. Mossel Bay has an average population density of 48 persons/ km². The high population density may cause pressure on the municipality to deliver adequate services to its 30,015 households (Mossel Bay Local Municipality, 2022, pp. 34, 35; Western Cape Government, 2021d, pp. 4, 5).

Mossel Bay's population has recorded an estimated growth rate of 1.6% in the age group of persons older than 65 years. This higher dependence rate implies increased pressure on working-age people to support those economically dependent on them. The population size of Mossel Bay is expected to increase to reach 97,514 people by the year 2025. The average household size in the MBLM was 3.2 people per household in 2021 and is estimated to decrease to 3.1 by 2025. However, from an energy supply perspective, declining household sizes, hence more households for population size, may indicate increased energy consumption (Okogu, 2011, p. 129).

The MBLM had the fifth highest proportion of informal households in the GRDM at 13.4%. It follows that access to formal housing is a challenge in the MBLM.

4.1.2.7.3 Income Levels

The average 2018 monthly household income in the MBLM was R18,107, compared to the R17,613 of the GRDM. During 2016, the household income levels in the MBLM were as follows (Mossel Bay Local Municipality, 2022, p. 35):

- Low-income households earned less than R38,200 per year. Almost 53% of households fall in the low-income category. Of the low-income households, 17.4% had no income.
- Middle-income households earned earning between R38,201 and R307,600 per year. Just over 39% of households fall in the middle-income. These households will essentially be able to afford most necessities, products, and services.
- High-income households earned more than R307,601 annually. Just more than 8% of households fall in the high-income category.

The 2016 poverty rate (less than R810 per month) showed that people living in poverty in the Mossel Bay municipal area fell from 3.2% cent of the population in 2011 to 2.1% in 2016. Reducing poverty reduces the pressure on the municipalities' financial resources. Poverty severity continues to be a problem (Mossel Bay Local Municipality, 2022, p. 36).

During the 2017 – 2020 period, the Gini coefficient[1] of the MBLM increased from 0.62 to 0.63. The Gini coefficient ranges between 0 and 1, with 0 indicating complete equality and one absolute inequality. The increase in the Gini coefficient shows that wealth inequality has increased within the MBLM. This trend is expected to worsen without interventions to address poverty and inequality, given the potential for ongoing in-migration of job seekers.

[1] The Gini coefficient represent the income or wealth inequality within the select group. It must, however, be recognised that the Gini coefficient by itself many be an overly simplified view of complex phenomenon.

4.1.2.7.4 Employment

In 2021, there were 25 420 people employed in the MBLM. Employment is anticipated to have decreased by 1 368 workers in 2021. The COVID-19 impact primarily drove these losses together with job losses from PetroSA. The national union of metalworkers of South Africa claimed that 500 of about 1 200 PetroSA workers received company notices to declare them redundant (Creamer Media's Engineering News, 2022).

4.1.2.7.5 Unemployment

The 2021 unemployment rate in Mossel Bay was 20.7% (Western Cape Provincial Treasury, 2021), with evidence that the job losses from PetroSA exacerbated this scenario (Golder Associates, 2021). This rate is lower than the national unemployment rate of 32.7% in the fourth quarter of 2022 (Stats SA, 2023). Escalating unemployment, particularly among women, youth, and vulnerable people, is challenging (WSP, 2023; Mossel Bay Local Municipality, 2021; Western Cape Government, 2020).

Poverty and inequality are the main contributors to a vulnerable society and remain critical challenges that South Africa grapples with; South Africa is known as one of the most unequal countries in the world. The World Bank reports close to half a million fewer jobs in South Africa at the end-2022 than in end-2019, with women and youth persistently more impacted. Poverty was an estimated 62.6% in 2022 based on the upper-middle-income country poverty line, only slightly below its pandemic peak (World Bank, 2023). The poor remains one of the most vulnerable groups in South Africa. The Southern Cape is not immune to the scourge of poverty, inequality and unemployment that prevails in the rest of South Africa, although, in some instances, to a lesser degree.

4.1.2.7.6 Skills levels

The skills levels are categorised as skilled, semi-skilled and low-skilled. During 2022, 26.7% of the formally employed cadre was skilled, 30.4% semi-skilled, and 18.7% low-skilled (Western Cape Government Provincial Treasury, 2022, pp. 154, 155).

The highest levels of skilled people were active in mining and quarrying, followed by the general government, and the finance, insurance, real estate, and business services sector in the third position.

The levels of semi-skilled people showed a different trend. Most semi-skilled people were active in the electricity, gas and water sector, followed by the manufacturing sector, while the mining and quarrying sector was third. Most of the low-skilled people were employed in the agriculture, forestry and fishing sector.

4.1.2.7.7 Education

Mossel Bay has 24 public schools, of which 17 are no-fee schools.[2] Learner retention decreased in Mossel Bay from 73,7% in 2019 to 69,0% in 2020, meaning fewer learners completed their schooling than the previous year (Mossel Bay Local Municipality, 2022, p. 36). The education outcomes (Matric Pass Rates) are underperforming. Progress in education outcomes is a key indicator of socio-economic development in a region (Mossel Bay Local Municipality, 2022, p. 36). Only 26.61% of the Mossel Bay population has attained a senior certificate or equivalent. Of the total population, 39.66% have no schooling or education below Adult Education Training level 4.

[2] No-fee schools means parents do not pay school fees and the school governing body cannot deny learner admission.

4.1.2.7.8 Health

Various factors play a role in the health of communities and keep diseases, primarily preventable and infectious diseases, at arm's length. These avoidance factors include high-quality municipal services, such as drinking water, sanitation, and solid waste disposal (Mossel Bay Local Municipality, 2022, p. 37; Western Cape Government, 2021d, pp. 8, 9).

Mossel Bay has access to the Mossel Bay District Hospital, five community healthcare centres, and three operational primary healthcare facilities. PetroSA built one of the care facilities and renovated two of the others.

Tuberculosis (TB) and HIV/AIDS remain high in the Mossel Bay area, and the number of patients receiving antiviral treatments is also increasing. The neonatal mortality rate (per thousand live births) remained stable at 6.0 from 2019 to 2020, but the malnutrition rate of children under five increased to 0.4 per 100,000. Teenage pregnancies are still high at 15,2%.

The COVID-19 virus pandemic in the Garden Route District affected Mossel Bay severely by having the second-highest mortality rate, averaging nearly 20% of all regional deaths. This statistic was taken throughout all three waves of viral infections starting from March 2020 up until July 2021. The COVID pandemic also played a detrimental role in the country's economy. According to the SA Economic Recovery Plan, with the first lockdown period of February to April 2020, a significant adverse impact was experienced as many South Africans lost their jobs across all sectors. In order of magnitude, most are in the trade sector, followed by business, community manufacturing, construction, and transport services (Statistics South Africa, 2020, p. 2; Garden Route District Municipality, 2021b).

4.1.2.7.9 Safety and Security

In general, safety and security in South Africa are concerning. Crime does not only have a significant impact on the life of citizens but also the economy. Crime hinders economic growth by discouraging investment and wealth accrual. If the crime statistics in South Africa are not seriously addressed, it will lead to social and economic despair.

Drug- and gang-related crimes remain the highest in the Mossel Bay area, although it is still lower than the rest of the GRDM. Although it is slightly decreasing, the murder rate and sexual offences remain alarming concerns throughout the GRDM.

4.1.3 George Local Municipality

The GLM is the third-largest municipality in the Western Cape Province of South Africa and occupies an area of 5,191 km². George is a tourist, lifestyle, business, and investment destination of interest. The town also has the only major airport in the district. It is this airport that places George within the IZoI. The population of George is expected to grow to 230 183 by 2025.

4.2 EASTERN CAPE

4.2.1 Governance and Administration

The Eastern Cape is on the east coast of South Africa and is bordered on the coastline by the Western Cape and KwaZulu-Natal. It is the second largest province in South Africa and covers an area of 168,966 km². There are two metropolitan municipalities and six district municipalities. Only two municipalities have significance for this SIA. Kouga for its contribution to the small fishers identified and Nelson Mandela Metropolitan Municipality for its port facility.

4.2.2 Key Municipal Data

4.2.2.1 Nelson Mandela Bay Metropolitan Municipality

Nelson Mandela Bay Metropolitan Municipality (NMBM) is one of eight metropolitan municipalities in South Africa.

The NMBM occupies 1 959 km² and has an estimated population of 1,263 861. (Statistics South Africa, 2022). The diverse population consists of different ethnic groups, languages and cultures. Black Africans account for 60.1% of the population, followed by Coloured people at 23.6. The predominant languages spoken are isiXhosa with 54%, Afrikaans 29% and English with 14% (Nelson Mandela Bay Municipality, 2022, p. 24).

Nelson Mandela Bay is a major seaport, automotive manufacturing centre, and economic powerhouse of the Eastern Cape Province. Unfortunately, according to STATS SA General Household Survey (2020), the NMBM is the metro with the lowest percentage of income from wages and salaries, with only 55.6%. A high 27.2% of households listed government grants as their primary source of income. The unemployment rate is 36.6%. It is predominantly a youthful city, with 20% falling within the 0-9 years category and another 18% of the population falling within the 10-19 age group.

4.2.2.2 Kouga Local Municipality

The Kouga Local Municipality is in the Eastern Cape of South Africa, approximately 80 km west of Gqeberha. It comprises nine towns and is governed by the opposition DA.

The municipality occupies 2,670 km², has a population of 112,942, and has the fastest annual growth rate within the district. The Coloured people represent 42.6% of the population, followed by Black African people with 38.83%. The Kouga Local Municipality has a high youth population of 52.4% of the 0-29 year age group (Kouga Local Municipality, 2023).

Kouga is the highest contributor to the GDP in the Sarah Baartman District. Traditionally, economic activities were focused on tourism and agriculture. Recently the energy sector emerged as a focal point. There are two wind farms. One of the preferred sites for a new nuclear power station is also in the Kouga Local Municipality. In 2016, the unemployment rate in Kouga was 14.75%, significantly lower than the average for the Eastern Cape Province, which was 47% at the time (Kouga Local Municipality, 2021, pp. 77, 78).

4.3 INFRASTRUCTURE

The NPA is an independent subsidiary of Transnet and is responsible for managing the national port system, which it manages in a landlord capacity. It provides port infrastructure and marine services and operates within a legislative and regulatory environment created by the National Ports Act 2005 (Act No. 12 of 2005). The NPA manages Richards Bay, Durban, East London, Ngqura, Gqeberha, Mossel Bay, Cape Town and Saldanha ports (Transnet, 2010; Maritimessa.org, 2020).

The Port of Mossel Bay will be the main port used for the onshore activities for TEEPSA. It is, however, envisaged that the ports of Cape Town, Ngqura and Gqeberha might be used for additional support should there be a logistical requirement.

4.3.1 Port of Cape Town

Cape Town is in Table Bay, in the Western Cape Province. The port is a hub for ships in the southern Atlantic. Cape Town is the second largest port in South Africa and one of eight commercial seaports. The port also plays a crucial role in supporting local commercial fisheries, including several

commercial fishing rights holders. In addition, the Port of Cape Town also contains the Victoria and Alfred Waterfront, a major international tourism and recreational destination. Custom clearance is also in place. The security department provides customs clearance within the port (National Ports Authority, 2018a, pp. 3, 5, 2018c, p. 4; Africa - Ports & Ships, 2021c). Commodities accommodated within the Port of Cape Town include liquid, dry, break bulk, containers, and roll-on roll-off (vehicles).

Regarding oil and gas commodities, the Port Authority needs prior clarification on the nature and scope thereof. This information is required to manage the storage of these commodities.

4.3.2 Port of Gqeberha

The Port of Gqeberha (Port Elizabeth) is a multi-cargo port located on the western perimeter of Algoa Bay. The port is some 384 nautical miles (442 miles) southwest of Durban and 423 (487) east of Cape Town. The port offers multifunctional use for handling containerised cargo, bulk manganese, liquid bulk, and automotive cargo. The port also supports commercial fishing, including commercial operators of the demersal trawl, pelagic trawl, lobster, and squid industries. Berthing for commercial and recreational fishing (small craft) is provided in the harbour. The harbour plays a limited role in tourism and recreation, with facilities such as boat charters, clubs, and restaurants. The port offers container (one of only five South African ports), breakbulk, tanker, and bulk terminals. Cruise ship facilities are provided at berths 8 and 9. A Ro-Ro terminal is available. The port supports commercial fishing, including commercial operators. The port does not offer major ship repair services. However, a slipway is available to repair vessels up to 1,200 tonnes (National Ports Authority, 2018b; Africa - Ports & Ships, 2021b).

4.3.3 Ngqura Port

The Ngqura Port is a deep-water port approximately 20 km northeast of Gqeberha on the east coast of South Africa. The port is situated at the mouth of the Coega River in Nelson Mandela Bay (Algoa Bay). It has been operational as a container port since 2009, making it the newest port in the country. The port was initially designed to handle containerised cargo. The port is now expanding to address dry bulk, break bulk and liquid bulk opportunities. Shipments include bulk commodities such as manganese, chemicals, oil, and refined hydrocarbons. The Port of Ngqura complements its twin sister port in Gqeberha and can handle 2.0 million TEUs per annum. Ngqura Port currently handles just over 6 million tonnes of cargo per year. The port received some 400 vessel calls. The port provides the first offshore fuel service in South Africa. This service operates from outside the Port of Ngqura, attracting passing ships.

4.3.4 Port of Mossel Bay

Port of Mossel Bay is located about 400 km east of Cape Town. It is a medium-sized port, the smallest commercial harbour along the South African coast, directly adjacent to Mossel Bay's CBD. The port can accommodate vessels up to 189 metres in length, with a draught not exceeding 6.5 metres. The allowable deadweight is 52,318 tonnes. The catenary buoy caters for vessels up to 32,000DWT, length of 2,904m and a draught of 12m (National Ports Authority, 2018e, pp. 6, 7, 10; Africa - Ports & Ships, 2021a; MarineTraffic, 2021).

The port mainly caters for the import and export of petroleum products. Mossel Bay is the only port in South Africa with two offshore berths within the port's limits and can accommodate passengers and Project ships.

4.3.5 Roads

South Africa's total road network is about 747 000 km. The N2 is of value for this baseline. The N2 runs along the Indian Ocean coast, linking Cape Town, Mossel Bay, Gqeberha, Ngqura Port (Coega) and the Port of Durban. The N2 will feature strongly if road transport of heavy equipment is required for future projects, be it from Cape Town or Durban or ports in between to Mossel Bay.

4.3.5.1 Cape Town road network

Cape Town is linked with the rest of South Africa via the N1, N2 and N7 national routes. The N2 highway connects Cape Town to Durban via Mossel Bay, George, Plettenberg Bay, Gqeberha and East London. The N7 runs north through the West Coast to link Cape Town with the border of Namibia.

The road network in Cape Town is complementary to the harbour area. The port is connected to all major freeways and regional roads. The N1 is located alongside the harbour. Access to the N1 is direct. The N2 is located further away to the south of the port. The N2 can be reached via various routes, of which the M5 is one.

4.3.5.2 Gqeberha road network

The Port of Gqeberha is accessible by several routes. The N2 highway traverses through Gqeberha. The N2 links Gqeberha with Cape Town to the west and Durban to the northeast. The port has direct access to the N2 north-easterly via the M4. The port also connects to the N2 via the R102 to the west. The port is well connected to a road network surrounding the port.

4.3.5.3 Ngqura port road network

Ngqura Port links the Port of Gqeberha via the M4, connecting with the N2 via Neptune Road. The distance between the two ports is just less than 30 km.

4.3.5.4 Mossel Bay Road Network

Mossel Bay has a total road network of 450 km and is halfway between Cape Town and Gqeberha, connected by the N2 highway. The CBD and the harbour are some distance away from the N2. The Louis Fourie corridor (R102) is the primary access to Mossel Bay. The Louis Fourie corridor connects the Mossel Bay CBD and the harbour with the N2 to the west (7 km) and the north via a short section of Aalwyndal road (5.5 km).

The roads in the vicinity of the port are in reasonably good condition. Heavy vehicles would typically travel from the port to Church Street, turn right into George Road, and then onto Louis Fourie Road towards Voorbaai, where the tank yard is situated. Heavy vehicles cannot travel on Marsh Street as the weight limit is 10 tonnes. An alternative route is to turn left from Louis Fourie Road onto the N2 highway that leads to Cape Town or Gqeberha. The Mossel Bay Traffic Department would assist in closing intersections if required to transport abnormal loads. A concern is the traffic congestion on Louis Fourie Road during the peak holiday season, from 5 December to mid-January.

4.4 MARINE AND COASTAL USERS

4.4.1 Fisheries

The productive system and diverse South Coast fish community supports a diversity of commercial, recreational and subsistence fisheries. In the IZoI, the fishing subsector employed an estimated 2 294 people directly in 2021.

4.4.1.1 Commercial Fishing

The large pelagic longline sector has the greatest spatial overlap with the Block 11B/12B Application Area and pipeline routing area, with a small overlap with offshore demersal trawl fishery and the Chokka squid fishery effort to the north and northeast of the Block, respectively. A brief overview of these fisheries follows below (Wright et al, 2023):

- The pelagic longline fishery targets large, predatory, highly mobile fish including bigeye tuna, yellowfin tuna, southern bluefin tuna and swordfish. The main bycatch species are albacore tuna, blue shark shortfin mako shark. Sixty new large pelagic longline fishing rights were allocated in 2017, for a period of 15 years, with 34 domestic South African registered vessels and three chartered (foreign) vessels. This fishery is distributed nationally, with many vessels reported to fish near the edge of or on the continental shelf.
- The deep-sea sectors of the South African hake demersal trawl fishery targets the Cape hake species. Valuable bycatch of the trawl fisheries include monkfish, kingklip, panga and snoek. The deep-sea trawl fishery is active between Namibia and East London, but the majority of fishing effort is focussed on the west coast of South Africa. The deep-sea trawl sector takes around 88% of the hake catch, with total catches over recent decades fluctuating around 150 000 tonnes per year. In 2005, 15-year rights were allocated to 52 rights holders in the hake deep-sea trawl sector, consolidated to 30 operational rights holders (the latest rights allocation took place in 2021, but these have not yet been finalised).
- The hake deep-sea trawl industry employs approximately 12 400 South Africans and contributes more than half of the total value of all commercial fisheries. In 2018, the total allowable catch (TAC) of approximately 112 000 tonnes had a landed catch value estimated at USD 280 million.
- The commercial squid jig fishery is concentrated in inshore Eastern Cape Waters between Plettenberg Bay and Gqeberha where the squid breeding aggregations occur. The fishery currently comprises 109 rights holders, 136 vessels and 2422 crew. Since 2010, an average of 530 individual fishing trips per year have been undertaken within the north-east border of Block 11B/12B Application Area, amounting to 111 fishing hours (average per annum) and yielding 218 tonnes of squid catch (average per annum). This is equivalent to 2.4 % of the overall total squid fishing effort and 2.91% of overall squid catch landed by the sector.

4.4.1.2 Small-scale Fishing

The Marine Living Resources Amendment Act, 2014 (Act 5 of 2014) (MLRA) defines a 'small-scale fisher' as "*a member of a small-scale fishing community engaged in fishing to meet food and basic livelihood needs, or directly involved in processing or marketing of fish, who—*

(a) traditionally operate in near-shore fishing grounds;

(b) predominantly employ traditional low technology or passive fishing gear;

(c) undertake single day fishing trips; and

(d) is engaged in consumption, barter or sale of fish or otherwise involved in commercial activity, all within the small-scale fisheries sector."

The 2014 amendment to the Act deleted the definition of 'subsistence fisher'.

The regulation of small-scale fishers includes the fish species that may be caught, the location and the size of the area in which fishing activities may take place, and that small-scale fishing is now

considered a commercial activity. These aspects will need to be considered during the impact assessment, and planning and implementation phases of the Project.

Small-scale fishing forms an essential source of livelihood for many households on the Southern Cape coastline. Although small-scale fisheries contribute less than 1% to South Africa's GDP, they are important in providing protein and employment for an estimated 136 coastal communities distributed along South Africa's 3 000 km coastline (Wright et al, 2023, p. 93). Small-scale fishing in South Africa has been considered to include various fishing methods targeting more than 30 species (Griffiths and Branch 1997) from a range of habitats (Branch et al. 2002, Clark et al. 2002) (in Wright et al, 2023, p. 93).

Various species have been set aside for the small-scale fishing sector. Some have already been allocated to the existing small-scale fishing co-operatives in other coastal provinces as part of the 2021 Fishing Rights Allocation Process. Many species allocated to the small-scale “baskets” are primary targets of the commercial and recreational linefish sectors, and these shared resources will need to be carefully monitored given the increased fishing pressure expected. Total Allowable Effort (TAE) will be apportioned between small-scale and commercial sector when the Department allocates commercial rights in 2021 (the outcome of which has been delayed due to an ongoing appeals process expected to be completed in October 2023). In the meantime, co-operatives will be able to fish from shore using hook and line while the fishing rights allocation process is being concluded.

In 2021, the DFFE allocated 15% of the squid catch to the small-scale fisheries sector (with the provision that this could be increased to up to 25% in the future). Prior to this decision, squid was not in the basket of species available to the 15 co-operatives and 600 individual small scale fisher men and women who operate in the areas of the Eastern Cape where squid is harvested. Small scale allocation for hake handline in 2023 allocation was 2 081 tons (1.5% of the total TAC). There is no specific small-scale allocation for South Coast Rock Lobster (2022), with 359 tons and 2 525 Sea Days allocated across the whole fleet.

The south coast area of South Africa in closest proximity to the Block 11B/12B Application Area has a number of recognised small-scale fishing communities. These communities comprise of estuarine fishers (42%) and marine fishers (58%) which target a range of intertidal invertebrates (marine and estuarine) and fish. There will be limited overlap between small-scale fishers that operate mostly close to the shore with the Block 11B/12B Application Area.

However, there may be a handful of small-scale rights holders that operate further from shore, accessing offshore fishing grounds either through cooperative means or as crew on existing commercial linefish or squid fishing vessels. There may therefore be some overlap between the area of operation of these fishers and the Block 11B/12B Application Area. These fishers are expected to access mostly linefish and squid resources (DFFE personal communication, January 2023).

Based on previous stakeholder engagement processes with small-scale fishers, it is understood that the small-scale fishers feel they are not benefiting from the ocean economy but are severely impacted by the loss of fishing grounds and the decline in certain fish species (Golder Associates Africa (Pty) Ltd, 2021). Mistrust was expressed regarding oil and gas projects and major oil companies' perceived lack of transparency. Small-scale fishers are concerned that fish stocks have gradually declined over the past years, and they fear that fishing boats and trawlers will be prohibited from working near gas or oil pipelines.

4.4.1.3 Recreational Fishing

Recreational fisheries in South Africa include line fisheries, rock lobster fisheries and harvesting of intertidal resources such as mussels, redbait and oysters (Griffiths et al. 2004, Cooke & Cowx 2006, Lewin et al. 2006, Winker et al. 2014, Maggs et al. 2016, Parker et al. 2016, Kerwath et al. 2019, Steyn et al. 2019, in: Wright et al, 2023). In the MLRA, "recreational fishing" means any fishing done for leisure or sport and not for sale, barter, earnings or gain. The recreational fishing sector is managed by a permitting scheme for entrants and catches are subject to total allowable effort (TAE) like the other fishing sectors. Recreational linefishing is a popular activity in South Africa and takes place along the entire coast.

Between 1994 and 1997, the first nation-wide survey was conducted to evaluate participation in South Africa's recreational shore angling fishery, and its management (Brouwer et al. 1997, Mann et al. 2003, in: Wright et al, 2023). Recreational fishing in South Africa includes participation from approximately 1.32 million fishers, of which approximately half are marine, targeting mainly linefish and rock lobster (Saayman et al. 2017, in: Wright et al, 2023). The MLRA legally recognises recreational fishers and along South Africa's south coast there are a number of areas where recreational fishers operate very close to shore. It is assumed this activity takes place from the shore and so impacts from the proposed Project that reach the shore could have consequences for these recreational fishers.

4.4.1.4 Mariculture

Mariculture species farmed in South Africa include dusky kob, abalone, Pacific oysters, Mediterranean mussels and black mussels, among others. South Africa's aquaculture sector is relatively small, contributing about 0.8% to the country's fish production, accounting for less than 0.2% of the national GDP. South Africa is, however, one of the largest producers and exporters of abalone. The country produces about 1 700 tonnes of abalone per year. Globally, abalone are one of the most expensive seafood products, with high demand specifically in the Asian countries because of the cultural, traditional, and medicinal qualities associated with abalone.

In South Africa, the abalone industry has experienced rapid growth and development, and today is considered one of the most important and valuable species to the South African aquaculture industry. Eighteen abalone farms were identified in 2015, 12 of which are land-based facilities with independent hatcheries Three farms were registered as ranching operations. There are four farms in the Northern Cape, twelve farms in the Western Cape and two farms in the Eastern Cape. Together these operations produced an estimated farm gate value of US$ 42.3 million. There is no spatial overlap with the Block 11B/12B Application Area and any mariculture activities.

4.4.2 Coastal Tourism and Recreational Activities

The swift recovery of tourism in the Garden Route after the COVID-19 pandemic speaks to the region's popularity as a tourism destination. In the first half of 2022, passengers through George Airport grew by 49% from the same period in 2021 and reached a 94% recovery rate compared to 2019 (WESGRO, 2022). In April 2022, passenger arrivals through George Airport exceeded pre-COVID levels, increasing from 32 939 arrivals in April 2019 to 35 606 arrivals in the same month of 2022, constituting a recovery rate of 109% (WESGRO, 2022).

Visitor surveys conducted via local tourism offices in George and Wilderness confirmed that the most significant proportion of Garden Route and Klein Karoo region travellers originated from the domestic market (79,3%), particularly within the Western Cape (50,7%). Over the period, the overseas market

accounted for 20,7% of visitors, led by the USA, France, Germany and the United Kingdom. Three-quarters of visitors travelled to the region for a holiday, and visiting beaches ranked as the top tourism activity. The main reason for travel to the Garden Route and the Klein Karoo was tourism, with 73.4% of respondents travelling to the region for leisure activities and holidays.

Mobile location data insights emphasised the popularity of Knysna as a holiday destination, with the Knysna Waterfront frequently visited by international, domestic and local tourists. According to mobile location data, Knysna Heads ranked second across all tourist segments in the Garden Route and the Klein Karoo, with around 2 hours of average dwell time (WESGRO, 2022). According to mobile location data, more than half of domestic tourists and nearly two-thirds of international tourists surveyed stayed overnight in Mossel Bay in the first half of 2022. Repeat visitors accounted for 45% of domestic and 25% of the international categories. Thesen Island in Knysna was also a popular destination (WESGRO, 2022).

People have a cultural relationship with the ocean and coast (i.e. nature). Coastal sporting, leisure and tourism activities have become for these communities since the activities contain strong cultural elements (i.e. social grouping, ritual practices, commensality, unique identity, shared histories, etc.).

4.4.2.1 Cruise Vessel Tourism

According to WESGRO (2023), Cape Town and the Western Cape achieved a record-breaking cruise tourism season dominated by high-spend source markets including the USA, Germany, and the UK. Commencing in October 2022 and ending in May 2023, the past season has welcomed 145 000 cruise passengers as well as 42 000 crew members to the Cape's shores. In total, the 2022/2023 season welcomed 75 ships with 41 turnaround visits which is double the number of ship calls when compared to the last complete season in 2019/2020, which saw 39 ship visits with an estimated 42 000 arriving passengers.

Mossel Bay is a popular cruise destination. The Mossel Bay Port has had the best cruise season (2022/2022) where a total of thirteen (13) Cruise Vessels and over nine thousand cruise tourism enthusiasts (9270), the largest number to visit Mossel Bay thus far, utilised the Port as their gateway to the Garden Route's Adventure Capital[3]. The Transnet National Ports Authority has indicated that growing tourism is one of their key strategic objectives for the region and the port is positioning itself as an ideal cruise gateway to a unique Garden Route experience.

[3] https://www.thegremlin.co.za/2023/04/20/over-9000-cruise-tourism-enthusiasts-visit-mossel-bay-during-the-2022-24-cruise-season/

5 CROSS-CUTTING THEMES

Cross-cutting themes are broad based and complex issues that are recognised and integrated into the issues and aspects that have been considered in this assessment. The following such themes are relevant to the Project:

- Tangible and intangible cultural heritage;
- Landscape and seascape;
- Vulnerable groups; and
- Human rights.

5.1 TANGIBLE AND INTANGIBLE CULTURAL HERITAGE

Cultural heritage consists of tangible and intangible cultural heritage. Tangible heritage includes monuments, sites, artefacts, and places of archaeological or historical significance. In contrast, intangible cultural heritage (ICH) consists of folklore, ritual practice, beliefs, symbolism, social attachment, and associated human sensory engagement with the coast and sea. ICH is also found underwater, associated with maritime artefacts that remain on the sea floor after a shipwreck (Boswell, 2022).

5.1.1 Tangible Cultural Heritage

5.1.1.1 Coastal Heritage

The Southern Cape region has a rich history in terms of cultural heritage, ranging, among other things, from the history of the Khoi-San, who is known as the first indigenous people of southern Africa, to the history of other indigenous groups, archaeological sites from the Earlier Stone Age (ESA), Middle Stone Age (MSA), and Early Later Stone Age (ELSA) (near Mossel Bay and Knysna), ships that had foundered along the coastline and the colonial history of Mossel Bay and surrounding areas.

According to Binneman (2018), archaeological research and observations made in the region between Kabeljous River Mouth and Cape St Francis indicate that this part of the coast and adjacent inland are extremely rich in archaeological heritage sites and material. Early Stone Age (ESA) artefacts are commonly recorded on agricultural lands. Nilssen (in NSOLO) found a dense patch immediately east of PetroSA. He also found ESA artefacts along the L2 eastbound from PetroSA, including large numbers collected in trenches. These included several Acheulean axes (NSOVO Environmental Consulting, 2020, p. 70; Mosselbay.info, 2022).

For example, research at rock shelters and caves, such as Klasies River Mouth, yielded some of the world's oldest remains of anatomically modern humans. Pinnacle Point and the Cape St. Blaize Cave characterised cultural importance when the cave excavations revealed occupation by Middle Stone Age people between 170,000 and 40,000 years ago. These sea caves have interested several archaeologists and professionals over the past years. In a meeting with MBT, it was indicated that Mossel Bay was recently placed on the international map as a critical research area. Pinnacle Point is a proposed World Heritage Site.

At Kabeljous River Mouth, the oldest sheep remains in the Eastern Cape were recovered from shell middens. These remains, associated with Khoi pastoralists, the first food producers in South Africa, were radiocarbon dated to 1 560 years old - the oldest recorded date for the presence of sheep along

the Eastern Cape coast. The series of caves and archaeological sites along the Southern Cape coast has been nominated for recognition as a UNESCO natural and cultural landscape (Boswell, 2023).

The South African continental shelf was exposed as dry land during multiple glacial cycles within the last million years. The exposure of the continental shelf would have been most pronounced on the wide Agulhas Bank off the southern Cape coast, and it is estimated that a new area of land, as much as 80,000 km^2 in extent, was exposed during the successive glacial maxima (Fisher et al, 2010). This exposed area is referred to as the Palaeo-Agulhas Plain (Marean et al., 2014) and was exposed for extended periods of tens of thousands of years on each occasion.

Most of the Block 11B/12B Project activities will be located offshore. Furthermore, onshore logistical related activities such as laydown areas, equipment storage facilities, manufacturing and maintenance activities, etc. will make use of existing support facilities at the port of Mossel Bay. Coastal heritage sites are therefore unlikely to be affected by the Project, under normal operations.

As indicated in the Heritage Impact Assessment that was done for the Block 11B/12B Project (ACO Associates, 2023), Block 11B/12B is located largely beyond the maximum extent of the Palaeo-Agulhas Plain, in water deeper than the area of the continental shelf that was exposed (i.e. 120 m). The seabed within Block 11B/12B would thus never have been occupied by early humans and no archaeological sites or material can be expected within the Block.

5.1.1.2 Maritime Cultural Heritage

According to available records, there are no known historical ship wrecks within Block 11B/12B; however, research indicates that a wreck (Kiani Satu that sank in 2013) may be located within the Production Development Area of the Block. The Taiwanese fishing vessel Shin Huie (sank July 1983) lies roughly 22 km north of Block11B/12B and more than 65 km east of the production pipeline corridors. Given their age, neither the Kiani Satu or Shin Huie currently fall under the jurisdiction of the National Heritage Resources Act (NHRA), nor is it likely that they will do so within the estimated life of the Block 11B/12B Project.

The only other recorded wrecks in the vicinity of Block 11B/12B and the production pipeline corridors are the Sabor, a World War II casualty of the German U-boat offensive off the south coast in 1943 and the Texanita, a Liberian registered oil tanker which sank after a collision with another tanker on 21 August 1972.

5.1.1.3 Palaeontology

Regarding palaeontology, the multidisciplinary Palaeo-Agulhas Plain mapping project has shown that terrestrial geological strata extend out onto the continental shelf and although there is no palaeosensitivity map for this offshore area, there is high probability that important fossils occur on the continental shelf.

The geology of the submerged landscape has been correlated with the exposed onshore geology and the northern extremities of Block 11B/12B lie, in places, on the Cenozoic Bredasdorp Group, calcareous sands and aeolianites, on terrestrial exposures, which have marine, estuarine and terrestrial fossils of Quaternary age, and are potentially very highly fossiliferous. This has been demonstrated by the recovery of fossilised whalebone during a scientific demersal trawl in Block 11B/12B in 1993, and by the recent finds of apparently fossilised whalebone and possible fossilised wood made during the TEEPSA environmental baseline surveys in late 2022 (ACO Associates, 2023).

In respect of palaeontological heritage resources, fossil material could be disturbed and/or damaged by Block 11B/12B Project activities such as the well drilling or the installation of the production pipeline. The potential for fossil (and/or shipwreck) related material in or on the seabed will be further investigated as part of the geophysical and ROV surveys and seabed sampling that will be done in the Block. This will supplement previous baseline survey studies and inform the design and placement of the production wells and subsea infrastructure.

Should fossils (or shipwreck) related material be identified in particularly the ROV video footage or stills images, this information will need to be recorded and passed on to an appropriate specialist and SAHRA must be notified through the implementation of the Chance Finds Procedure. The implementation of a buffer of at least 50 m around such a site or material will serve to ensure that it not impacted by the activities in Block 11B/12B.

5.1.2 Intangible Cultural Heritage

South Africa has a diverse and rich ICH. The South African population holds a diversity of beliefs which inform daily and social interaction. The role of culture in South Africa remains a powerful force. Colonisation and modernisation have not erased cultural practices or beliefs (Boswell, 2023).

It is noted that for any site that is coastal or where people make use of the sea, there is need to consider cultural tangible and intangible heritages, since these terraqueous (territorial and watery) areas include sites of spiritual significance. The waters noted by community members encountered along the South Cape coast describe these areas as ‘living’ waters. Coastal and oceanic ICH is holistic. It includes a variety of waterways that ultimately lead to the sea. These include streams, rivers, pools, lakes and estuaries. These waterways are believed to play a critical role in spiritual and health management in indigenous and Nguni groups specifically. Specific beliefs concerning ‘living’ waters include, but are not limited to, the following (Boswell, 2023):

- Waters contain the ancestral spirits of the cultural communities.
- Waters offer a spiritual domain to which people in the present realm can travel to (intentionally or otherwise) and from which they can return if the correct ritual activities are performed to ensure safe return.
- Waters can be portals to a parallel universe, or mirror universe and that humans in our dimension cultivate relations with beings from this mirror universe.
- Waterways such as streams, rivers and pools may contain a community’s specific ancestral spirits.
- Ancestral spirits in the ocean reside on the seabed or seafloor.
- Markers such as reeds, whirlpools or disturbances in the water that indicate the place and presence of ancestral or water spirits.

Extensive research was undertaken for the Project in 2022/2023. The focus of the supplementary study conducted in 2023 study (which is applicable to Block 11B/12B) was on the following (Boswell, 2023):

- Xhosa and indigenous and autochthonous ancestral beliefs and ritual practices regarding coastal and deep ocean significance. This includes Khoi-San (indigenous peoples) and small-scale fishers’ cultural relations with the sea and coast.

- ICH of settler groups (English/Portuguese/other European descendants) and coastal ICH indicated by Afrikaans speaking peoples.
- Gender and generational dimensions of ICH at the coast in the selected sites.

The key findings of the study can be summarised as follows:

- There is a greater holism between land and sea in the south cape coast;
- There are cultural worlds apparent in the lives of small-scale fishers and their families;
- The receptors of cultural heritage are symbiotic;
- A racial dynamic in the South Cape Coast coastal communities makes it difficult for local communities to access the ocean and other related cultural sites, even though apartheid legislation is no longer in place;
- In the Western Cape, there is a specific Coastal By-Law (2020) to enforce public access to the coast; and
- There is a tension between contested heritage understandings of the sea and socio-economic reality in the region.

According to Boswell (2023), any impact on the integrity of the coastal and marine ecosystem through disturbance, pollution, noise, etc. from the various Project phases could negatively impact various aspects which make up people's intangible cultural heritage. The following key potential impacts are noted from an ICH perspective (Boswell, 2023):

- Project activities, such as helicopters, could disturb rituals which take place all year round; these impacts could however be mitigated with timely, sustained and relevant healer-diviner and First Peoples' Chief interventions.
- Project activities in Block 11B/12B, specifically maritime safety zones, may affect the livelihood of coastal communities, especially small-scale fishers. For small-scale fishers, fishing is not merely for food; it is part of culture. Other livelihood uses of the sea (i.e., seaside restaurants, sporting use of the sea, tourism) also advance cultural heritage.
- Natural and cultural heritages are interdependent; people use nature in their cultural and ritual practices. Any pollution or other form of negative impact on the sea arising from Project activities, such as air emissions, light and noise from the drill unit and supply and specialised vessels, may impact on natural phenomena (i.e., fish, shellfish, fynbos, mangroves, penguins, beach), which in turn may form part of cultural heritage practices.
- The sea is used for health purposes. Nguni and Khoi-San peoples believe in the ocean's curative and cleansing properties and collect them for spiritual and physical cleansing. The water is ingested for ritual cleansing purposes. People bathe in the seawater and kneel at the beach to revere ancestral spirits and also the sea itself (Boswell, 2023). Although Project activities will largely take place far from shore, any pollution or other form of negative impact on the sea, arising from Project activities (e.g. routine discharges to sea, drill cuttings discharges, etc.) might affect health uses of the sea. i.e., the water is no longer perceived as pristine enough for bathing, etc. or for ritual use. In an interview with a Khoi-San Chieftainess, she expressed concerns about oil and gas exploration and developments. Her concerns were about polluting endangered species within the ocean, the ecosystems and life within the ocean. She also recalled an oil spill in January

2023. There was no indication of the source of the oil spill, and no one was held accountable (Boswell, 2023).

To mitigate the above-mentioned impacts on ICH, it has been recommended that TEEPSA (Boswell, 2023):

- Engage with relevant communities to undertake a ritual event/s that supports communities' engagement with ancestral spirits and with living communities/indigenous people to allow for the usage of the sea. Details of the engagement to be developed as part of the Project's Stakeholder Engagement Plan (SEP).
- Implement a gender-sensitive ritual event that recognises gendered coastal cultural heritage to permit all genders to articulate their cultural relation with the sea and coast. Details to be developed as part of the Project's SEP.
- Implement a project-specific Grievance Mechanism and ensure effective implementation through independent verification undertaken annually.
- Identify appropriate cultural sites and heritage research within IZoI for consideration in the TotalEnergies Corporate Social Investment programme.

These measures, along with Project controls and mitigation measures for maritime safety zones, routine discharges to sea, drill cuttings discharges, noise, air emissions, etc. are anticipated to mitigate the impact of the Project on ICH to an acceptable level of impact (very low to medium).

5.2 LANDSCAPE AND SEASCAPE

The onshore landscape of the IZoI and primary study area is unlikely to be affected by the Block 11B/12B Project, considering the offshore nature of the development at a far distance from the coast. Onshore activities will be contained within the footprint of the Port of Mossel Bay. The seascape, as viewed from the coast, will also be unaffected by the development due to the distance from the shore. Noise from helicopters transporting personnel to offshore infrastructure is unlikely to affect the sense of place experienced by coast inhabitants, given the relatively infrequent number of trips required for the various phases of the project (2 trips per day during well drilling and one trip per day during decommissioning). Under normal operations, Project activities are unlikely to affect people's sense of place.

5.3 VULNERABLE GROUPS

5.3.1 Who is Vulnerable?

TotalEnergies' General Specification, Sustainable Development, Social Baseline Study (GS EP SDV 101) emphasises the importance of "*identifying vulnerable stakeholders, groups or PAPs, especially those that may not have been identified through the desktop study, the evaluation of their vulnerability and resilience to future project impacts*." It further states that "*particular attention should be paid to groups that are potentially excluded from the community or power or not recognised through existing or official information, e.g., women, migrant workers, people with disabilities or children*."

The Revised 'White Paper' on Families in South Africa, produced by the Department of Social Development in 2021, defines vulnerable families as "families that need particular support and services". This document adds female-headed households, child-headed households, homeless people, families or people in extreme economic and social need, families in rural areas, teenage

parents, caregivers with mental health conditions, and economically distressed households to the list of vulnerable people.

Regarding the Western Cape Government Disaster Management Definitions, Vulnerability is defined as follows: "*Vulnerability is seen as the ability a person or community has, to predict, cope with, or avoid and recover from, the consequences of a hazard or disaster. Marginalised, poorer, and over-populated communities are more vulnerable and less able to cope with disasters*".

The GRDM and the Mossel Bay Local Municipality refer to "vulnerable groups" in their IDPs; however, the term "vulnerable" is unclear. In their respective IDPs, both municipalities state alignment with the Western Cape Government's regional, economic, and strategic plans. Therefore, it could be concluded that the definition of vulnerable groups would fit the national definition from a regional, district, and local point of view.

In its Vulnerable Groups Indicator Report, Statistics South Africa defines vulnerable groups as "*a part of the South African population that experience a higher risk of poverty and social exclusion than the general population. This sector requires effort at all policy planning and implementation levels to inform, among other things, resource allocation*".

The Vulnerable Groups Indicator Report identified vulnerable groups as follows:

- *Children (those aged 17 years and below)*
- *Older persons (people aged 60 years and older)*
- *Persons with disabilities (experiencing various difficulties in functional domains such as seeing, hearing, walking, remembering, concentrating, self-care, communicating, and social interaction)*
- *The youth (people aged between 15-34 years)4*
- *Women (the female population)*

The “Revised White Paper on Families in South Africa” refers to “families that are in need of particular support and services”.

Existing research shows that coastal communities remain on the fringes of developmental prospects, bearing many costs without receiving many benefits. It can be due to a lack of skills limiting job access, environmental impacts negatively affecting local livelihoods and unresolved governance dilemmas across different scales and actors. Millions of people dwelling in coastal communities worldwide already exist at the margins. They often contend with converging pressures that place them in a vulnerable position to make a decent living (Andrews *et al*., 2021, p. 1).

5.3.2 Responsibility of Care

The responsibility to care for individuals is not limited to families. The state is the most recognised caretaker of individuals and families. However, in practice, neither the state nor families are solely responsible for the care of individual members as local communities and NGOs, and the private sector is involved in the caretaking of individuals.

The White Paper for Social Welfare (1997) reiterated the country’s obligation to provide basic welfare and human rights and focus on the family in its entirety, from children to youth and then the aged. The purpose is to support relationships and community interaction for vulnerable groups, including vulnerable families. This focus will result in stronger families and communities where removing

[4] In contrast, the South Africa National Youth Policy defined the youth) as those aged between 14 and 35 years.

children from the families should be the last resort (Republic of South Africa: Department of Social Development, 2021, p. 5).

As of 2019, approximately 18 million South Africans vulnerable to poverty or in need of state support received social grants, relief assistance or social relief paid by the government. But this has increased since the outbreak of Covid-19 and following the July 2021 unrest. The largest group that received social grants were African and Coloured South Africans Statista, “South Africa: Social Grant Recipients, by Province,” Statista, 2020, https://www.statista.com/statistics/1116081/population-receiving-social-grants-in-south-africa-by-province/; EWN, “A Basic Income Grant: The Nitty-Gritty and Feasibility of This Proposed Idea,” EWN Web Site, February 2022, https://ewn.co.za/2022/02/09/a-basic-income-grant-the-nitty-gritty-and-feasibility-of-this-proposed-idea.

The social grants available are as follows (“Social Grant Increases”, South African Social Security Agency, 2023, https://www.sassa.gov.za/newsroom/articles/Pages/Social-Grants-Amount.aspx):

- Older person’s grant (old-age pension) R2,080 – R2,100
- Child support grant: R500
- Care dependency grant: R2,080
- Grant-in-aid (if you live on a social grant but need someone to take care of you) R500
- War veteran’s grant: R2,100
- Foster child grant: R1,120
- Disability grant: R2,080

NGOs and welfare organisations receive a small percentage of funding from the government through the Department of Social Development. Each welfare organisation propose programmes for which funding is needed. The funding is sourced from the Department of Social Development, the National Lotteries Commission, donations from private companies or individuals and fundraising projects.

Poverty and inequality are the main contributors to a vulnerable society and remain critical challenges that South Africa grapples with; South Africa is known as one of the most unequal countries in the world. The World Bank reports close to half a million fewer jobs in South Africa at the end of end-2022 than in end-2019, with women and youth persistently more impacted. Poverty was an estimated 62.6% in 2022 based on the upper-middle-income country poverty line, only slightly below its pandemic peak (World Bank, 2023). The poor remains one of the most vulnerable groups in South Africa. The Southern Cape is not immune to the scourge of poverty, inequality and unemployment that prevails in the rest of South Africa, although, in some instances, to a lesser degree.

The national unemployment level was 32,7% in the fourth quarter of 2022 (Stats SA, 2023). The 2021 unemployment rate in Mossel Bay was 20.7% (Western Cape Provincial Treasury, 2021), with evidence that the job losses from PetroSA exacerbated this scenario (Golder Associates, 2021). Escalating unemployment, particularly among women, youth, and vulnerable people, is challenging (WSP, 2023; Mossel Bay Local Municipality, 2021; Western Cape Government, 2020).

During stakeholder engagement for the TEEPSA Block 11B/12B Social Baseline Study (Golder Associates, 2021), I&APs reported gender-based violence as a big concern in the Project area, one that does not receive adequate attention. Victims of gender-based violence can therefore be seen as a vulnerable group.

Other vulnerable groups in the IZoI (based on interactions with I&APs) are the poor, the unemployed, women, youth (substance abuse among young people was mentioned as a specific concern), indigenous peoples (Khoi-San and Nguni peoples), and small-scale fishers.

The Social and Labour Plan (SLP) developed for the Project has identified various initiatives that could support vulnerable groups in the IZoI, such as youth development programmes and programmes to empower women and vulnerable people. TEEPSA is committed to creating a culture of equity and building upon the strengths that diversity brings. To achieve this, one of the initiatives is to increase the number of women as well as other historically disadvantaged persons (HDPs) in management positions.

Furthermore, as part of TotalEnergies Corporate Social Investment programme, TEEPSA will invest in programmes focused on substance abuse and gender-based violence by connecting with relevant NGOs and CBOs to ascertain where assistance is needed.

5.4 HUMAN RIGHTS

The United Nations defines human rights as follows:

"*Human rights are rights inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status. Human rights include the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education, and many more. Everyone is entitled to these rights, without discrimination*" (United Nations, no date).

The UN Declaration on the Rights of Indigenous Peoples (UNDRIP) is a comprehensive international instrument on the rights of Indigenous Peoples. The 46 articles of the declaration acknowledge the historic treatment of indigenous peoples and recognise that individuals are entitled to all rights recognised in international law.

South Africa adopted the UNDRIP in 2016. The Declaration imposes a number of obligations on member states. It also prohibits discrimination against indigenous peoples and promotes their full and effective participation in all matters that concern them.

South Africa's history of apartheid has left a heritage of inequality. This heritage affects the economic potential of many areas and makes life more difficult and riskier for those excluded in times of crisis. South Africa's human rights record is marred by violence against environmental rights defenders, ongoing violence against women, xenophobia, and widespread corruption (Human Rights Watch, 2022).

However, South Africa has a highly professional civil society versed in human rights issues and remedies. This viewpoint was confirmed during the engagement with social baseline respondents (Golder Associates, 2021). Furthermore, the South African media largely operates free but proactive and self-regulatory.

On 28 July 2022, the United Nations General Assembly passed a resolution recognising the right to a clean, healthy, and sustainable environment as a human right (UNEP, 2022). The right to a clean, healthy and sustainable environment is pertinent here, seen explicitly in the light of the recent social mobilisation in France and South Africa against the TEEPSA Project (Green Building Africa, 2022) and other recent social mobilisation efforts against oil and gas exploration projects, such the Shell seismic survey process along the Wild Coast. The latter resulted in some legal challenges against Shell and has reached international audiences (BBC News, 2021; Govender, 2021; Isaac, 2021; le Monde avec AFP, 2021; O'Regan, 2021).

Specifically, the rights of vulnerable populations such as indigenous groups, including the Gourikwas and the Koi-San group (which claims coastal areas) and the rights and impacts on small-scale fishers (including informal and subsistence fishers) are of relevance. An indigenous peoples' representative stated, "It is important for us to have opportunities to express our dissatisfaction about this Project" (WSP Mossel Bay Public Meeting, 2023).

Small-scale fishers argue that offshore oil and gas extraction negatively affects their livelihoods and way of life. Concerns can be linked to the displacement of fishers from fishing grounds due to increasing coastal traffic and infrastructure, designated safety zones, and the effects of oil and gas extraction activities on fish populations (Andrews et al., 2021).

Such displacement can potentially impact the livelihoods of small-scale and subsistence fishers and their right to provide sustenance for themselves and their family. "*Our vessels go from Mossel Bay to Port Elizabeth to catch fish for sale at Mossel Bay market. We are concerned that fishers will not have access to fishing grounds*" (WSP Mossel Bay Public Meeting, 2023).

With a specific focus on the Block 11B/12B Project, it is not foreseen that adverse human rights impacts will result from the normal operations of the Project. Human rights-related aspects that should however be noted for consideration by TEEPSA in the implementation of the proposed development include:

- The rights of indigenous groups such as the Gourikwas and the Koi-San group, who claims coastal areas.[5]
- The rights of and impacts on small-scale fishers, including informal and subsistence fishers.
- The right to a healthy environment.
- A catastrophic pollution event could be seen as a human rights infringement.

The TotalEnergies Charter of Principles and Guidelines regarding Indigenous and Tribal Peoples sets out its commitment to respect the culture, values and lifestyle of the local communities, and contributes to their economical development while carrying out its business. As such, it is understood that TEEPSA will endeavour to honour the principles of the charter together with applicable legal standards, while dealing with Indigenous Peoples.

Establish a stakeholder engagement forum to facilitate ongoing engagement with indigenous people, coastal communities and fisheries associations / organisations, while carrying out its business in the IZoI. Encourage communities to document and report any adverse health effects, incidents, or concerns related to the Project operations.

5.5 SUSTAINABLE DEVELOPMENT

The UN set sustainable development goals (SDGs) as a universal call to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. The social SDGs include: end poverty in all its forms everywhere (SDG 1); end hunger, achieve food security and improved nutrition and promote sustainable agriculture by 2030 (SDG 2); ensure healthy lives and promote well-being for all at all ages (SDG 3); ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (SDG 4); and achieve gender equality and empower women in all spheres of life, including the economic, political and social spheres (SDG 5).

[5] (Golder Associates Africa (Pty) Ltd, 2021k, pp. 2, 3)

According to the SGD Country Report (2019), South Africa has set the following cross-cutting priorities to achieve the social SDGs:

- Improve social protection;
- Improve access to basic services;
- Expand early development childhood programmes;
- Promote higher quality and industry-relevant education and training;
- Address the unequal share of unpaid care and domestic work;
- Promote innovative and sustainable health financing;
- Improve frontline health care services;
- Prioritise social determinants of health; and
- Correct gaps in legislation and policy which address discrimination.

The Sustainability Development Report (2023) ranks South Africa as 110 out of 166 countries. Out of the 5 social SDGs, SDG 3 (good health and well-being) and 5 (gender equality) are improving, while SDG 4 (quality education) is decreasing.

The GRDM has 2% people without any education. In total, the number of people with primary and secondary education is 46.5%, while 31.1% of people in the City has matric. Only 3.7% of people in the GRDM have an undergraduate qualification. GRDM's functional literacy rate was 87.63% in 2019. In 2020, the GRDM municipal area had a total of 170 public ordinary schools, decreasing by 1 from 2019. In an effort to alleviate some of the funding challenges the Western Cape Department of Education (WCED) offered certain fee-paying schools to become no-fee schools. As such 131 schools (77.1 %) within the GRDM are registered with the WCED as no-fee schools.

The number of schools with libraries/media centres has declined from 107 in 2017 to 95 in 2020. Given that access to libraries and media centres can have a positive impact on the overall quality of education, there is room for expansion in this regard (Garden Route District municipality, 2021).

In accordance with Section 41 of the Mineral Petroleum Resources Development Plan Regulations (MPRD regulations), TEEPSA is required to prepare a social and labour plan (SLP) for the Project. Based on the draft SLP, which will focus on the GLM and MBLM for the first five-year cycle, the following is being considered for implementation:

- HRD Development: TEEPSA aims to implement a multipronged Human Resources Development Programme (HRDP), in collaboration with its JV partners. The HRDP will be implemented and focused on the immediate communities in the primary focus areas of the Block 11B/12B project particularly those from local municipalities within the GRDM and the Sarah Baartman District Municipality (SBDM). These municipalities include Hessequa, Mossel Bay, George, Knysna, Bitou, Kou-Kamma and Kouga local municipalities. Nelson Mandela Bay Metropolitan Municipality is also included in the primary focus area. In line with the requirements of the MPRDA, the Company will impose HRDP requirement on its partners to ensures an integrated approach to Human Resource Development.
- Adult education and training: TEEPSA will prioritise local hiring, along with community Adult Education and Training (AET) development.

- Portable skills: TEEPSA is committed to a skills development strategy, which promotes portability of skills for the future, but also, as a primary objective, ensures that TEEPSA and its core contractors meet the operational requirements. An additional focus of the skills development initiatives anticipated is to provide skills that can be utilized not only in the formal sector but also in the informal sector.
- Learnerships: Learnership programmes will help community members from the identified municipalities in the IZoI, primary and secondary study areas earn relevant NQF-accredited qualifications that combine structured practical work experience and structured theoretical training. These include work and school. Based on the nature of the jobs that will be required at the production operation, it is possible that learnerships will be offered for the following positions:
    - Boilermakers.
    - Electricians.
    - Fitters.
    - Welders.
    - Instrument mechanics.
    - Riggers.
    - Roustabouts.
    - Environment, Health & Safety, Hygiene Officers.
    - Marine crews.
    - Cooks / Chefs.
    - Stores / Logistics.
- Internships and bursaries: Internships and bursaries will be offered to help the Project develop the skills and competences needed for staffing plans. Bursaries will be available both to internal and external candidates. Bursaries will be awarded to students with the potential to succeed.
- External bursary students will preferably be selected from the local communities who will be informed of the availability of such bursaries through a variety of communication structures including local community structures, tertiary institutions and advertisements in the local press. TEEPSA will liaise and work closely with local Universities and University of Technologies to identify top students.
- The liaison with these institutions would also be to ensure the training provided meets business requirements. Bursary funding will be inclusive of the costs of finance to meet enrolment fees and study costs.
- Students will be required to pass all their subjects to keep the bursary provided. However special circumstances may be considered at times. Mentors will play an extensive role in the development of bursary students. Mentoring will take place while the student is at the tertiary institution or doing vocational work at the operation.
- It is anticipated that bursaries will focus on, but not be limited to, the following fields:
    - Chemistry.
    - Analytical chemistry.
    - Geology.
    - Control systems.
    - Financial, People and Support fields
    - Renewable Energy skills.

- Environmental health and Social Sciences.

- Internships will offer high quality, structured practical work experience directly linked to fields of study. The manpower plan will be the key driver in terms of which positions will be allocated internships based on:
  - Hard-to-fill vacancies.
  - Core and critical skills.
- Interns will be mentored during their in-service training. Internship programmes will be designed to ensure a logical sequence, build on skills and competencies acquired during the formal study but contribute to supporting TEEPSA's operational requirements.
- Graduate development programme: TotalEnergies has implemented a graduate development programme which is managed through its Marketing Services Branch.
- Employment equity: TEEPSA is committed to creating a culture of equity and building upon the strengths that diversity brings. To achieve this, TEEPSA will strive to:
  - Eliminate unfair discrimination within the company.
  - Ensure that the company is recognised as an equal opportunities' employer.
  - Establish representation of designated groups in all occupational levels of the production operation.
  - Integrate the production operation's equity initiatives with the terms of the Skills Development Act, as far as is practically possible.
  - Increase the number of women as well as other HDPs in management positions.
- Local economic development projects: TEEPSA has committed to invest in local economic development projects. These projects include:
  - MBM: Business Incubator Programme
  - MBM: Community / Household Gardens
  - MBM: Youth Development Programmes
  - MBM: Provision of solar water geysers
  - MBM: Programmes to empower women and vulnerable people
  - GLM: Project to be confirmed.

Cross-cutting themes are broad based and complex issues that are recognised and integrated into the issues and aspects that have been considered in this assessment. The following such themes are relevant to the Project:

- Tangible and intangible cultural heritage;
- Landscape and seascape;
- Vulnerable groups; and
- Human rights.

6 IMPACT SCREENING

The following potential social impacts have been identified based on the Project activities and baseline.

6.1 SOCIAL IMPACTS

6.1.1 Impact on Fishing Activities

Fishing is important for coastal communities. The temporary and permanent safety zones established around Project infrastructure could interfere with access to commercial and small-scale fishing grounds.

6.1.2 Project-induced Influx

Any new development has the potential to stimulate project-induced in-migration, particularly where unemployment is high. The 2019 unemployment rate in Mossel Bay was between 15.3% and 15.6% compared to the national unemployment level of 34.9% (third quarter of 2019). There is evidence that the job losses from PetroSA exacerbate this scenario.[6] Considerable in-migration can have implications on municipal service and infrastructure within the MBLM. However, due to the specific nature of the Project (relatively low local job creation potential, cyclical nature of expat deployment) and the offshore location of the activities, it is not expected that there will be any significant direct project-related population change due to the Project.

As such, it is unlikely that there will be conflict arising from the introduction of people dissimilar in age, gender, racial and ethnic composition in the local communities within the IZoI. Newcomers may create problems, as there is a motion against employing “outsiders”. This viewpoint is exacerbated if there are skilled or unskilled individuals from within the community capable of executing the work. It is envisaged that the limited Project personnel onshore will reside within their respective communities in privately owned or rented accommodation.

6.1.3 Community Health, Safety and Security

Since most of the Project activities will take place offshore and there are limited onshore Project activities, potential impacts on community health, safety and security are unlikely. However, when project workers mix with local communities, even if contact is limited, there is always the possibility of an increase in anti-social behaviour, a lack of sensitivity towards and respect for local customs and traditions and an increase in communicable diseases. Furthermore, emissions from the drilling rig and support and supply vessels while offshore and in port could impact on the health of communities. Lastly, security risks could arise if tensions / conflict is caused if fishers are asked to leave safety zones assocaited with the Project.

6.1.4 Pressure on Community Infrastructure and Services

There is a shortage of affordable housing in the MBLM.[7] The MBLM constructed 2400 houses in vulnerable communities during 2020. However, it is anticipated that there will only be apprximately 45 contractor employees onshore and a further five to 10 TEEPSA employees on- and offshore. The TEEPSA workforce will reside in privately owned or rented accommodation within their respective

[6] (Golder Associates Africa (Pty) Ltd, 2021, p. 16)

[7] (Golder Associates Africa (Pty) Ltd, 2021i, p. 2, 2021, p. 20)

communities. It is improbable that the additional housing requirements will pressure the MBLM. It is not foreseen that the proposed Project will place substantial pressure on municipal infrastructure and services.

6.1.5 MBLM Spatial Planning and Land Use

The MBLM land use process is regulated mainly by the Spatial Development Framework (SDF). The SDF indicates the PetroSA GTL plant as a development node. This node will synergise with the proposed Block 11B/12B Project. Apart from this aspect, although the oil and gas sector does not feature in the SDF, there is no apparent conflict in land use requirements or future spatial planning needs. Onshore impacts will likely consist of a project laydown area and the use of the Mossel Bay harbour as a logistical support base. TEEPSA will use existing support facilities at the port.

6.1.6 Household Livelihood

Mossel Bay is known for its tourism, trade, port, industrial, fishing and service centre activities. Mossel Bay has an industrial focus, and a Special Economic Zone is being proposed for the town. The PetroSA GTL plant and Mossel Bay harbour are essential infrastructure for the region. PetroSA has an uncertain future in terms of gas extraction and its financial standing (PetroSA is recorded as making a R5.6 billion loss in 2020). The MBLM faces poverty, unemployment, and lack of access to services. The 2016 poverty rate showed that people living in poverty in the Mossel Bay municipal area fell from 3.2% cent of the population in 2011 to 2.1 %. Poverty reduction is positive, as it reduces the pressure on the financial resources of municipalities. The poor below the poverty line decreased from 43,5% (2011) to 43% (2016). However, the demonstrated poverty intensity is still high.

The unemployment rate currently stands at 15.3 per cent, with a labour participation rate of 62.7 per cent. The labour force has approximately 33.6% skilled workers, 41.5% semi-skilled and 24.9% low skilled workers. Unemployment remains a key social challenge likely exacerbated by the staff reduction of PetroSA and a subdued manufacturing sector. The Cape Economic Development Partnership stated that businesses in the MBLM are all affected by the downscaling of PetroSA.[8]

The Cape Economic Development Partnership confirmed that the oil and gas sector is seen as a key sector. Businesses in the sector have good relationships with TEEPSA. The expectation is that the TEEPSA Block 11B/12B Project will expand on the economic injection and growth in the area. Mossel Bay was built around the oil and gas industry. The businesses are all affected by the downscaling of PetroSA. If TEEPSA cannot revive the industry, many businesses will close. [9]

The exact number of staff to be employed is uncertain at this stage. Preliminary indicators are that there will be some 45 contractor employees onshore and a further five to 10 TEEPSA employees on- and offshore. However, sourcing will predominantly be from the Mossel Bay Municipality and the Garden Route District Municipality, depending on skills requirements.

Although the Block 11B/12B Project will likely only create limited direct employment opportunities, it will increase downstream economic activity in terms of local procurement, vehicle and pipeline repairs, maintenance, and ad-hoc services during the production phase. The proposed development will also support PetroSA production capabilities.

[8] (Golder Associates Africa (Pty) Ltd, 2021, p. 15; Mossel Bay Local Municipality, 2021, p. 28; Urban-Econ, 2021, p. 43; Western Cape Government, 2020, p. 10; Western Cape Government Provincial Treasury, 2020, p. 457)

[9] (Golder Associates Africa (Pty) Ltd, 2021n, p. 2)

There will be local, regional, and national benefits through taxes, social development projects and support via the social and labour plans. Local procurement, local services and diverse support from Mossel Bay will further enhance the economic benefit.

Possible local economic development projects identified in the TEEPSA social and labour plan for the Project focusses on income generation and green infrastructure. The preliminary budgetary allocation for the social and labour plan (SLP) allocates approximately R36 million for local economic development initiatives (over 5 years).

6.1.7 Major Accidental Events

A major accidental event, such as a pipeline leak, well blowout, and vessel collision has a low probability of occurrence. However, should it occur, there will be significant adverse consequences for coastal communities.

6.2 Issues With Negligible Social Impact

The issues screened out of the impact assessment are shown in Table 6-1. These issues are deemed to have a negligible effect on the social conditions, based on an assessment of Project activities and the baseline conditions within the Project IZoI:

Table 6-1 –Issues with Negligible Social Impact

No.	Potential Impact	Reason not Further Assessed
1	Possibility of Project-induced in-migration; introduction of people dissimilar in age, gender, racial and ethnic composition	Due to the specific nature of the Project (relatively low local job creation potential, cyclical nature of ex-pat deployment), the specialised nature of work required and the offshore location of the development plus its distance from shore, it is not expected that there will be any significant direct Project-induced in-migration or impacts relating to the introduction into the IZoI of people dissimilar in age, gender, racial and ethnic composition.
2	Impacts on municipal spatial planning and land uses	The offshore location of the bulk of the development will minimise spatial impacts on the MBLM. Onshore impacts will likely consist of a Project laydown area and using the Port of Mossel Bay as a logistical support base. TEEPSA will probably use the PetroSA support facilities at the port. MBLM spatial planning and land uses - The MBLM land use process is regulated mainly by the Spatial Development Framework (SDF). The SDF indicates the PetroSA GTL plant as a development node. This node will synergise with the proposed Block 11B/12B Project. Apart from this aspect, although the oil and gas sector does not feature in the SDF, there is no apparent conflict in land use requirements or future spatial planning needs. Onshore impacts will likely consist of a project laydown area and the use of the Mossel Bay harbour as a logistical support base. TEEPSA will use existing support facilities at the port
3	Pressure on community infrastructure and municipal service provision	There is a shortage of affordable housing in the MBLM. The MBLM constructed 2400 houses in vulnerable communities during 2020. However, it is anticipated that there will only be 50 to 60 contractor employees onshore and a further five to 10 TEEPSA employees on- and offshore. The TEEPSA workforce will reside in privately owned or rented accommodation within their respective communities. It is improbable that the additional housing requirements will pressure the MBLM.

No.	Potential Impact	Reason not Further Assessed
		Limited volumes of fresh water will be required during well drilling activities for water supply, cement and drilling mud preparation. The F-A Platform is self-sufficient, generating its own potable water. The onshore logistics base will use the municipal water supply. Waste generated by Project activities will be that cannot be reused or recycled will be disposed onshore at licensed waste disposal facilities in accordance with a project-specific waste management plan. The volumes of waste generated by the project will be relatively small and the disposal of waste will be fully traceable to ensure correct disposal. It is not foreseen that the proposed Project will place unrealistic pressure on municipal infrastructure and services.

7 Impact Assessment for Normal Operating Conditions

This section assesses the anticipated social impacts and benefits resulting from the Project activities during normal operational conditions.

7.1 Impact on Fishing Activities

7.1.1 Source of Impact

The following sources of impact have been identified:

- A restriction on commercial, small-scale, recreational or mariculture activities within Block 11B/12B Application Area with due to:
  - The establishment of 500 m radius temporary safety zones around areas where Project vessels are undertaking exploration and production well drilling, construction, closure or survey activities, including the safety zone established around the metocean buoys that may be deployed for up to a year within Block 11B/12B.
  - The establishment of a safety zone around the area where the subsea infrastructure is installed and a safety zone of 250 m to either side of the pipeline to the F- A Platform.
- A reduction in fish catch due to a decrease in the abundance of fisheries species caused by the disturbance to or destruction of habitat as a result of well drilling, construction, closure and survey activities.

7.1.2 Project Controls

- TEEPSA will ensure that contractors undertake Project activities in a manner consistent with good international industry practice and Best Available Techniques (BAT).

7.1.3 Potential Impact Description

There is no overlap between Block 11B/12B and fishing grounds for inshore hake trawling, demersal longline fishing, mid-water trawl fishing, traditional/commercial line fishing, small pelagic purse seine fishing and south coast rock lobster fishing.

There is an overlap of Block 11B/12B with established fishing grounds for deep-sea hake trawling but this is outside of the Project Development Area and the overlap with the Exploratory Priority Area is limited to a small area along the northern boundary. There is an overlap with large pelagic longline fishing grounds and Block 11B/12B; however, the assessment indicated that this area is fished 38.5% of the time, on average, per annum. There is also limited overlap in the north-east corner of Block 11B/12B with squid jig fishing, and the intensity of fishing is described as ‘high’ in this area.

The establishment of temporary and permanent safety zones within areas of Block 11B/2B is limited to a 500 m radius around the specific locations where Project activities take place. During the exploration, construction and closure phases and while survey work is undertaken, TEESPA will notify SAMSA who will issue a Notice to Mariners regarding the establishment of temporary safety zones for the duration of activities, prior to the commencement of works.

The permanent safety zone around the production wells, subsea infrastructure installation and pipeline will possibly prevent large pelagic longline fishing and squid jig fishing in certain areas of Block 11B/12B.

The reduction in fish catch due to disruption to the abundance of valuable fish species will increase the effort required by fishers to fill quotas. This may result in fishers abandoning the fishing ground altogether or fishers having to leave the industry due to fewer fishing licenses being issued due a reduction in the total allowable catch.

7.1.4 Sensitivity of Receptors

The sensitivity of the fishing sectors (commercial, small-scale, recreational or mariculture) is based on the potential resilience of the sector to disruption from activities such as those proposed in Block 11B/12B.

While all fishing activity is subject to the seasonal weather conditions and annual catch variability, the small-scale sector is not as well established as commercial fishers, in terms of capital investment, access to markets or financial reserves to continue operations when activities are disrupted by limitations on access to established fishing grounds. For the mariculture industry, the cultivation of mariculture species for the export market is an important industry. One mariculture farm operates in the region to the east of Block 11B/12B.

Although some small-scale fishers have an allocation of the catch for commercially important species and may utilise the commercial fishing grounds through cooperative means or as crew on commercial linefishing or squid fishing vessels, most small-scale fishers (as defined in the Marine Living Resources Amendment Act, 2014) limit their activities to within the intertidal zone, the near shore or undertake single day fishing trips.

The sensitivity of the commercial fishing industry, recreational fishing and the mariculture industry is considered **low**. The sensitivity of small-scale fishers is considered **medium** in the western Project Development Area and **high** in the eastern Exploratory Priority Area.

7.1.5 Impact Magnitude (or Consequence)

The magnitude of the impacts of the temporary safety zones established during the well drilling, construction, closure and survey phases on commercial, recreational or mariculture fisheries is considered **very low** due to the short-term and localised extent of the impact that is fully reversible, once the Project activities have ceased at that location.

The magnitude of the impacts of the temporary safety zones for the above Project phases on small-scale fishers is considered **very low** due to the short-term and localised extent of the impact that is fully reversible once activities have ceased.

The magnitude of the impacts of the permanent safety zones for the production phase of the Project on commercial, recreational or mariculture fishers is considered **medium**.

The magnitude of the impacts of the permanent safety zones for the production phase of the Project on small-scale fishers is considered **low**.

The impact of the reduction in fish catch due to disruption to the abundance of fisheries species on commercial, recreational or mariculture is considered **high**. The same impact on small-scale fishers is considered **medium**.

7.1.6 Impact Significance

The significance of the impact of the temporary safety zone on commercial, recreational or mariculture fisheries is **negligible**.

The significance of the impact of the temporary safety zone on small-scale fishers is **very low**.

The significance of the impact of a reduction in fish catch on commercial, recreational or mariculture is **medium**.

The significance of the impact of a reduction in fish catch on small-scale fishers is **medium**.

7.1.7 Identification of Mitigation Measures

The following measures have been identified as having the potential to complement the project controls that will be implemented. These include:

- Once the subsea infrastructure and pipeline is installed, the location will be surveyed and the coordinates sent to South African Maritime Safety Authority (SAMSA). Following a risk assessment, SAMSA will establish a permanent safety zone around the area of installation and instruct the Hydrographic Office to show any areas deemed a risk to navigation as a hazard on navigation charts and bathymetric maps. This will remain on maps and charts for the duration of the production phase and possibly indefinitely, depending on the extend of removal of subsea infrastructure during the closure phase.
- No Project activities will occur in designated Marine Protected Areas and the subsea infrastructure will be placed to minimise any disturbance to ecologically or biologically sensitive areas. If necessary, an out-of-kind offset or compensation will be included in the Biodiversity Management Plan.
- Pre-screening surveys will be undertaken to identify the most appropriate location for well drilling and installation of subsea infrastructure and the pipeline to minimise disturbance to benthic habitat.
- Establish a stakeholder engagement forum to facilitate ongoing engagement with indigenous people, coastal communities and fisheries associations / organisations, while carrying out its business in the IZoI. Encourage communities to document and report any adverse health effects, incidents, or concerns related to the Project operations.
- Implementation of a grievance mechanism that allows the community to lodge a grievance with the Project.

7.1.8 Residual Impact Assessment

The residual effect of the impact of the temporary safety zones is substantially the same as for the unmitigated impact given that the temporary safety zones will be limited spatially and of a short duration and the significance of the residual impact is considered **negligible** for commercial, recreational or mariculture fishing for all Project phases. The significance of the residual impact on small-scale fishers is very low for well drilling, construction, closure and survey phases and **low** for the production phase. This is due to the limited overlap of fishing grounds with the Project Development Area.

The avoidance or minimisation of impacts to benthic habitat is the most effective means of minimising the residual impact of disturbance or destruction of benthic habitat that may result in the reduction in abundance of fish species. With pre-screening surveys informing the placement of production wells and subsea infrastructure together with the pipeline alignment, disturbance to

benthic habitat can be avoided entirely or, minimised. This will reduce the impact to **low** to **negligible**.

7.1.9 Additional Assessment Criteria

The additional assessment criteria summarised in Table 7-1 refer to impacts on fishing activity for commercial and recreational fishing and mariculture activity. In particular, the probability of the impact occurring is considered **unlikely** and, with implementation of Project controls, the impact is considered **fully reversible**. The mitigation potential is **high**. The loss of resource is **low**, and the cumulative potential is **unlikely**.

Table 7-1 – Impacts on Commercial, Recreational Fishing and Mariculture Activity During Well drilling, Construction, Closure and Survey Phases

Project Phase:	Well drilling, construction, closure and survey	
Type of Impact	Direct	
Nature of Impact	Negative	
Sensitivity of Receptor	Low	
	Pre-Mitigation Impact	Residual Impact
Magnitude (Consequence)	Very Low	Very Low
Intensity	Low	Low
Extent	Local	Local
Duration	Short-term	Short-term
Significance	Negligible	Negligible
Probability	Possible	Unlikely
Confidence	High	High
Reversibility	Fully reversible	Fully reversible
Loss of Resources	Low	Low
Mitigation Potential	High	High
Cumulative potential	Unlikely	Unlikely

The additional assessment criteria for small-scale fishers during the well drilling, construction, closure and survey phase is similar to other fishery groups, with the exception that the sensitivity of the receptor is **medium.** The probability of the impact occurring is considered **possible** and, with implementation of Project controls, the impact is considered **fully reversible**. The mitigation potential is **medium**. The loss of resource is **low**, and the cumulative potential is **unlikely**.

Table 7-2 - Impacts on Small-scale Fishers During Well drilling, Construction, Closure and Survey Phases

Project Phase:	Well drilling, construction, closure and survey	
Type of Impact	Direct	
Nature of Impact	Negative	
Sensitivity of Receptor	Medium	
	Pre-Mitigation Impact	Residual Impact
Magnitude (Consequence)	Very Low	Very Low

Project Phase:	Well drilling, construction, closure and survey	
Intensity	Low	Low
Extent	Local	Local
Duration	Short-term	Short-term
Significance	**Very Low**	**Very Low**
Probability	Possible	Unlikely
Confidence	High	High
Reversibility	Fully reversible	Fully reversible
Loss of Resources	Low	Low
Mitigation Potential	Medium	High
Cumulative potential	Unlikely	Unlikely

The additional assessment criteria summarised in Table 7-3 refers to the potential for impacts to commercial and recreational fishing and mariculture activity due to a reduction in fish stocks. The probability of the impact occurring is considered **possible** and with implementation of Project controls, the impact is considered **partially reversible**. The mitigation potential is **very low**. The loss of resource is **high**, and the cumulative potential is **unlikely**.

Table 7-3 - Reduction in fish catch for Commercial, Recreational Fishing and Mariculture Activity During Well drilling, Construction, Closure and Survey Phases

Project Phase:	Well drilling, construction, closure and survey	
Type of Impact	**Direct**	
Nature of Impact	**Negative**	
Sensitivity of Receptor	**Low**	
	Pre-Mitigation Impact	**Residual Impact**
Magnitude (Consequence)	**High**	**Very Low**
Intensity	Medium	Low
Extent	Regional	Local
Duration	Long-term	Short-term
Significance	**Medium**	**Negligible**
Probability	Possible	Possible
Confidence	Medium	Medium
Reversibility	Partially reversible	Fully reversible
Loss of Resources	High	Low
Mitigation Potential	Very Low	High
Cumulative potential	Unlikely	Unlikely

The additional assessment criteria summarised in Table 7-4 refers to the potential for impacts to commercial and recreational fishing and mariculture activity due to a reduction in fish stocks. The probability of the impact occurring is considered **possible.** With the implementation of Project controls, the impact is considered **partially reversible**. The mitigation potential is **low**. The loss of resource is **low**, and the cumulative potential is **unlikely**.

Table 7-4 - Reduction in fish catch for Small-scale Fishers During Well drilling, Construction, Closure and Survey Phases

Project Phase:	**Well drilling, construction, closure and survey**	
Type of Impact	**Direct**	
Nature of Impact	**Negative**	
Sensitivity of Receptor	**High**	
	Pre-Mitigation Impact	**Residual Impact**
Magnitude (Consequence)	**Medium**	**Very Low**
Intensity	Medium	Low
Extent	Local	Local
Duration	Long-term	Medium-term
Significance	**Medium**	**Low**
Probability	Possible	Unlikely
Confidence	Medium	Medium
Reversibility	Partially reversible	Partially reversible
Loss of Resources	High	Low
Mitigation Potential	Low	Medium
Cumulative potential	Unlikely	Unlikely

7.2 COMMUNITY HEALTH, SAFETY AND SECURITY

7.2.1 Source of Impact

The following sources of impacts on community health, safety and security have been identified:

- Potential for anti-social behaviour due to Project personnel socialising and interacting with the local community
- The potential for conflict with established community member due to a disregard for or lack of understanding of local customs and traditions by newcomers in the community
- Emissions from the drilling rig and support and supply vessels while offshore and in port.

7.2.2 Project Controls

The following project controls have been identified:

- TEEPSA will ensure that contractors undertake Project activities in a manner consistent with good international industry practice and BAT.

7.2.3 Potential Impact Description

The potential for anti-social behaviour within communities, including an increase in communicable diseases resulting from Project workers spending leisure time in local communities, even if the opportunity for interaction with the local community is limited. Local communities are aware that security and safety issues are linked to the lack of work opportunities for unskilled or low-skilled job seekers and the anti-social behaviour of criminal activity and substance abuse are linked to the lack of constructive alternatives.

A lack of understanding of local culture and traditions may result in tensions between Project personnel who are newcomers to the community and established community members. The potential for this is limited by the low number of local personnel required for most Project phases. However, the production phase over a 25-year period has the greatest potential for community health, safety and security issues to arise as newcomers seek opportunities associated with the Project.

The emissions from support and supply vessels while they are in port and utilise diesel-powered on-board generators for power supply will potentially increase emissions in the local airshed. There is not sufficient information to confirm the anecdotal attribution of poor health to exceedances of ambient air quality limits, but communities are concerned that Project activities may result in a decrease of ambient air quality with consequent health effects.

7.2.4 Sensitivity of Receptors

The health, safety and security of coastal communities are considered to be of **medium** sensitivity, taking into consideration such factors as the baseline ambient air pollutants on community health and the possibility of anti-social behaviour and communicable diseases due to Project workers spending leisure time within local communities.

Local communities are small tight-knit and have specific cultural norms that, due to a lack of understanding of and respect for these traditions, can result in tensions between established community members and newcomers.

Given that the well drilling, construction, closure and survey phases of the project will rely primarily on expatriates to undertake the work, there is limited opportunity for interaction with local communities. The extended production phase is when impacts on community health, safety and security might manifest and project controls will be required to be pro-actively implemented to mitigate impacts.

7.2.5 Impact Significance

For all phases of the Project, negative impacts on community health, safety and security are expected to have a **local** impact over a **long-term** duration. The intensity of the negative impacts on community health, safety and security is **medium**. The sensitivity of the communities to these impacts is considered assessed as **medium.** As a result, the magnitude of the potential negative impact on community health and safety is **medium**. The significance of the impacts is considered to be **medium** and, with mitigation can be reduced to **low**.

7.2.6 Identification of Mitigation Measures

The following mitigation measures have been identified:

- Engage with local communities, government agencies, and other stakeholders throughout the Project process to understand community concerns regarding health, safety and security issues.
- Maintain the project-specific grievance mechanisms and ensure that it is implemented effectively through independent verification on an annual basis.
- Coordinate with the MBLM emergency and rescue services and provide support (training and resources) as part of TotalEnergies Corporate Social Investment programme.
- As part of TotalEnergies Corporate Social Investment programme, invest in programmes focused on substance abuse and gender-based violence by connecting with relevant NGOs and CBOs to ascertain where assistance is needed.
- Ensure that Project personnel are made aware of local customs and traditions and the need to respect cultural norms.
- Minimise emission from vessels while in port, specifically the use of generators for power, using quayside electrical connection, where available.

7.2.7 Residual Impact Assessment

Given the limited opportunity for interaction with the local community for most of the Project phases and with pro-active implementation of the proposed mitigation measures, impacts to community health, safety and security should be minimised.

Implementation of mitigation measures to address any instances of tensions conflict and health impacts that arise as a result of Project activities will reduce the intensity of the impact to **low** and consequently the residual impact significance is considered to be **low**.

7.2.8 Additional Assessment Criteria

The additional assessment criteria summarised in Table 7-5 refer to impacts on community health, safety and security for all Project phases. In particular, the probability of the impact occurring is considered **likely;** however**,** with implementation of Project controls, the impact is considered **partially reversible**. The mitigation potential is **medium**. The cumulative potential is **unlikely**.

Table 7-5 - Community Health, Safety and Security for All Phases

Project Phase:	**All Phases**	
Type of Impact	**Direct**	
Nature of Impact	**Negative**	
Sensitivity of Receptor	**MEDIUM**	
	Pre-Mitigation Impact	**Residual Impact**
Magnitude (Consequence)	**Medium**	**Low**
Intensity	Medium	Low
Extent	Local	Local
Duration	Long-term	Long-term
Significance	**Medium**	**Low**
Probability	Likely	Likely
Confidence	Medium	Medium

Reversibility	Partially reversible	Partially reversible
Loss of Resources	Low	Low
Mitigation Potential	Medium	Medium
Cumulative potential	Unlikely	Unlikely

7.3 EMPLOYMENT OPPORTUNITIES

7.3.1 Source of Impact

The following sources that can lend support to existing or new employment opportunities associated with all phases of the Project have been identified:

- Spend on goods and services that will be procured locally or within the region that will have a direct, indirect or induced effect in terms of the number of employment opportunities that can be supported by each phase of the Project.

7.3.2 Project Controls

The following measures have been identified to support the employment opportunities supported by the direct, indirect and induced effects of spend during the lifetime of the Project:

- In accordance with Section 41 of the Mineral Petroleum Resources Development Plan Regulations (MPRD regulations), a SLP is required for the proposed Project as well as the development of a Procurement Progression Plan. There is substantial overlap between the project controls and the initiatives identified in the SLP and they complement the objective of improving the outcomes of the economic opportunities. Based on the draft SLP, the following will be considered when procurement occurs:
  - During the life of the production operation, HDP companies will be given preferential status for the supply of goods and services to the operation, provided that they comply with HSE, security & safety quality, price, schedule, quantity, suitability and delivery requirements.
  - All local suppliers will be selected on a tendering procedure basis.
  - TEEPSA will develop a database to define the HDP and status of its potential suppliers, which will include elements of ownership as well as management.
  - The production operation will, from inception, set up its procurement systems to track the ownership status of its suppliers in line with required B-BBEE classifications.
  - Current and all future non-HDP suppliers will be either part of “strengthening, development” or Joint Venture programmes, depending on their level of competitiveness and importance to the Project.
  - Suppliers will be encouraged to subcontract portions of their work to HDPs, or procure goods and services from HDPs, or otherwise assist in promoting the progression of HDPs in the industry.
  - The production operation will consider implementing specific measures to promote HDP success, which may include breaking procurement contracts up into smaller packages; waiver or relaxation of deposits and guarantees; early payment cycles; and simplification of tender procedures, with simplified standard contracts. This will of course depend on the scope of work involved and the risk potential.

- Contractors will be required to maximise local content through the employment and training of HDPs:
    - HDPs should be provided opportunities to be recruited and to improve their skill sets and advance their capabilities.
    - For all training and employment, first priority is given to HDPs.
- Through the provision of goods and services by local companies and HDPs.
- Through technology transfer & capacity building programmes, aiming at enhancing the local participation."
- TEEPSA's local recruitment procedure will be used to guide the recruitment process. The procedure should be disclosed to communities through engagement undertaken as part of the corporate stakeholder engagement process.

7.3.3 Potential Impact Description

Given the highly specialised nature of the equipment used in offshore oil and gas, the procurement of technical equipment in the local market is unlikely and most of the subsea infrastructure will be procured internationally and shipped to South Africa for installation. The limited opportunity for local content in the well drilling, construction, closure and survey phases of the project will curtail the Project spend in the South African economy and, consequently, the employment opportunities that the spend would support.

The 25-year production phase provides the greatest opportunity for Project spend to support employment opportunities; particularly if goods and services required for the ongoing maintenance and periodic refurbishment of the support and supply vessels and the F-A Platform can be procured locally.

Economic modelling (Urban-Econ, 2023) suggests that the spend in the various Project phases could support the following employment opportunities (see Table 7-6).

Table 7-6 – Estimated Employment Opportunities

Project Phase	Direct	Indirect	Induced	Total
Exploration Wells	205	331	342	878
Construction (Production Wells and Subsea Infrastructure Installation)	634	801	651	2 086
Production	266	1 201	1 011	2 478
Closure	396	737	723	1 856
TOTAL	**1 501**	**3 070**	**2 727**	**7 298**

Adapted from Urban-Econ SAM Modelling, 2023

The employment opportunities that may be supported are not necessarily new opportunities but may be existing employment which the Project will contribute to sustaining.

The economic assessment modelled a scenario that included the spend incurred for a refurbishment of the F-A Platform. Given that most of the equipment required for the upgrade is available in South Africa, or can be locally fabricated, the impact of high local content spend is to increase the significance of the impact on employment opportunities in the short-term.

7.3.4 Sensitivity of Receptors

In 2021, the three largest sectors contributing to the MBLM economy include finance, insurance, real estate and business services (34.5%), wholesale and retail trade, catering and accommodation (14.4%) and manufacturing (13.68%). The total numbers of jobs in the MBLM formal economy is 25 420, a substantial reduction from the 35 772 reported in 2015 (2017 Socio-economic Profile, Mossel Bay Municipality).

While these industries support numerous employment opportunities; the unemployment rate in the MBLM in 2021was reported as 20.7%. This implies that there is substantial demand for employment opportunities and the 25-year production phase will provide the opportunity to reskill and train job seekers to take up the skilled and semi-skilled positions that are created directly by the Project or are supported by the demand for goods and services in the local and regional economy.

The public consultation process undertaken as part of the Scoping phase for the ESIA highlighted the expectation among local communities that the Block 11B/12B project will create numerous opportunities in the IZoI, not only employment opportunities but also opportunities for local supplier to be considered as service providers and suppliers.

The sensitivity to employment opportunities generated by the Project is considered **low,** given the misalignment of skills requirement for the Project and the skills availability in the IzoI, together with the requirement for specialist plant and equipment for the Project components.

7.3.5 Impact Magnitude (or Consequence)

The Project spend is expected to have the greatest impact in sectors with established linkages to the oil and gas sector and will likely support employment opportunities in the local manufacturing sector. The magnitude of the impact is considered to be **low**.

7.3.6 Impact Significance

The impact will have a **local** extent, the magnitude of the employment opportunities is expected to be **low** and the significance of the impact is considered **low**.

7.3.7 Identification of Enhancement Measures

No additional enhancement measures were identified over and above the Project controls.

7.3.8 Residual Impact Assessment

The proposed mitigation measures could enhance the impacts of economic effects generated by the direct, indirect and induced effects of Project spend. If the mitigation measures are successfully implemented, the residual impact will increase to **medium**, .

7.3.9 Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-7. The positive impact on economic opportunities is **irreversible** and the magnitude of the effect is **low**, with **long-term** effects.

Table 7-7 - Economic Effects for All Project Phases

Project Phase:	All Phases
Type of Impact	**Direct**
Nature of Impact	**Positive**

Project Phase:	All Phases	
Sensitivity of Receptor	**LOW**	
	Pre-Mitigation Impact	**Residual Impact**
Magnitude (Consequence)	Medium	**High**
Intensity	Medium	High
Extent	Local	Local
Duration	Long-term	Long-term
Significance	**Low+**	**Medium+**
Probability	Highly Likely	Highly Likely
Confidence	Medium	Medium
Reversibility	Irreversible	Irreversible
Loss of Resources	Low	Low
Mitigation Potential	High	High
Cumulative potential	Possible	Possible

7.4 HOUSEHOLD LIVELIHOOD EFFECTS

7.4.1 Source of Impact

The following impacts have been identified on household livelihoods due to Project activities in all phases of the Project:

- Adverse impacts on livelihoods of small-scale fishers resulting from to a reduction in fish catch due to a decrease in the abundance of fisheries species caused by the disturbance to or destruction of habitat (as described in section 7.1.3)
- An increase in household livelihood resulting from direct income generation due to increased employment opportunities generated by the Project, whether these opportunities are direct, indirect or induced.

7.4.2 Project Controls

The following project controls have been identified:

- As per section 7.3.2 specifically:
  - TEEPSA will develop a database to define the HDP and status of its potential suppliers, which will include elements of ownership as well as management.
  - Current and all future non-HDP suppliers will be either part of “strengthening, development” or Joint Venture programmes, depending on their level of competitiveness and importance to the Project.
  - Suppliers will be encouraged to subcontract portions of their work to HDPs, or procure goods and services from HDPs, or otherwise assist in promoting the progression of HDPs in the industry
  - Contractors will be required to maximise local content through the employment and training of HDPs:

- HDPs should be provided opportunities to be recruited and to improve their skill sets and advance their capabilities.
- For all training and employment, first priority is given to HDPs.

- TEEPSA's local recruitment procedure will be used to guide the recruitment process. The procedure should be disclosed to communities through engagement undertaken as part of the corporate stakeholder engagement process.

7.4.3 Potential Impact Description

The impact on household livelihoods will depend on the number of direct, indirect and induced employment opportunities supported by the Project activities. Where households are able to benefit from these opportunities the outcome magnitude is **medium** and the significance of the benefit is **medium**.

The need to minimise Project activities impacting on households that are dependent on fishing activities for their livelihood is to prevent a differential impact falling on those households where the security of the livelihood is marginal and any reduction in the ability to maintain the livelihood activity will affect food security and the general wellbeing of the household.

7.4.4 Sensitivity of Receptors

The sensitivity of household livelihood to the during the construction phase is of **medium sensitivity**, as these receptors are likely to derive a substantial level of benefits or opportunities from the Project. The number of community members benefiting from construction phase economic activities is deemed to be high considering the number of local employment opportunities available, the size of the population in question and the extent of the primary study area.

7.4.5 Impact Magnitude (or Consequence)

Positive impacts on household livelihood are expected to be **local** and will be over the **long-term** given the duration of the Project lifecycle. The intensity of the positive impacts on household livelihood is **medium** and the magnitude of the potential positive impact on household livelihood is **medium**.

7.4.6 Impact Significance

Considering the magnitude of the potential positive impact on household livelihood (**medium**) and the **medium sensitivity** of receptors, the impact significance is **medium**.

7.4.7 Identification of Mitigation Measures

The following additional mitigation measure was identified:

- Pre-screening surveys will be undertaken to identify the most appropriate location for well drilling and installation of subsea infrastructure and the pipeline to minimise disturbance to benthic habitat.

7.4.8 Residual Impact Assessment

The significance of the residual impact is **high**, given the **regional** extent and **long-term** duration of the positive impact.

7.4.9 Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-8. The positive impacts on the activities of small-scale fishers during the exploration phase are considered to be **likely** with a **low** enhancement potential and **possible** cumulative potential.

Table 7-8 - Household Livelihoods for All Project Phases

Type of Impact	Direct	
Nature of Impact	**Positive**	
Sensitivity of Receptor	**MEDIUM**	
	Pre-Mitigation Impact	**Residual Impact**
Magnitude (Consequence)	Medium	High
Intensity	Medium	Medium
Extent	Local	Regional
Duration	Long-term	Long-term
Significance	**Medium+**	**High+**
Probability	Likely	Likely
Confidence	Medium	Medium
Reversibility	Partially Reversible	Partially Reversible
Loss of Resources	Low	Low
Mitigation Potential	Low	Low
Cumulative potential	Possible	Possible

7.5 Impact Assessment Summary – Normal Operations

The summary of the assessment for Project activities and impacts is shown in Table 7-9.

Table 7-9 – Impact Summary Table: Exploration Phase

No.	Aspects	Impacts on Main Receptors	Pre-Mitigation Significance	Key Project Controls and Mitigation / Enhancement Measures	Residual Significance
1	A restriction on commercial and recreational or mariculture activities within Block11B/12B Application Area (well drilling, construction, closure and survey phases)	Commercial and recreational fishing and mariculture activities	**Negligible**	• Once the subsea infrastructure and pipeline is installed, the location will be surveyed and the coordinates sent to SAMSA. Following a risk assessment, SAMSA will establish a permanent safety zone around the area of installation. • No Project activities will occur in designated Marine Protected Areas and the subsea infrastructure will be placed to minimise any disturbance to ecologically or biologically sensitive areas. If necessary, an out-of-kind offset or compensation will be included in the Biodiversity Management Plan. • Pre-screening surveys will be undertaken to identify the most appropriate location for well drilling and installation of subsea infrastructure and the pipeline to minimise disturbance to benthic habitat.	**Negligible**
2	A restriction on small-scale fishing within Block11B/12B Application Area	Small-scale fishers	**Negligible**		**Negligible**
3	A restriction on commercial and recreational or mariculture activities within Block11B/12B Application Area (production phase)	Commercial and recreational fishing and mariculture activities	**Very Low**		**Very low**
4	A restriction on small-scale fishing within	Small-scale fishers	**Medium**		**Low+**

No.	Aspects	Impacts on Main Receptors	Pre-Mitigation Significance	Key Project Controls and Mitigation / Enhancement Measures	Residual Significance
	Block11B/12B Application Area (production phase)				
5	Reduction in fish catch (commercial and recreational or mariculture activities)	Commercial and recreational fishing and mariculture activities	**Medium**		**Negligible**
6	Reduction in fish catch	Small-scale fishers	**High**		**Very Low**
7	All Phases	Community Health, Safety and Security	**Medium**	• Potential for anti-social behaviour due to Project personnel socialising and interacting with the local community • The potential for conflict with established community member due to a disregard for or lack of understanding of local customs and traditions by newcomers in the community • Emissions from the drilling rig and support and supply vessels while offshore and in port	**Low**
8	Economic Opportunities	Community and households	**Low+**	• There is substantial overlap between the project controls and the initiatives identified in the SLP and they complement the objective of improving the outcomes of the economic opportunities. Based on the draft SLP, the following will be considered when procurement occurs: • During the life of the production operation, HDP companies will be given preferential status for the supply of goods and services to the operation, provided that they comply with HSE, security & safety quality, price, schedule, quantity, suitability and delivery requirements. • All local suppliers will be selected on a tendering procedure basis.	**Medium+**
9	Household Livelihood	Households	**Medium+**		**High+**

No.	Aspects	Impacts on Main Receptors	Pre-Mitigation Significance	Key Project Controls and Mitigation / Enhancement Measures	Residual Significance

				• TEEPSA will develop a database to define the HDP and status of its potential suppliers, which will include elements of ownership as well as management.
				• The production operation will, from inception, set up its procurement systems to track the ownership status of its suppliers in line with required B-BBEE classifications.
				• Current and all future non-HDP suppliers will be either part of "strengthening, development" or Joint Venture programmes, depending on their level of competitiveness and importance to the Project.
				• Suppliers will be encouraged to subcontract portions of their work to HDPs, or procure goods and services from HDPs, or otherwise assist in promoting the progression of HDPs in the industry.
				• The production operation will consider implementing specific measures to promote HDP success, which may include breaking procurement contracts up into smaller packages; waiver or relaxation of deposits and guarantees; early payment cycles; and simplification of tender procedures, with simplified standard contracts. This will of course depend on the scope of work involved and the risk potential.
				• Contractors will be required to maximise local content through the employment and training of HDPs:
				  • HDPs should be provided opportunities to be recruited and to improve their skill sets and advance their capabilities.
				  • For all training and employment, first priority is given to HDPs.
				• Through the provision of goods and services by local companies and HDPs.
				• Through technology transfer & capacity building programmes, aiming at enhancing the local participation."
				• TEEPSA's local recruitment procedure will be used to guide the recruitment process. The procedure should be disclosed to communities through engagement undertaken as part of the corporate stakeholder engagement process.	

8 IMPACT ASSESSMENT - UNPLANNED EVENTS

8.1 Well Blowout and Pipe Rupture –Project Development Area

8.1.1 Impacts on Household Livelihood

8.1.1.1 Source of impact

The greatest threat on the marine environment from the Project is the risk of a major spill of hydrocarbons occurring either from a blowout or loss of well control, or rupture of the production pipeline.

The IOGP (International Association of Oil & Gas Producers) Report 434-02 (2019) contains the following definitions related to blowouts:

- Blowout: an incident where formation fluid flows out of the well or between formation layers after all the predefined technical well barriers or the activation of the same have failed.
- Surface blowout: Uncontrolled incidents with surface flow and includes subsea releases, e.g., from topside or subsea wellhead, drill floor or Christmas tree.
- Underground blowout: Underground flow only or with limited surface flow where minor flow occurred and typically the BOP has been activated.
- Kick: During drilling, the drilling mud compensates the reservoir pressure. If the mud density is too low compared to the actual reservoir pressure, or if the well integrity cannot ensure this counterpressure, then hydrocarbons can flow through the wellbore – this phenomenon is known as a “kick” – and this can quickly escalate into a blowout if not promptly identified and addressed.

The term “blowout” does therefore does not necessarily infer that this will lead to a major uncontrolled flow of hydrocarbons from the well. In fact it relates to the failure of a technical barrier when a “kick” is happening in the well.

Industry standards require that a minimum of two barriers is maintained at all time during drilling. If one of the barriers has technical integrity issues then operations will stop and the issue will be addressed. If a “kick” is detected, the drill entry point will be isolated by closing in the well, thus reducing the probability of a blowout. A heavier fluid will then be introduced into the well to raise the hydrostatic pressure and achieve a balance. Meanwhile, the fluid or gas that infiltrated the wellbore will slowly be evacuated in a controlled and safe manner.

The probability of a well blowout occurring is considered to be extremely low. Offshore South Africa, 358 wells have been drilled to date (based on shapefile data provided by PASA in 2021) and no well blowouts have been recorded to date. Worldwide offshore, a well blowout database from 1980 until 2019 maintained by Lloyds Register (and IOGP Blowout frequencies Sept 2019) indicates that the frequency of a blowout for exploration wells is in the order of 1.43×10^{-4} (0.000143) per well drilled.

TotalEnergies is a recognised operator in the offshore and deep offshore drilling industry and has developed a set of methodologies to prevent and mitigate blowouts. TotalEnergies has drilled more than 400 offshore exploration wells since 1980. In South Africa, TotalEnergies has successfully drilled two wells in Block 11B/12B (Brulpadda, 2019 and Luiperd, 2020) with no incident.

Failure from subsea pipelines could result from mechanical damage (hooking with anchors and trawls, falling heavy objects, etc.), corrosion and ageing, construction and pipe metal defects, and/or natural conditions such as underwater currents.

8.1.1.2 Impact Description

Large oil spills can have a significant impact on fisheries resources. These impacts can include physical contamination, toxic effects on stock, and direct disruption of fishing activities (Andrews et al. 2021, in Wright et al, 2023). Oil spills can cause serious damage to the environment, including marine habitats, fish, mussel and oyster mariculture areas and the highly valuable abalone, which can also have indirect negative effects on small-scale fisheries and coastal communities that rely on shore-based harvesting of marine resources and economic income through fishing (Andrews et al. 2021, in Wright et al, 2023).

Oil spills could lead to loss of access to fishing grounds with consequent loss of revenue to the fisheries. Oil on and in the water, and on the seabed, will temporarily disrupt fishing and impact normal production (and therefore income). It could also lead to a loss of market confidence may occur leading to price reductions or outright rejection of seafood products by commercial buyers and consumers.

For small-scale and recreational fishers, and mariculture activities, a disruption to fishing resulting from a spill could compromise the food security for coastal communities.

Furthermore, should an oil spill come to shore, this could have a negative impact on tourism in the IZoI. If tourists' access to the shoreline is restricted or if there is a perception that their experience will be affected, fewer tourists may choose to visit the area. Cruise tourism to the Port of Mossel Bay may be halted. The tourism industry is an important component of the local economy in the IZoI and many people rely on the tourism industry for income.

8.1.1.3 Project Controls

The following Project controls will be in place for an unplanned event:

- A "multi-barrier" approach will be implemented to deal with the risk of oil spills. This approach involves defining multiple barriers (avoidance / technical barriers / mitigation measures) to manage environmental risk. The first step and most important priority in applying the mitigation hierarchy to manage the risk of an oil spill is avoidance (or prevention). If these preventive technical and control barriers fail or are not effective under certain conditions, then control and response capabilities (Mitigation Measure) will be in place.
- In the unlikely event of a spill incident resulting from a blowout, an emergency response system will be implemented by TEEPSA to mitigate the consequences of the spill. The size and location of a spill incident will determine the tiered response scenario and actions to be implemented.
- TEEPSA will ensure all the required measures are in place to deal with a spill event, including the preparation and implementation of a Project and well-specific Oil Spill Contingency Plan (OSCP) and Blowout Contingency Plan (BOCP), based on international best practices, and which will be co-ordinated with the South African National Oil Spill Contingency Plan and approved by SAMSA, PASA and DFFE.
- In the unlikely event of oil spill occurring, a process of determining the economic effects and related compensation would be initiated including engagement and consultation with affected

parties in terms of the IPIECA-IOGP guideline document for the economic assessment and compensation for marine oil releases.

- This process typically involves government, insurers, the organisation responsible for the incident, industry organisations and the applicable legal system (including Sections 28 and 30 of the NEMA which outline the requirements for Duty of Care, Remediation of Environmental Damage, and Control of Emergency Incidents).
- All claims will be submitted to DFFE, who will take the necessary steps to establish that the claim is adequately substantiated and reasonable. These claims could include loss or damage to property, grazing lands, livestock, fishing nets, loss of livelihood etc., in South Africa, resulting from the discharge of oil from an offshore installation and also damage or loss caused by methods used to clean up polluted areas during a spill.
- Once the details of each claim have been verified, it will be forwarded to the SAMSA Administration Officer for processing.
- The claims are paid from insurance cover to financially manage the consequences of any unplanned event.
- Proof of this financial insurance and assurances must be provided to PASA.

8.1.1.4 Sensitivity of Receptors

The impact on household livelihood as a result of a well blowout or a pipeline rupture is of **high** sensitivity due to the vulnerability and resilience of receptors involved. Many people in the IZoI rely on the fishing and tourism industries as a source of income.

8.1.1.5 Impact Magnitude (or Consequence)

Oil spill modelling was conducted for the Project. Two separate studies were done; one for the western Project Development Area, which considered a spill of gas and condensate from a well blowout or from a rupture from the pipeline; and one for the eastern Exploratory Priority Area, which assumed a worst-case scenario of a crude oil spill (crude oil is heavier than condensate and the crude hydrocarbons float and form a thick layer on the sea surface). The results from modelling were used to inform the assessment of the impacts of an unforeseen event (well blowout/pipeline rupture, and the resulting oil spill) on the marine ecological systems and beneficial users of the environment (fishing, protected areas etc.).

The oil modelling results for the western Production Development Area indicate that (DHI, 2023a; Wright et al, 2023):

- There is a 90% probability that a spill will extend 250-290 km from the rupture point to the southwest.
- The area affected may overlap with areas of operation of the demersal trawl, hake longline, mid-water trawl, line fishery, large pelagic, small pelagic, rock lobster, and squid jig industries. However, the large pelagic fishery would be impacted the most in terms of area. Based on estimated fishing industry sizes, the largest economic impact of a well blowout is estimated to be on the deep-sea trawl industry (Urban-Econ, 2023). Taking into consideration the employment numbers of the various industries, the deep-sea trawl, squid jig and hake longline industries may be the most affected. The deep-sea trawl and small pelagic industries will be the most affected by a spill from a pipe rupture in terms of economic value and employment (Urban-Econ, 2023).
- Worst-case model results indicate that approximately 64 km of shoreline could potentially be impacted with oil should a well blowout occur in winter (June-August). The maximum oil amount

found on shore based on the worst-case scenario (deterministic simulation) is 1.2-2.8 tons, with a probability of 1.1-4.8%. The probability of oil reaching shore in these concentrations is, however, very low (1-5% across all seasons). The impacted shoreline is predicted to comprise Cape St Francis, Oyster Bay, Huisklip Nature Reserve, Thyspunt, Rebelsrus Private Nature Reserve, Wasserna's Beach.

- Due to the small area of shoreline anticipated to be affected, negligible impact on mariculture and on recreational fishers is expected.

Based on the above, negative impacts on household livelihood are expected to have a **regional impact**. Impacts of a well blowout or a pipeline rupture can be expected to be medium-term. The intensity of the negative impacts on household livelihood is **high**. Therefore, the magnitude of the potential negative impact on community livelihood is **high**.

8.1.1.6 Impact Significance

Considering the magnitude of the potential negative impact on household livelihood (**high**) and the **high sensitivity** of receptors, the impact significance is **high**.

8.1.1.7 Identification of Mitigation Measures

Over and above the Project controls listed above, in order to mitigate the negative impacts on household livelihood due to a well blowout or pipeline rupture, the following mitigation measures are proposed:

- Ensure resources to be mobilised in response to an unplanned event are effectively trained and equipped through periodic training and simulations exercises.
- TEEPSA will seek to work with the relevant local authorities with regard to the development and implementation of the emergency response plan in the unlikely event of a large oil spill.

8.1.1.8 Residual Impact Assessment

The residual impact significance after the above Project controls and mitigation measures have been applied is expected to be **medium**.

8.1.1.9 Additional Assessment Criteria

The additional assessment criteria are summarised in **Table 8-1**. The impact is considered to be **unlikely** should the relevant Project controls be implemented. The impact is considered to be **partially reversible**. The mitigation potential is **medium**. The loss of resource is **medium**, and the cumulative potential is **possible**.

Table 8-1 – Impacts on household livelihood as a result of a well blowout or a pipeline rupture in the Western Production Development Area

Project Phase:	**Well Blowout or Pipe Rupture: Western Production Development Area**	
Type of Impact	**Indirect**	
Nature of Impact	**Negative**	
Sensitivity of Receptor	**HIGH**	
	Pre-Mitigation Impact	**Residual Impact**
Magnitude (Consequence)	**High**	**Medium**
Intensity	High	Medium

Project Phase:	Well Blowout or Pipe Rupture: Western Production Development Area	
Extent	Regional	Regional
Duration	Medium-term	Medium-term
Significance	**High**	**Medium**
Probability	Unlikely	Unlikely
Confidence	Medium	Medium
Reversibility	Partially reversible	Partially reversible
Loss of Resources	Medium	Medium
Mitigation Potential	Medium	Medium
Cumulative potential	Possible	Possible

8.1.2 Impacts on Community Health and Safety

8.1.2.1 Source of impact

See Section 8.1.1.1.

8.1.2.2 Impact Description

Even when lethal impacts are not observed, oil can make fish and shellfish unsafe for humans to eat (Wright et al, 2023). It could also become unsafe to swim or undertake any other recreational activities in the affected coastal waters. Should a large oil spill occur, it is likely that the local authority's emergency response plan would include restricting access to affected beaches and banning fishing and collection of shellfish in certain areas.

Should a large oil spill occur, this could potentially result in emissions through evaporation and from fire on vessels, drill unit or ignition of the highly combustible gas and condensate (from loss of well control). These emissions could impact on human health.

8.1.2.3 Project Controls

Refer to Section 8.1.1.3.

8.1.2.4 Sensitivity of Receptors

Receptors onshore are expected to have **medium** sensitivity, assuming that any risks to community members would be addressed by the local authority's emergency response plan.

8.1.2.5 Impact Magnitude (or Consequence)

Based on modelling results, only a small area of shoreline is anticipated to be affected by a large spill in the western Project Development Area. Therefore, impact intensity is expected to be **low** and impact extent **local**. Impact duration is anticipated to be **short-term**. Impact magnitude is therefore expected to be **very low**.

8.1.2.6 Impact Significance

Taking into account the magnitude of the potential negative impact on community health and safety (very low) and the medium sensitivity of receptors, the impact significance is **very low**.

8.1.2.7 Identification of Mitigation Measures

- Ensure resources to be mobilised in response to an unplanned event are effectively trained and equipped through periodic training and simulations exercises. TEEPSA will seek to work with the relevant local authorities with regard to the development and implementation of the emergency response plan in the unlikely event of a large oil spill.

8.1.2.8 Residual Impact Assessment

The residual impact significance after the Project controls and mitigation measures have been applied is expected to remain **very low**.

8.1.2.9 Additional Assessment Criteria

The additional assessment criteria are summarised in Table 8 1. The impact is considered to be unlikely should the relevant Project controls be implemented. The impact is considered to be **partially reversible**. The mitigation potential is **medium**. The loss of resource is **low**, and the cumulative potential is **possible**.

Table 8-2 – Impacts on community health and safety as a result of a well blowout or a pipeline rupture in the Western Production Development Area

Project Phase:	Well Blowout or Pipe Rupture: Western Production Development Area	
Type of Impact	**Indirect**	
Nature of Impact	**Negative**	
Sensitivity of Receptor	**MEDIUM**	
	Pre-Mitigation Impact	**Residual Impact**
Magnitude (Consequence)	**High**	**Medium**
Intensity	Very Low	Very Low
Extent	Local	Local
Duration	Medium-term	Medium-term
Significance	**Very Low**	**Very Low**
Probability	Unlikely	Unlikely
Confidence	Medium	Medium
Reversibility	Partially reversible	Partially reversible
Loss of Resources	Low	Low
Mitigation Potential	Medium	Medium
Cumulative potential	Possible	Possible

8.2 Well Blowout – Exploratory Priority Area

8.2.1 Impacts on Household Livelihood

8.2.1.1 Source of Impact

Refer to Section 8.1.1.1

8.2.1.2 Potential Impact Description

See Section 8.1.1.2.

8.2.1.3 Project Controls

See 8.1.1.3.

8.2.1.4 Sensitivity of Receptors

Refer to 8.1.1.4.

8.2.1.5 Impact Magnitude (or Consequence)

As indicated in Section 8.1.1.5, oil spill modelling was conducted for the eastern Exploratory Priority Area, which assumed a worst-case scenario of a crude oil spill. The results of the oil spill modelling for the eastern Exploratory Priority Area indicate that (DHI, 2023b; Wright et al, 2023):

- A much larger area would be affected ion the event of a large spill than in the western Project Development Area. Depending on the discharge locality there is a 90-100% probably that a surface slick will spread up to 340 km to the southwest across all seasons. There is also a 90-100% probably that the surface slick will spread 138 km to the north/northeast in winter, a 70% probability of the spill moving north-east towards Gqeberha in summer, and an 80% probability of an autumn spill moving north/north-east towards the east coast of South Africa.
- In the event of a well blowout in the eastern Exploratory Priority Area, there is a very high possibility for an extensive stretch of the shoreline to be affected. For the worst-case, model results indicate that a maximum shoreline impact probability of 100% from George to Gqeberha could take place after a well blowout occurring in autumn (July-Sept). Winter is the worst case, with oil expected to come ashore in the Gqeberha area after approximately 1 day.
- The impact of crude oil spillage will be significant, overlapping with the fishing grounds of most major fisheries of South Africa (demersal trawl, midwater trawl, commercial linefishing, large pelagic longline, small pelagic purse seine, squid jig, south coast rock lobster), small-scale and recreational fisheries. In terms of the most affected fisheries, hake longline, midwater trawl, south coast rock lobster and squid fisheries will have significant direct impacts. This would result in significant disruption to fishery operations in those areas in the short term but impacts of crude oil persisting in the marine system would impact the resource for much longer than this.
- Small-scale and recreational fishers that operate on the south coast (coastline and offshore e.g., those targeting squid) would be significantly impacted by the modelled crude oil spill though significant interruption to normal fishing activities and would be detrimental to the populations of species they target (allocated within the small-scale ‘basket’ of species).
- On the coastline, up to 23.64 % of small-scale fishing grounds are likely to be covered by crude oil in the event of a spillage.
- Given the size of the respective commercial industries in terms of their commercial value, the largest economic impact of a well blowout in the eastern Exploratory Priority Area is estimated to be on the deep-sea trawl and small pelagic fishing industries (Urban-Econ, 2023).

Based on the above, potential negative impacts on household livelihood are expected to have a **regional impact**. Impacts of a crude oil well blowout can be expected to be **long-term** and **high**, given the type and extent of oil spilled. Therefore, the magnitude of the potential negative impact on household livelihood is **very high**.

8.2.1.6 Impact Significance

Considering the magnitude of the potential negative impact on community livelihood (**very high**) and the **high sensitivity** of receptors, the impact significance is **very high**.

8.2.1.7 Identification of Mitigation Measures

See Section 8.1.1.7.

8.2.1.8 Residual Impact Assessment

The residual impacts after the above mitigation measures have been applied can be expected to be **high**.

8.2.1.9 Additional Assessment Criteria

The additional assessment criteria are summarised in **Table 8-3**. The negative impacts on household livelihood as a result of a well blowout eastern Exploratory Priority Area are considered to be unlikely and partially **reversible**. Loss of resources is **high** and the mitigation potential is **medium**.

Table 8-3 – Impacts on community livelihood as a result of a well blowout: Eastern Exploratory Priority Area

Project Phase:	**Well Blowout – Eastern Exploratory Priority Area**	
Type of Impact	**Indirect**	
Nature of Impact	**Negative**	
Sensitivity of Receptor	**VERY HIGH**	
	Pre-Enhancement Impact	**Residual Impact**
Magnitude (Consequence)	**Very high**	**High**
Intensity	Very high	High
Extent	Regional	Regional
Duration	Long-term	Long-term
Significance	**Very high**	**High**
Probability	Unlikely	Unlikely
Confidence	Medium	Medium
Reversibility	Partially reversible	Partially reversible
Loss of Resources	High	High
Mitigation Potential	Medium	Medium
Cumulative potential	Likely	Likely

8.2.2 Impacts on Community Health and Safety

8.2.2.1 Source of Impact

Refer to Section 8.1.1.1.

8.2.2.2 Project Controls

See Project controls in Section 8.1.1.3.

8.2.2.3 Potential Impact Description

Refer to Section 8.1.2.2.

8.2.2.4 Sensitivity of Receptors

See Section 8.1.2.4.

8.2.2.5 Impact Magnitude (or Consequence)

Based on modelling results, an extensive area of shoreline is anticipated to be affected by a large crude oil spill in the eastern Exploratory Priority Area. Therefore, impact intensity is expected to be **high** and impact extent **regional**. Impact duration is anticipated to be **long-term**. Impact magnitude is therefore expected to be **high**.

8.2.2.6 Impact Significance

Taking into account the magnitude of the potential negative impacts on community health and safety (**high**) and the **medium sensitivity** of receptors, the impact significance is **high.**

8.2.2.7 Identification of Mitigation Measures

Refer to Section 8.1.2.7.

8.2.2.8 Residual Impact Assessment

The residual impact significance after the Project controls and mitigation measures have been applied is expected to reduce to **low**.

8.2.2.9 Additional Assessment Criteria

The additional assessment criteria are summarised in **Table 8-4**. The negative impact on community health and safety as a result of a well blowout in the eastern Exploratory Priority Area is **partially reversible.** The mitigation potential is **medium** and cumulative potential **likely**. Loss of resources is **medium**.

Table 8-4 – Impacts on community health and safety as a result of a well blowout in the eastern Exploratory Priority Area

Project Phase:	**Well Blowout – Eastern Exploratory Priority Area**	
Type of Impact	**Indirect**	
Nature of Impact	**Negative**	
Sensitivity of Receptor	**MEDIUM**	
	Pre-Mitigation Impact	**Residual Impact**
Magnitude (Consequence)	Very High	Low
Intensity	High	Low
Extent	Regional	Local
Duration	Long-term	Long-term
Significance	**High**	**Low**
Probability	Unlikely	Unlikely
Confidence	Medium	Medium
Reversibility	Partially reversible	Partially reversible
Loss of Resources	Medium	Medium
Mitigation Potential	Medium	Medium
Cumulative potential	Likely	Likely

8.3 Accidental Vessel Collision or Accident

8.3.1 Impacts on Community Health and Safety

8.3.1.1 Source of Impact

There is an expected increase in vessel traffic during the construction and decommissioning phases of the Project. Block 11B/12B is located within the main vessel traffic routes that pass around southern Africa. The overlap of some fishing areas with the SPS, including the production wells, may result in accidents related to trawling gear.

8.3.1.2 Project Controls

- Compliance with COLREGS (the Convention dealing with safety at sea, particularly to reduce the risk of collisions at sea) and SOLAS (the Convention ensuring that vessels comply with minimum safety standards).
- Ensure vessel transit speed between the survey/drill area and port is a maximum of 12 knots (22 km/hr), except within 25 km of the coast where it is reduced further to 10 knots (18 km/hr).
- During the Construction Phase, a 500 m safety zone will be established around the vessels where the subsea infrastructure and pipeline installation is conducted.
- Radar, facility lighting and designated navigation channels will be used to manage support vessel traffic, tugboats, and supply vessels. The designated safety zones will be enforced with Project patrol boats during well drilling, construction, and decommissioning phases.
- Deployment of metocean buoys will require a temporary safety zone of between a 500 m and 2 km radius on the sea surface (depending on the water depth). All vessels would be excluded from entering this safety zone.
- During the Construction Phase, a 500 m safety zone will be established around the vessels where the subsea infrastructure and pipeline installation is conducted. After installation the location of the production wells, subsea infrastructure and pipeline will be surveyed and marked on bathymetric and navigation charts as a hazard. Maritime shipping, commercial and small-scale fishing sectors will be notified of the presence of the infrastructure.
- For abandoned exploration wells, well heads will be left on the seafloor with an over trawl cap designed to allow for trawling activity without damaging trawling gear.
- Once the closure certificate for the plugged wells is issued by the CA, the requirement for a safety zone will be decided by SAMSA based on an assessment of the risk of the infrastructure as a navigational hazard. Any infrastructure deemed a navigational hazard will remain marked on the navigational charts.

8.3.1.3 Potential Impact Description

Although unlikely, incidents between fishing and recreational vessels, and Project vessels could occur. Fishing trawl nets could also be caught on subsea infrastructure and well heads. Increasing coastal traffic, and the increased likelihood of vessel collisions, could also lead to displacement of fishers from fishing grounds.

8.3.1.4 Sensitivity of Receptors

The sensitivity of receptors is considered to be **medium**, given that safety zones will be communicated via notices to mariners and/or marked on navigation charts.

8.3.1.5 Impact Magnitude

Negative impacts on the health and safety of fishers are expected to have a **local** impact over the **long-term**. The intensity of the impact is however considered to be **high**, given that the impact could lead to loss of life. Therefore, the magnitude of the impact is considered to be **high**.

8.3.1.6 Impact Significance

Taking into account the high magnitude of the impact and the medium sensitivity of receptors, the impact significance is considered to be **high** before mitigation.

8.3.1.7 Identification of Mitigation Measures

Over and above the Project controls listed above, the following mitigation measures are recommended:

- Ensure all Project support vessels are aware of navigation management systems outside Mossel Bay Port.
- Support sea rescue services to ensure that the organisation has sufficient resources and training to deal with vessel-on-vessel collision.

8.3.1.8 Residual Impact Assessment

With the implementation of the Project controls and mitigation measures, impact significance will remain **high**.

8.3.1.9 Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-6. The impact is considered to be **possible** before mitigation, but with mitigation is unlikely. The mitigation potential is **medium**. The loss of resource is **high**, and the cumulative potential is **possible**.

Table 8-5 – Impacts on community health and safety – Vessel Collisions

Project Phase:	All Phases	
Type of Impact	**Direct**	
Nature of Impact	**Negative**	
Sensitivity of Receptor	**MEDIUM**	
	Pre-Mitigation Impact	**Residual Impact**
Magnitude (Consequence)	**Very Low**	**Low**
Intensity	High	High
Extent	Local	Local
Duration	Long-term	Long-term
Significance	**High**	**High**
Probability	Possible	Unlikely
Confidence	Medium	Medium
Reversibility	Partially reversible	Partially reversible
Loss of Resources	High	High
Mitigation Potential	Medium	Medium
Cumulative potential	Possible	Possible

8.4 Impact Assessment Summary – Unplanned Events

Table 8-6 - Impact Summary Table: Pipe Rupture and Well Blowout –Production Development Area

No.	Aspects	Impacts on Main Receptors	Pre-Mitigation Significance	Key Mitigation Measures	Residual Significance
1.1	Well blowout or a pipeline rupture	Impacts on household livelihood	**High**	▪ Ensure resources to be mobilised in response to an unplanned event are effectively trained and equipped through periodic training and simulations exercises. ▪ TEEPSA will seek to work with the relevant local authorities with regard to the development and implementation of the emergency response plan in the unlikely event of a large oil spill.	**Medium**
1.2	Well blowout or a pipeline rupture	Impacts on community health and safety	**Very low**	▪ Same as for Point No. 1.1	**Very low**

Table 8-7: – Impact Summary Table: Well Blowout – Eastern Exploratory Priority Area

No.	Aspects	Impacts on Main Receptors	Pre-Mitigation Significance	Key Project Controls and Mitigation Measures	Residual Significance
2.1	Well blow out	Impacts on household livelihood	**Very high**	See Point No. 1.1	**High**
2.2	Well blow out	Impacts on the community health and safety	**High**	See Point No. 1.2	**Low**

Table 8-8 - Impact Summary Table: Accidental Vessel Collision or Subsea Production System and Trawling Gear Accident

No.	Aspects	Impacts on Main Receptors	Pre-Mitigation Significance	Key Project Controls and Mitigation Measures	Residual Significance
3.1	Vessel collision or subsea production and trawling gear accidents	Impacts on community health and safety	**High**	▪ Ensure all Project support vessels are aware of navigation management systems outside Mossel Bay Port. ▪ Support sea rescue services to ensure that the organisation has sufficient resources and training to deal with vessel-on-vessel collision.	**High**

9 CUMULATIVE IMPACT ASSESSMENT

The EIA Regulations, 2014 require the consideration of the “cumulative impact”, which includes the ‘reasonably foreseeable future impact of an activity’. Cumulative impacts must be considered when assessing the risk and potential impacts of a particular project. Cumulative impacts are those resulting from the incremental effects of a proposed project when added to present, and reasonably foreseeable future actions, regardless of who undertakes them. Cumulative impacts can result from individually minor, but collectively significant actions, taking place over time.

This Chapter considers the cumulative effects that could arise from a combination of the Block 11B/12B Project effects.

Section 9.1 provides a brief overview of historic oil and gas activities in South Africa, to indicate the extent of exploration and development that has taken place in the oil and gas sector.

Based on a review of existing and planned projects within reasonable proximity and/or coincident with the Project, as well as inputs received from I&APs during the Scoping Phase PPP, the existing and approved activities outlined in Section 9.2 have been identified and assessed from a cumulative impact perspective.

In addition, where possible, at a high level, the assessment has included projects which are not yet consented but are in the public domain (Section 9.3). These projects have been referred to as proposed projects and have been included in this Chapter for completeness.

9.1 HISTORIC OIL AND GAS ACTIVITIES

Several oil and gas exploration and production areas exist along the South African coast, including the Orange River Mouth (Orange Basin) offshore the west coast; the south coast (including Bredasdorp, the Outeniqua, the Gamtoos and Algoa Basins) and another two off the east coast (Durban and Zululand Basins). Within these basins, various Licence Blocks have been allocated by DMRE to national and multinational oil and gas companies. Drilling has been conducted in some of the blocks and in others it is still proposed, but the timing of these is unknown.

The Bredasdorp Basin on the Agulhas Bank has been the focus of most oil and gas exploration and drilling activity since 1980, with the development of the Oribi, Oryx and Sable oil fields and F-O gas fields, approximately 120 km south-west of Mossel Bay. Block 9 is located the north-west of Block 11B/12B.

In the entire South African offshore area, there are approximately 358 exploration, appraisal and production wells that have already been drilled; most (56%) of these have been drilled off the South Coast on the Agulhas Bank in relatively shallow waters (less than 250 m water depth).

The Block 11B/12B Project will be the first deep sea production well offshore South Africa[10]. Figure 9-1, obtained from the PASA geoportal, geographically presents the location of drilled wells within the various resource basins.

[10] Note: the first deep sea wells were drilled by TEEPSA in Brulpadda and Luiperd in 2019 and 2020 as part of the Block 11B/12B exploration programme

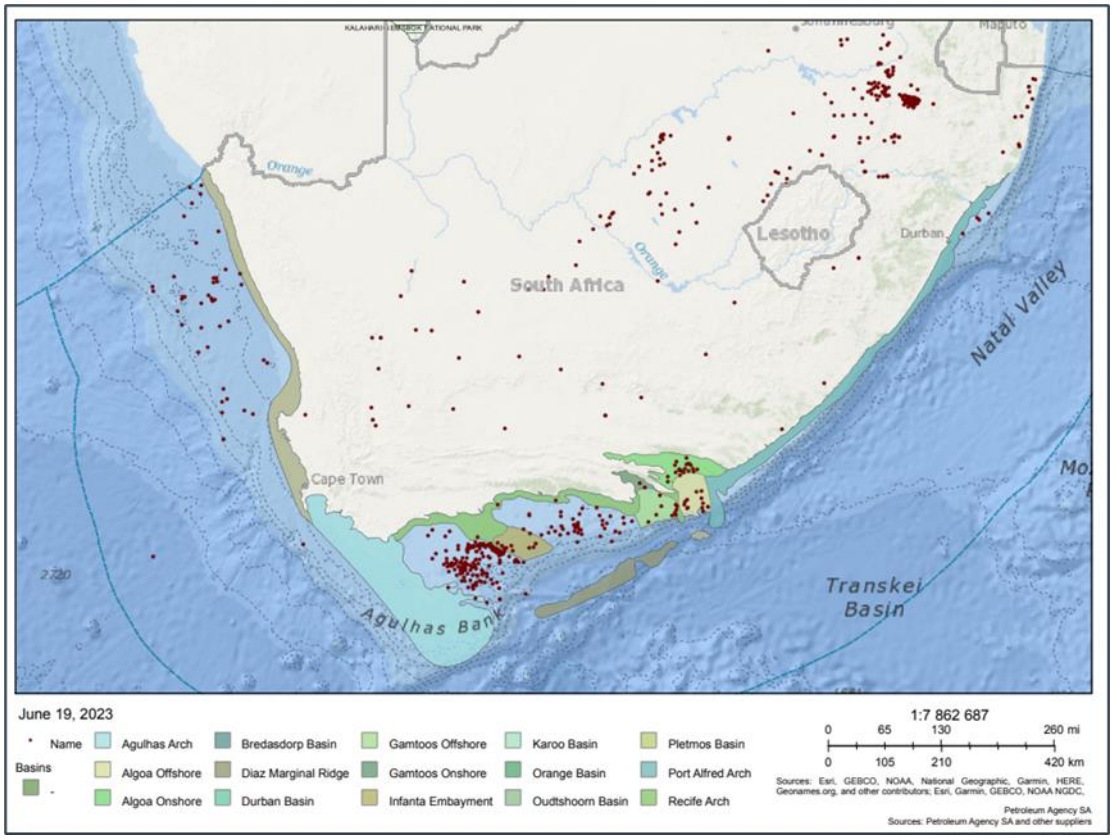

Figure 9-1 - Location of Exploration, Appraisal and Production Well Activities in South Africa

9.2 EXISTING AND APPROVED INFRASTRUCTURE

Table 9-1 provides a list of existing and approved infrastructure that could potentially result in cumulative social impacts, combined with the TEEPSA Block 11B/12B Project.

Table 9-1 – Existing and Approved Infrastructure Within Reasonable Proximity to the Project

Infrastructure	Description	Status	Potential Social Cumulative Impact
Gourikwa Power Station, Mossel Bay	740 MW open cycle gas turbine power station commissioned in 2007. The PetroSA GTL facility supplies the fuel, which is diesel, via a pipeline.	Existing	• Effect on air quality/GHG emissions

Infrastructure	Description	Status	Potential Social Cumulative Impact
Re-commissioning of PetroSA F-A Platform operations, to process gas from Block 11B/12B	Should a commercial agreement be reached between TEEPSA and PetroSA and the relevant authorisations are obtained, the F-A Platform and associated infrastructure will be used to process the gas and condensates.	Existing (in care and maintenance since November 2020)	• Increased marine traffic from Mossel Bay port • Permanent maritime safety zones impacting on small-scale, recreation and subsistence fishers • Influx into IZoI resulting on pressure on public infrastructure and services • Community livelihood impacts in terms of job creation • Vulnerable group impacts in terms of job creation • Negative impacts on intangible cultural heritage, and coastal tourism
TEEPSA Exploration drilling in Block 5/6/7, offshore of the South-West Coast	Exploration in Block 5/6/7 located offshore the southwest coast of South Africa, between Cape Town and Cape Agulhas. Since the first granting of the Exploration Right, two seismic surveys have been undertaken in the Block. Based on the analysis of acquired seismic data, it is proposed that one exploration well is drilled and, depending on success, up to four additional wells in total within the Area of Interest within the Block (i.e. up to five wells in total).	Approved - EA issued on 17 April 2023 and is valid for two years	• No cumulative impacts anticipated as the Block 5/6/7 activities are too distant from Block 11B/12B and the exploration well drilling activities are unlikely to coincide with the production well drilling and construction phases of Block 11B/12B.

9.3 PROPOSED PROJECTS

There are several known applications for infrastructure projects within the Block 11B/12B Area of Influence, including exploration and PR applications. These projects are at various phases of approval and, as such, their implementation is not confirmed.

Where an application has not been approved, the impacts have not been formally assessed as part of this cumulative assessment. However, known project are presented in Table 9-2, for consideration by the CA.

Table 9-2 – Proposed Project Within Reasonable Proximity to the Project

Infrastructure	Description	Status	Potential Social Cumulative Impact
PetroSA Offshore Bypass Pipelines	PetroSA proposes to modify the existing Single-Point Mooring (SPM) subsea bundle by installing two new ~1.4 km steel pipelines on the seabed, parallel to the existing housing structure. The pipelines will terminate in a new Pipeline End Manifold seabed structure and be tied into the existing SPM buoy (to be repositioned) and the existing operating bundle. The pipelines will be launched to sea from the pipeline assembly site at PetroSA's Tank Farm	Proposed – Awaiting decision on final Basic Assessment Report (BAR) submitted in May 2023	Maritime safety zone around pipeline excluding fishing activities Security measures around tank farm
CGG Services SAS (CGG) Proposed speculative 3D seismic survey in the Algoa/Outeniqua Basin, off the south-east coast of South Africa	Proposed 3D survey covering an area of up to 9000 km^2 in a 12 750 km^2 area of interest located offshore between Gqeberha in the east and a point approximately 120 km southeast of Plettenberg Bay in the west. A portion of the area of interest overlaps with the eastern section of Block 11B/12B (see Figure 11-1).	Proposed – Awaiting decision on final BAR submitted in July 2023	Maritime safety zone around survey areas excluding fishing activities
Karpowership – 450MW Gas to Power Powership Project at the Port of Ngqura, within the Coega SEZ, Eastern Cape	Proposed Gas to Power Powership Project at the Port of Ngqura, Nelson Mandela Bay Metropolitan Municipality, Eastern Cape.	Proposed - DFFE refused EA on 7 March 2023. Appeal process underway	Negative impacts on landscape and seascape
The Coega Development Corporation gas to power project, including three power plants and associated infrastructure, within the Coega Special Economic Zone (SEZ), and Port of Ngqura, 20 km northeast of Gqeberha	Proposed LNG terminal, consisting of a berth with off-loading arms within the Port of Ngqura, cryogenic pipelines, storage and handling facilities and re-gasification modules (both on and off-shore). Proposed LNG Infrastructure, floating storage regasification unit, gas pipelines and distribution hub, for the transmission, distribution and reticulation of natural gas within the Coega SEZ and Port of Ngqura. Proposed three Gas to Power plants, each with a 1 000 MW generation capacity (specific generation technologies may vary). Proposed electricity transmission connecting powerlines to evacuate distribute electricity to the previously approved 400 kV lines in the SEZ.	Proposed - No EA secured to date	-

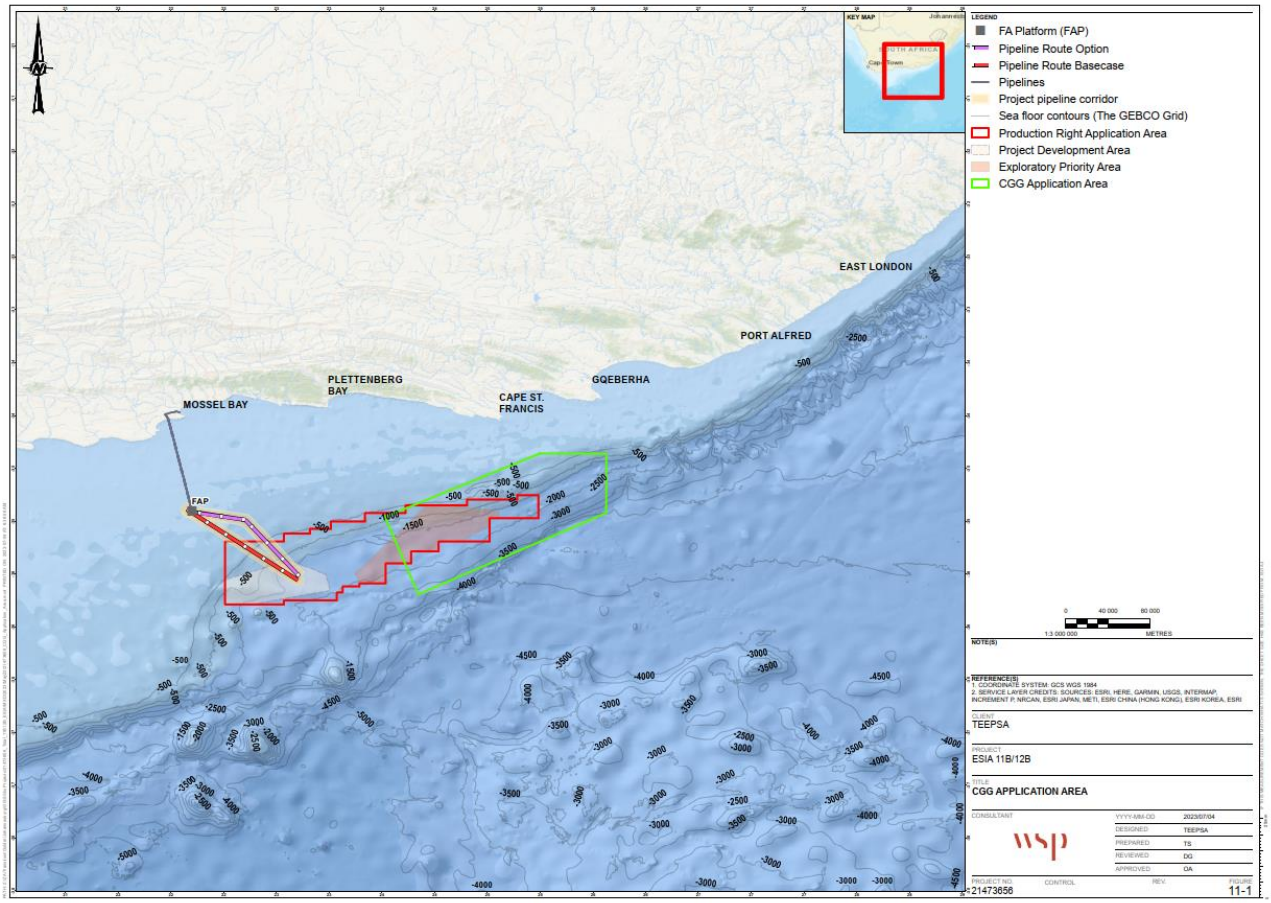

Figure 9-2 - Overlap of the Block 11B/12B and CGG application areas

9.4 CUMULATIVE IMPACT ASSESSMENT

Of all the developments that have been identified as proposed or authorised, the following have potential for cumulative impacts to occur with Block 11B/12B:

- The PetroSA F-A Platform – if the Platform is re-commissioned, the timing of these activities may coincide with the activities of the Block 11B/12B drilling and construction phases. Although Block11B/12B is approximately 40 km to the south of the F-A Platform, there is potential for cumulative impacts due to a temporary loss in access to fishing grounds resulting from the construction activities. The cumulative economic impacts are considered to be a significant impact to the economy of the IZoI, in terms of spending on local goods, services and labour, translating to an increased economic output and GDP; increased employment opportunities and household income.
- Construction related safety zones associated with the Project may impact on fisheries operating within Block 11B/12B and the pipeline corridors, especially Large Pelagics and Squid fisheries. If fishing activities are excluded from the area where seismic survey activities are taking place for the CGG Project, at the same time as well drilling and construction works in Block 11B/12B, disruption to fisheries in terms of access to fishing grounds could be extensive.

10 CONCLUSION AND RECOMMENDATION

10.1 NORMAL OPERATIONS

For normal operations, the following key impacts have been assessed:

Employment opportunities

- The Project's construction phase will support 5 547 direct jobs, the majority of which will be created by PetroSA for the re-commissioning of the F-A Platform and refurbishment / modifications. The Project construction phase, excluding the F-A Platform upgrade, is expected to support 634 direct jobs.
- The main sectors estimated to benefit from employment during construction include manufacturing, trade and accommodation, and general government and community services.
- The drilling of the production, appraisal and exploration wells, installation of the production pipeline and subsea production system, and subsequent decommissioning will create fewer local, direct jobs, given the specialised nature of the work to be done.
- In conjunction with the economic benefits linked to Project activities, there will be investment into local economic development initiatives through the Social and Labour Plan (SLP) prepared as a requirement of the PR application.
- The positive impacts linked to employment opportunities have been assessed as low(+) but could be increased to medium(+), should TEEPSA implement options for local procurement for the production pipeline construction.

Impact on livelihood of fishers

- There is no overlap between Block 11B/12B and fishing grounds for inshore hake trawling, demersal longline fishing, mid-water trawl fishing, traditional/commercial line fishing, small pelagic purse seine fishing and south coast rock lobster fishing.
- There is an overlap of Block 11B/12B with established fishing grounds for deep-sea hake trawling but this is outside of the Project Development Area and the overlap with the Exploratory Priority Area is limited to a small area along the northern boundary. There is an overlap with large pelagic longline fishing grounds and Block 11B/12B; however, the assessment indicated that this area is fished 38.5% of the time, on average, per annum. There is also limited overlap in the north-east corner of Block 11B/12B with squid jig fishing, and the intensity of fishing is described as ‘high’ in this area.
- The establishment of temporary and permanent safety zones within areas of Block 11B/2B is limited to a 500 m radius around the specific locations where Project activities take place. During the exploration, construction and closure phases and while survey work is undertaken, TEESPA will notify SAMSA who will issue a Notice to Mariners regarding the establishment of temporary safety zones for the duration of activities, prior to the commencement of works.
- The permanent safety zone around the production wells, subsea infrastructure installation and pipeline will possibly prevent large pelagic longline fishing and squid jig fishing in certain areas of Block 11B/12B.

- The reduction in fish catch due to disruption to the abundance of valuable fish species will increase the effort required by fishers to fill quotas. This may result in fishers abandoning the fishing ground altogether or fishers having to leave the industry due to fewer fishing licenses being issued due a reduction in the total allowable catch.
- The impact significance of safety zones on commercial, recreational, small-scale fisheries and mariculture fisheries is assessed as very low to negligible. However, the impact significance of reduction in fish habitat is assessed as medium.
- A key mitigation measure for this impact is for TEEPSA to conduct pre-screening surveys to identify the most appropriate location for well drilling and installation of subsea infrastructure and the pipeline to minimise disturbance to benthic habitat.

Community, heath, safety and security

- The potential for anti-social behaviour within communities, including an increase in communicable diseases resulting from Project workers spending leisure time in local communities, even if the opportunity for interaction with the local community is limited. Local communities are aware that security and safety issues are linked to the lack of work opportunities for unskilled or low-skilled job seekers and the anti-social behaviour of criminal activity and substance abuse are linked to the lack of constructive alternatives.
- A lack of understanding of local culture and traditions may result in tensions between Project personnel who are newcomers to the community and established community members. The potential for this is limited by the low number of local personnel required for most Project phases. However, the production phase over a 25-year period has the greatest potential for community health, safety and security issues to arise as newcomers seek opportunities associated with the Project.
- The emissions from support and supply vessels while they are in port and utilise diesel-powered on-board generators for power supply will potentially increase emissions in the local airshed. There is not sufficient information to confirm the anecdotal attribution of poor health to exceedances of ambient air quality limits, but communities are concerned that Project activities may result in a decrease of ambient air quality with consequent health effects.
- These impacts in the absence of mitigation measures are considered to be medium. It has been recommended that TEEPSA engage with communities, government agencies, and other stakeholders throughout the Project process to understand community concerns regarding health, safety and security issues. TEEPSA should also ensure that Project personnel are made aware of local customs and traditions and the need to respect cultural norms.

10.2 UNPLANNED EVENTS

In the unplanned event scenario, several impacts were assessed. All of these were assessed as adverse.

Impact on household livelihood

In the case of the unlikely event of a well blowout or pipeline rupture, oil spills could lead to loss of access to fishing grounds with consequent loss of revenue to the fisheries. For small-scale and recreational fishers, and mariculture activities, a disruption to fishing resulting from a spill could compromise the food security for coastal communities. Furthermore, should an oil spill come to shore, this could have a negative impact on tourism in the IZoI. If tourists' access to the shoreline is

restricted or if there is a perception that their experience will be affected, fewer tourists may choose to visit the area. Cruise tourism to the Port of Mossel Bay may be halted. The tourism industry is an important component of the local economy in the IZoI and many people rely on the tourism industry for income.

Impact on community health, safety and security

- A large oil spill from a well blowout or pipeline rupture could make fish and shellfish unsafe for humans to eat. It could also become unsafe to swim or undertake any other recreational activities in the affected coastal waters. Should a large oil spill occur, it is likely that the local authority's emergency response plan would include restricting access to affected beaches and banning fishing and collection of shellfish in certain areas. Should a large oil spill occur, this could also potentially result in emissions through evaporation and from fire on vessels, drill unit or ignition of the highly combustible gas and condensate (from loss of well control). These emissions could impact on human health. Conflict could arise between fishers and authorities if fishers are asked to leave restricted fishing areas. The same would apply to community members accessing beaches for recreational activities.
- There is an expected increase in vessel traffic during the construction and decommissioning phases of the Project. Block 11B/12B is located within the main vessel traffic routes that pass around southern Africa. The overlap of some fishing areas with the subsea production system (SPS), including the production wells, may result in accidents related to trawling gear.

Mitigation Measures

- To reduce the probability and significance of the impacts arising from a well blowout or pipeline rupture, a "multi-barrier" approach will be implemented to deal with the risk of oil spills. This approach involves defining multiple barriers (avoidance / technical barriers / mitigation measures) to manage environmental risk. The first step and most important priority in applying the mitigation hierarchy to manage the risk of an oil spill is avoidance (or prevention). If these preventive technical and control barriers fail or are not effective under certain conditions, then control and response capabilities (emergency response system, Oil Spill Contingency Plan, Blowout Contingency Plan, etc.) will be in place.
- In the unlikely event of oil spill occurring, a process of determining the economic effects and related compensation would be initiated including engagement and consultation with affected parties. This process typically involves government, insurers, the organisation responsible for the incident, industry organisations and the applicable legal system.
- All claims will be submitted to DFFE, who will take the necessary steps to establish that the claim is adequately substantiated and reasonable. These claims could include loss or damage to property, grazing lands, livestock, fishing nets, loss of livelihood etc., in South Africa, resulting from the discharge of oil from an offshore installation and also damage or loss caused by methods used to clean up polluted areas during a spill.
- Once the details of each claim have been verified, it will be forwarded to the SAMSA Administration Officer for processing. The claims are paid from insurance cover to financially manage the consequences of any unplanned event.
- TEEPSA will seek to work with the relevant local authorities and civil society organisations with regard to the development and implementation of the emergency response plan in the unlikely event of a large oil spill.

- To reduce the probability and significance of the impacts arising from vessel collisions, Project vessel transit speed between the survey/drill area and port will be managed, and safety zones established around drilling / construction areas. After installation the location of the production wells, subsea infrastructure and pipeline will be surveyed and marked on bathymetric and navigation charts as a hazard. Maritime shipping, commercial and small-scale fishing sectors will be notified of the presence of the infrastructure. TEEPSA will support sea rescue services to ensure that the organisation has sufficient resources and training to deal with vessel-on-vessel collision, should it occur.

10.3 APPROVAL OF PROJECT

It is recommended that the proposed Project be approved. Given the potential for the Project to stimulate demand in the local economy, there is potential for support for direct, indirect or induced employment opportunities that may generate a beneficial impact on household livelihoods.

In addition, the potential adverse impact of disruption to, or a reduction in, household livelihood for the portion of households where most of the livelihood is derived from fishing activities, can be mitigated by project controls during the well drilling, construction, closure and survey phases.

Should the application be successful, TEEPSA will be required to provide sufficient assurance that they can finance the cost of clean-up, restoration and compensation, in the event of an unplanned event that is a large oil spill or pipeline leak.

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Appendix A

SPECIALIST CV

David de Waal

Earth & Environment, Technical Director: Africa Social Lead – Planning & Advisory

CAREER SUMMARY

Dr David de Waal has over 35 years of experience in his practice field. David is the WSP Social Management Services Lead for Africa, based in Midrand, South Africa. His Project exposure includes mining, mine closure, oil and gas, large-scale physical and social infrastructure, linear projects (pipelines, rail and road networks, electricity lines) and social development processes. David's experience is largely with international lenders' best practices and guidelines, notably the IFC, World Bank, European Reconstruction and Development Bank and other international lenders, including SACE, the Italian export credit agency.

He has worked on projects located in Albania, Botswana, Cameroon, the Democratic Republic of the Congo, Ethiopia, Gabon, Georgia, Ghana, Jamaica, Kenya, Kosovo, Liberia, Mozambique, Romania, Rwanda, Seychelles, South Africa, Swaziland, Turkey, Uganda, and Zambia.

7 years with WSP

28 years of experience

Areas of expertise

Social Due Diligence Assessments for International Lenders

Resettlement and Livelihood Restoration Planning and Review Processes.

Social Impact Assessment

Social Mine Closure

Indigenous People Planning

Stakeholder Engagement

Social Recipient Studies

Capacity Building

Language

Afrikaans – Fluent

English – Fluent

EDUCATION

Doctor of Literature and Philosophy, University of South Africa	1992
Masters in Community Development, University of Stellenbosch, South Africa	1986
Bachelor of Arts (Honours), Development Administration, University of Stellenbosch, South Africa	1984
Bachelor of Arts, Development Administration, University of Stellenbosch, South Africa	1984

ADDITIONAL TRAINING

Guest lecturer at the University of Johannesburg in the Master of Arts Degree in social Impact Assessment.	Since 2007
Developing SAQA Training Outcomes	2002

PROFESSIONAL MEMBERSHIPS

SABS - Member of SABS 14001 Impartially Committee	2009-2015
IAIA - Member of the International Association of Impact Assessment Reg No: 10530210	Annual

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd, Technical Director	July 2021 – present
Golder Associates Africa (Pty) Ltd (now WSP), Technical Director	2015 – June 2021
AECOM SA (Pty) Ltd, Executive Social Specialist Services	2013 – 2015
BKS (Pty) Ltd, Technical Director (Bought by AECOM)	2009 – 2013
Afrosearch (Pty) Ltd, Director	1993 – 2008
Louis Heyl Management Consultants, Senior Consultant	1988 – 1992
South African Development Trust Corporation, Senior Consultant	1986 – 1988

RECENT PROFESSIONAL EXPERIENCE:

Social Management and Resettlement

CESI S.p.A, Interconnection Project to establish a power and fibre-optic link under the Black Sea between Georgia and Romania
2022 - current
Social Lead and Support
Social components of the environmental and social screening and social contribution for routing and possible resettlement processes within the International Lenders requirements.

Bechtel Infrastructure, Skavica Hydro Electric Power Project located in the northern part of Albania, to be operated mainly in the Kukës region, including a dam in the Black Drin River, Albania
2022 – current
Social Lead and Adviser
Social management and stakeholder engagement in compliance with IFC and related international lenders' requirements. The focus includes social assessment, resettlement and livelihood planning and compensation processes.

Eskom Holdings SOC Ltd, Indigenous Peoples Plan for the Proposed Mier-Rietfontein Solar P.V. and Battery Storage Project, South Africa
2022
Social Lead
Leading the development of an indigenous people's plan for the ǂKhomani San indigenous people in the Project region to World Bank Group requirements.

Kamoa Copper SA, Social and Policy Support for Kamoa SA, The Democratic Republic of the Congo
2021 – current
Social Management and Stakeholder Engagement Support
Kamoa-Kakula Copper Project to ensure compliance with IFC and related international lenders' requirements. This work included preparing a stakeholder engagement plan, grievance management policy, land acquisition and livelihood restoration policy, associated training courses, and two land acquisition and resettlement plans to IFC standards.

Société de Péage du Lualaba, SOPEL By-pass Toll Road, The Democratic Republic of the Congo
2021
Social Lead, Adviser and Senior Review
Social management, resettlement and stakeholder engagement in compliance with IFC and related international lenders' requirements. The focus includes social assessment, resettlement and livelihood planning and compensation processes.

Ankara-Izmir YHT Yapımı İş Ortaklığı (on behalf of the International Lenders), Ankara - İzmizr High-speed Railway Project, Turkey
2021
Social Lead, Adviser and Senior Review
IFC-compliant social assessment, resettlement and livelihood planning, compensation processes, and the development of social management plans and due diligence assessments for 503 km high-speed railway line, affecting 11500 parcels of land are affected.

Doğu Biga Madencilik-Alamos Gold Inc, Environmental assessment for the Kirazlı Gold Mine, Çanakkal, Turkey
2020 – 2021
Social Lead and Reviewer
Guidance and review of the stakeholder engagement, social assessment, social management, survey, and policy documents to ensure EBRD compliance.

Newmont Ghana Gold Limited (a Subsidiary of Newmont Mining Corporation), Ahafo North Gold Mine Project influx management process and plan, Ghana
2020 – 2021
Adviser and Senior Review
To ensure compliance with international lenders' requirements.

Liren Corporation Inc., New Liberty Gold Mine Solar Power Plant with an associated Battery Energy Storage System, Liberia
2021
Social Lead and Reviewer
Social baseline.

Genser Energy Ghana Limited, Genser Energy Ghana Limited gas pipeline, Ghana
2020
Specialist adviser and reviewer
Ensure the stakeholder engagement plan complied with the requirements of the International Finance Corporation standards and the Environment and Social Safeguard Standard of the Development Bank of South Africa.

Cardinal Resources Limited, Namdini Gold Project in Northern Ghana review of MKM Social RAP, Ghana
2020
Social Lead, Adviser and Senior Reviewer
Revision and update the MKM Social RAP to ensure compliance with IFC requirements.

SOWI Kosovo, Establishment of the Bajgora Wind Farm Project and associated transmission lines, Kosovo
2019 – 2020
Senior Social Expert and Senior Reviewer
Ensure compliance with the EBRD requirements. Much of the focus was on stakeholder engagement, social baseline, impact assessment, land acquisition, compensation, and livelihood restoration processes.

South32 Group Operations Pty. Ltd, Duty of care compliance status assessment for Ifalethu, Khutala, Klipspruit and Wolvekrans Collieries, South Africa
2019 – 2020
Team Lead
Social aspects of the Duty of care assessment.

Maamba Collieries Limited, Maamba RAP implementation process, Zambia
2015 – 2019

Annual External Impact Monitoring and Review
Maamba RAP implementation process to ensure compliance with international lender's requirements.

Moz Power Invest, S.A. and Sasol New Energy Holdings (Pty) Ltd, Central Térmica de Temane gas to power facility, Mozambique
2019
Social Lead and Reviewer
Ensure compliance of social aspects to international standards.

Eurasian Resources Group – Africa, Resettlement Policy Framework for Kisankala Village, situated in the middle of the COMIDE Copper Project area, DRC
2019
Social Lead
Develop an internationally compliant resettlement policy framework, with Nomad Consulting as a significant specialist sub-consultant. Key aspects related to livelihood implications and artisanal mining.

Government of Kenya and its Commercial Partners Tullow Oil Kenya Ltd, Africa Oil Turkana Ltd and Total Oil / Maersk Oil Kenya Ltd., Proposed Lokichar to Lamu Crude Oil Pipeline, Kenya
2018 – 2019
Stakeholder Engagement Lead and Senior Social Reviewer
Phase 1 of the ESIA study for the planned Lokichar to Lamu Crude Oil Pipeline.

Eurasian Resources Group: Africa, Independent verification of the resettlement process of Samukonga village at the Metalkol Mine, DRC
2018-2019
Independent Reviewer
Independent review of the resettlement process of Samukonga village.

Mine closure related.

Phalaborwa Mining Company (PMC), PMC mine closure planning process, South Africa
2022
Social adviser and lead
Social components of the mine closure planning process and associated stakeholder engagement. A social closure report was prepared.

South32 SA Coal Holdings (Pty) Ltd and Glencore Operations South Africa (Pty) Ltd, Rietspruit Colliery closure process, South Africa
2022
Social Lead and Adviser
Social components of the closure pre-feasibility study and environmental regulatory process required to authorise rehabilitation-related activities and implementation of the closure plan.

Newmont Golden Ridge Limited, Closure planning for the Akyem gold mine, Ghana
2021-2022
Social Lead
Social aspects of the mine closure planning process.

Exxaro Resources, Arnot Coal Mine Closure Process, South Africa
2021
Social Lead and Senior Reviewer
Preparation of a Closure Social Impact Assessment and inputs to a Sustainable Social Closure Plan.

Anglo American Coal South Africa/ Exxaro Resources, Springboklaagte mine closure, South Africa
2019
Social Lead and Senior Reviewer
Portable skills development plan for the Mafube Colliery as part of the Springboklaagte mine closure process.

Environmental and Social Due Diligence

International Finance Corporation for the Pele Green Energy, Mogalakwena Solar P.V. Project, South Africa
2022 ongoing

Social ESDD Specialist
IFC ESDD for the proposed 100 MW solar photovoltaic (P.V.) plant near the Mogalakwena mine in Mokopane

SACE and International Lenders, Phase 1 of the Konza Techno City development, 60 km southeast of Nairobi, Kenya
2018 – current
Social ESDD Specialist
ESDD, including reviewing stakeholder engagement processes, social management-related reports, policy documentation, social impact assessment, and management plans.

Société de Péage du Lualaba, Environmental and Social Due Diligence of the Karuma - Tororo Transmission Line Project, Uganda
2022
Social ESDD Specialist
ESDD for constructing a new 332km, 400kV double circuit transmission line from Tororo to Karuma substation, construction of the 400/220kV Tororo Substation.

ASGC Construction, Dandé Mayo Roads Project, Senegal
2022
Senior Social Review
Senior review of social aspects of ESDD for the upgrading of the existing Dandé Mayo Road over two portions totalling 211 km

SACE and International Lenders, ESDD for the Arror and Kimwarer Hydropower Projects, Kenya
2017-2019
Social ESDD Specialist
IFC compliance review of the stakeholder engagement process, social assessment, resettlement action plans, and associated policies.

PUBLICATIONS

Lead author of the first South African Public Participation Guidelines

Co-authored “The Promotion of Participative Development Management at Grassroots Level: A Field Guide” for the Water Research Commission of South Africa.

Appendix B

IMPACT ASSESSMENT METHODOLOGY

IMPACT ASSESSMENT METHODOLOGY

APPROACH TO IMPACT ASSESSMENT

Identifying and assessing environmental and social impacts is a multifaceted process using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgement to determine the significance of environmental impacts associated with a proposed Project. Environmental and social assessment practitioners identify impacts throughout the ESIA process, from specialist studies and stakeholder engagement process, and refine as more detailed baseline information, modelling data or Project design information is available. For potentially significant impacts or those of stakeholder concern, the impact identification and evaluation process involve the following main steps:

Step 1: define the area of influence:

The area of influence of the Project is defined as a basis for defining the boundaries for baseline data gathering by considering the spatial extent of potential direct and indirect impacts of the Project. Direct impacts of the Project are typically located within a smaller area around the Project activities (i.e. in the direct area of influence). In comparison, indirect impacts typically extend across a wider area and often relate to the social sphere of influence of the Project. Based on the oil spill modelling results, the direct area of influence will be reassessed in the ESIA phase.

Step 2: identification of potential impacts

Potential impacts of a Project are identified by examining the potential for interactions between Project activities and environmental and social receptors (or features). This requires consideration of the range of Project activities across different phases of the Project (planning, exploration, construction, operation and decommissioning) and the potential for interactions on each of the environmental receptors, features or aspects occurring in the Project area of influence. The results are then presented in an 'environmental and social interaction matrix' format. For each Project activity, the degree of interaction is rated by colour-coding the matrix's level and type of interaction. This matrix approach to impact identification is designed to highlight where interactions may occur as a way of focusing the impact assessment.

Step 3: compile impacts – aspects register

An impacts-aspects register is typically prepared during the scoping phase to further elaborate on the potential impacts identified through the initial impact identification stage. For each of the Project activities, different aspects associated with the activity and their potential impacts are tabulated. This systematic approach provides a basis for planning the scope of specialist studies to ensure the correct information is obtained to conduct a detailed assessment of the Project impacts. It also enables the identification of the linkages between different specialist scopes and overlapping impacts and where there are interdependencies in data and reporting to enable an integrated impact assessment. For instance, social specialists typically rely on other specialists for inputs such as water quality, air quality or underwater noise effects, which must be factored into work scopes and

schedules. The presentation of an impacts-aspects register further provides stakeholders with a degree of confidence that the specialists and environmental assessment practitioners have adequately identified potential impacts at an early stage.

Step 4: impact evaluation

Evaluation of impact significance follows a stepwise process as set out below with reference to definitions in Section 5.2.2

A Assign sensitivity ratings to receptors

The sensitivity of a receptor is defined on a scale of very low, low, moderate, high or very high, guided by the definitions for biophysical, ecological and social receptors in Section 3. These are derived from the baseline information, which shall be used to support the sensitivity ratings in the impact description.

B Determine the impact magnitude ratings

Magnitude (or consequence) is determined based on a combination of the "intensity", "duration", and "extent" of the impact following the designations set out in Section 5.2.4. Magnitude is assigned to the pre-mitigation impact (i.e. before additional mitigation measures are applied but considering embedded controls specified as part of the Project description) and residual impacts after additional mitigation is applied.

C Determine impact significance rating

The significance of an impact is a function of the intensity and the sensitivity of the impact determined using the matrix table in Section 5.2.5. and is assigned to the predicted impact pre-mitigation and post-mitigation (residual) after considering all possible feasible mitigation measures following the mitigation hierarchy.

D Applying the mitigation hierarchy

Identification of mitigation measures under the mitigation hierarchy is made throughout the ESIA process, emphasising avoiding significant impacts where feasible. The mitigation hierarchy, as specified in IFC Performance Standard 1, widely regarded as the best practice approach to managing risks, is based on a hierarchy of decisions and measures. Specific avoidance mitigation measures may be identified early in the scoping phase and become 'embedded' into the Project design and specified in the Project description (e.g., drilling sites may be confirmed to avoid sensitive sea floor areas, or the timing of seismic surveys may avoid certain seasons). These embedded controls are not 'added' to the list of mitigation measures or used to determine the post-mitigation significance. Additional mitigation measures may be identified during the impact assessment process, and those agreed with the proponent will be used to assess the post-mitigation significance ratings.

E Assign additional ratings to describe the impact

Qualifying ratings are assigned to criteria such as probability (or likelihood of the impact occurring), confidence (in the impact prediction), mitigation potential, the extent of resource

loss (as defined in Section 5.2.5), reversibility of impact and potential for cumulative impacts.

DEFINITIONS OF IMPACT TYPES AND CRITERIA USED

Impact types

Table B1 below defines the criteria used to categorise and describe impacts.

Table B1 - Impact Types and Criteria

Term	Definition
Nature of Impact	Effect (neutral).
Positive	An impact that is considered to represent an improvement to the baseline conditions or introduces a positive change to a receptor.
Negative	An impact that is considered to represent an adverse change from the baseline conditions or receptor or introduces a new adverse effect.
Neutral	An impact that has no or negligible effect on the receptor.
Type	Cause and effect relationship between the Project activity and the nature of the effect on receptor.
Direct	Impacts that result from a direct interaction between a proposed Project activity and the receiving.
Indirect	Impacts that are not a direct result of a proposed Project are often produced away from or because of a complex impact pathway. Sometimes referred to as secondary impacts.
Induced	A type of indirect impact resulting from factors or activities caused by the presence of the Project but which are not always planned or expected (e.g. human in-migration along new access or for jobs creating increased demand on resources).
Residual	The impacts that remain after implementation of the Project and all associated mitigation and other environmental management measures.

Definitions of impact assessment criteria and categories applied

Definitions of the criteria used in assessing impact significance and the assigned categories, and the additional criteria used to describe the impacts, are summarised in Table B2.

Table B2 - Definitions of Impact Assessment Criteria and Categories Applied

Criterion	Definition	Categories
Sensitivity	Sensitivity is a rating of a receptor's importance and vulnerability (e.g., the conservation value of a biodiversity feature, cultural heritage resource, or social receptor).	Very Low Low Medium High Very High
Magnitude (or consequence)	A term describing the change predicted to occur to a resource or receptor caused by an action, activity, or linked effect. It is derived from a combination of intensity,	Very Low Low Medium

Criterion	Definition	Categories
	Extent and Duration and considers scale, frequency and degree of reversibility.	High Very High
Intensity	A descriptor for the degree of change an impact is likely to have on the receptor considers the scale and frequency of occurrence.	Very Low Low Medium High Very High
Extent	The spatial scale over which the impact will occur.	Site Local National Regional International Transboundary
Duration	Time scale over which the consequence of the effect on the receptor/s will last. [Note that this does not apply to the duration of the Project activity]. The terms' Intermittent' and 'Temporary' may be used to describe the duration of an impact.	Short-term Medium-term Long-term Permanent
Probability	A descriptor for the likelihood of the impact occurring. Most assessed impacts are likely to occur, but the probability is typically used to qualify and contextualise the significance of unplanned events or major accidents.	Unlikely Possible Likely Highly Likely Definite
Confidence	A descriptor for the degree of confidence in the evaluation of impact significance.	Low Medium High Certain
Mitigation potential	A descriptor for the degree to which the impact can be mitigated to an acceptable level.	None Very Low Low Medium High
Loss of Irreplaceable resources	A descriptor for the degree to which irreplaceable resources will be lost, fragmented or damaged.	Low Medium High
Reversibility	A descriptor for the degree to which an impact can be reversed.	Irreversible Partially Reversible Fully Reversible
Cumulative	A descriptor of the potential for an impact to have cumulative impacts arise.	Unlikely Possible Likely

DETERMINATION OF FACTORS

Determination of sensitivity

Sensitivity is a term that covers the 'importance' (e.g., the value of an ecological receptor or heritage resource) or 'vulnerability' (e.g., the ability of a social receptor to cope with change) of a receptor to a Project-induced change. It considers 'Irreplaceability' - the measure of the value of, and level of dependence on, impacted resources to society and local communities, as well as consistency with policy (e.g., conservation) targets or thresholds.

Broad definitions of sensitivity ratings for social, ecological and physical/abiotic receptors are defined in Table B3 below. These are not exhaustive and may be modified case-by-case, as appropriate. Additional ratings can be developed for other receptors, such as cultural heritage.

Table B3 –Sensitivity Categorisation and Description

Sensitivity rating	Definition
Social Receptors	Individuals, communities or groups of stakeholders.
Very Low	Receptors who are not vulnerable or susceptible to project-related changes and have substantive resources and support to understand and anticipate Project impacts. Such receptors can avoid negative Project impacts, cope with, resist or recover from the consequences of such an impact with negligible changes to their lives, or will derive little benefit or opportunities from the Project.
Low	Receptors who have few vulnerabilities and are marginally susceptible to project-related changes but still have substantive resources and support to understand and anticipate a Project impact. Such receptors can easily adapt to changes brought about by the Project with marginal impacts on their living conditions, livelihood, health and safety, and community well-being or will derive marginal benefits or opportunities from the Project.
Medium	Receptors have some vulnerabilities and are more susceptible to project-related changes, given they only have moderate access to resources, support, or the capacity to understand and anticipate a Project impact. Such receptors are not fully resilient to Project impacts but are generally able to adapt to such changes, albeit with some diminished quality of life. For positive impacts, these receptors are likely to derive a moderate benefit or opportunities from the Project.
High	Receptors are vulnerable and susceptible to project-related changes and have minimal access to resources, support, or capacity to understand and anticipate a Project impact. Such receptors are not resilient to Project impacts and cannot adapt to such changes without substantive adverse consequences on their quality of life. For positive impacts, these receptors are likely to derive substantial benefits or opportunities from the Project.
Very High	Receptors are highly vulnerable and have very low resilience to project-related changes. Because of their unique social setting or context, such receptors have a diminished capacity to understand, anticipate, cope with, resist or recover from the consequences of a potential impact without substantive external support. For positive impacts, receptors are likely to derive substantial benefits or opportunities from the Project, which could lead to significant and sustained improvement in their quality of life.

Sensitivity rating	Definition
Ecological Receptor	Species, habitats or ecosystems, including processes necessary to maintain ecosystem functions.
Very Low	Species or habitats with negligible importance for biodiversity include largely transformed or highly modified habitats.
Low	Species or habitats listed as Least Concern (LC) on the International Union for Conservation of Nature (IUCN) Red List or on regional or national Red Lists and habitats or species which are common and widespread, of low conservation interest, or habitats which are degraded and qualify as 'modified habitat' under international definitions (e.g. IFC or World Bank standards).
Medium	Species, habitats or ecosystems listed as globally vulnerable (VU) or Near Threatened (NT) on IUCN Red List; or listed as VU or NT on national or regional Red Lists, or which meet the IUCN criteria based on expert-driven biodiversity planning processes. It includes habitats that meet definitions of 'natural habitat'; or ecosystems with important functional value in maintaining the biotic integrity of these habitats or VU or NT species.
High	Species, habitats or ecosystems listed as globally endangered (EN) or critically endangered (CR) by IUCN or listed as EN/CR on national or regional Red Lists; or which meet IUCN criteria for range-restricted species 13 or which meet the definition of migratory and congregatory species 14, but which do not qualify as critical habitat based on IUCN Key Biodiversity Area thresholds 15. It includes habitats or ecosystems that are important for meeting national conservation targets based on expert-driven national or regional systematic conservation planning processes but do not meet global IUCN thresholds. It can also include protected areas such as national parks, marine protected areas or ecological support areas designated for biodiversity protection containing species that are nationally or globally listed as EN or CR or other designated areas important for the persistence of EN/CR species or habitats.
Very High	Species, habitats or ecosystems listed as globally endangered (EN) or critically endangered (CR) by IUCN or listed as EN/CR on expert-verified national or regional Red Lists, or which meet IUCN criteria for range-restricted or migratory /congregatory species and which meet IUCN thresholds for Key Biodiversity Areas. It includes habitats or ecosystems that are highly important for maintaining the persistence of species or habitats that meet critical habitat thresholds. Habitats of high sensitivity may typically include legally protected areas that meet IUCN categories 1, 1a and 1b16, or KBAs or Important Bird Areas (IBAs) with biodiversity features that meet the IUCN KBA criteria and thresholds.
Physical Abiotic Receptors	Water quality, sediment quality, air quality, and noise levels.
Very Low	Receptors are highly resilient to Project-induced change, and changes remain undetectable and within any applicable thresholds.
Low	Receptors are resilient to Project-induced change, and changes, while detectable, are within the range of natural variation and remain within any applicable thresholds.
Medium	Receptors are moderately resilient to Project-induced changes, but these changes are easily detectable, exceeding the.

Sensitivity rating	Definition
High	Receptors are vulnerable to Project-induced change, and changes are readily detectable, well outside the range of natural variation or occurrence, and regularly exceed any applicable thresholds.
Very High	Receptors are highly vulnerable to Project-induced change, and changes are easily detectable, fall well outside the range of natural variation or occurrence, and will continually exceed any applicable thresholds.

Determination of magnitude (consequence)

The term 'magnitude' (or consequence) describes and encompasses all the dimensions of the predicted impact, including:

- The nature of the change (what is affected and how);
- Its size, scale or intensity;
- Degree of reversibility; and
- Its geographical extent and distribution.

Considering the above, magnitude (or consequence) is derived from a combination of 'intensity', 'duration' and' extent'. The criteria for deriving intensity, extent and duration are summarised in Table B4 below.

Table B4 – Categorisation and Description for Intensity, Extent and Duration

Criteria	Rating	Description
Criteria for ranking the intensity of environmental impacts considering reversibility and scale	Very Low	Negligible change, disturbance or nuisance which is barely noticeable or may have minimal effect on receptors or affect a tiny proportion of the receptors.
	Low	Minor (Slight) change, disturbance or nuisance which is easily tolerated and reversible in the short-term without intervention or which may affect a small proportion of receptors.
	Medium	Moderate change, disturbance or discomfort caused to receptors, or reversible over the medium-term, may affect a moderate proportion of receptors.
	High	Prominent change, or large degree of modification, disturbance or degradation caused to receptors, or which may affect a large proportion of receptors, possibly entire species or community and which is not easy.
Criteria for ranking the extent / spatial scale of impacts	Site	The impact is limited to the activity's immediate footprint and surroundings within a confined area.
	Local	The impact is confined to within the Project concession/licence area and its nearby surroundings.
	Regional	The impact is confined to the region, e.g., coast, basin, catchment, municipal region, district, etc.

Criteria	Rating	Description
	National	The impact may extend beyond district or regional boundaries with national implications.
	International	The impact extends beyond the national scale or may be transboundary.
Criteria for ranking the duration of impacts	Short-Term	The impact duration will be < 1 year or may be intermittent.
	Medium-Term	The duration of the impact will be 1-5 years.
	Long-Term	The duration of the impact will be 5-25 years, but where the impact will eventually cease either because of natural processes or human intervention.
	Permanent	The impact will endure for the reasonably foreseeable future (>25 years) and where.

Determining magnitude (or consequence) ratings

Once the intensity, extent and duration are defined, the magnitude of negative and positive impacts is derived based on Table B5 below. It should be noted that there may be times when these definitions may need to be adjusted to suit the specific impact where justification should be provided. For instance, the permanent loss of the only known occurrence of a species in a localised area of impact can only achieve a "high" magnitude (or consequence) rating. Still, it could, in this instance, warrant a "very high" rating. The justification for amending the rating should be indicated in the impact table.

Table B5 – Magnitude Determination

Magnitude (or consequence) rating	Description
Very High	Impacts could be: • Of high intensity at a regional level and endure in the long-term. • Or of high intensity at a national level in the medium or long-term. • Or of medium intensity at a national level in the long-term.
High	Impacts could be: • Of high intensity at a regional level and endure in the medium-term. • Or of high intensity at a national level in the short-term. • Or of medium intensity at a national level in the medium-term. • Or of low intensity at a national level in the long-term. • Or of high intensity at a local level in the long-term. • Or of medium intensity at a regional level in the long-term.
Medium	Impacts could be: • Of high intensity at a local level and endure in the medium-term.

Magnitude (or consequence) rating	Description
	• Or of medium intensity at a regional level in the medium-term. • Or of high intensity at a regional level in the short-term. • Or of medium intensity at a national level in the short-term. • Or of medium intensity at a local level in the long-term. • Or of low intensity at a national level in the medium-term. • Or of low intensity at a regional level in the long-term.
Low	Impacts could be: • Of low intensity at a regional level and endure in the medium-term. • Or of low intensity at a national level in the short-term. • Or of high intensity locally and endure in the short-term. • Or of medium intensity at a regional level in the short-term. • Or of low intensity at a local level in the long-term. • Or of medium intensity locally and endure in the medium-term.
Very Low	Impacts could be: • Of low intensity at a local level and endure in the medium-term. • Or of low intensity at a regional level and endure in the short-term. • Or of low to medium intensity locally and endure in the short-term. • Or zero or very low intensity with any combination of extent and duration.

* Note: For any impact that is "permanent" or "international", apply the "long-term" and "national" ratings, respectively. For impacts at the "site" or "local" level, apply the "local" level rating.

Determination of impact significance

The significance of an impact is based on expert judgement of the sensitivity (importance or vulnerability) of a receptor and the magnitude (or consequence) of the effect that a Project-induced change will cause.

In summary, the impact assessment method is based on the following approach:

Significance = Magnitude (or Consequence) x Sensitivity

Where Magnitude (or Consequence) = Intensity +Extent + Duration

Once ratings are applied to each of these parameters, the matrix presented in Table B6 is used to derive significance.

Table B6 – Matrix for Determining Significance

Magnitude or consequence	Sensitivity					
	Very low	Low	Medium	High	Very High
Very low	Negligible	Negligible	Very low	Low	Low
Low	Very low	Very low	Low	Low	Medium
Medium	Low	Low	Medium	Medium	High
High	Medium	Medium	High	High	Very High
Very High	High	High	High	Very High	Very High

The definitions and approach to determining "sensitivity" and "magnitude" (or consequence) criteria are described below.

DEFINITIONS OF SIGNIFICANCE RATINGS

Broad definitions of impact significance ratings are provided in the table below. Impacts of 'high' and 'very high' significance require careful evaluation during decision-making and need to be weighed up against potential long-term socio-economic benefits of the Project to inform Project authorisation. Where there are residual biodiversity impacts of 'high' and 'very high' significance, this will require careful examination of offset feasibility and confirmation that an offset is possible before decision-making (Table B7).

Table B7 – Definition of Significance Ratings

Significance rating	Interpretation
Very High	Impacts where an accepted limit or standard is far exceeded, changes are well outside the range of normal variation, or where long-term to permanent impacts of large magnitude (or consequence) occur to highly sensitive resources or receptors. For adverse residual impacts of very high significance, there is no possible further feasible mitigation that could reduce the impact to an acceptable level or offset the impact, and natural recovery or restoration is unlikely. The impact may represent a possible fatal flaw, and decision-making must evaluate the trade-offs with potential social or economic benefits. Positive social impacts of Very High significance would be those where substantial economic or social benefits are obtained from the Project for a significant duration (many years).
HIGH	Impacts where an accepted limit or standard is exceeded, impacts are outside the range of normal variation, or adverse changes to a receptor are long-term. Natural recovery is unlikely or may only occur in the long-term, and assisted and ongoing rehabilitation is likely required to reduce the impact to an acceptable level. High significance residual impacts warrant close scrutiny in decision-making, strict conditions, and monitoring to ensure compliance with mitigation or other compensation requirements. Positive social impacts of high significance would be those where considerable economic or social benefits are obtained from the Project for an extended duration in the order of several years.
MEDIUM	Moderate adverse changes to a receptor where changes may exceed the range of natural variation or where accepted limits or standards are sometimes exceeded. The potential for natural recovery in the medium-term is good, although a low level of residual impact may remain. Medium impacts will require

Significance rating	Interpretation
	mitigation and a demonstration that the impact has been reduced to as low as reasonably practicable (even if the residual impact is not reduced to low significance). Positive social impacts of medium significance would be those where a moderate level of benefit is obtained by several people or a community, or the local, regional or national economy for a sustained period, generally more than a year.
LOW	Minor effects will be experienced, but the impact magnitude (or consequence) is sufficiently small (with and without mitigation), within the range of normal variation or accepted standards, or where effects are short-lived. Natural recovery is expected in the short-term, although a low level of localised residual impact may remain. In general, impacts of low significance can be controlled by standard good practice but may require monitoring to ensure operational controls or mitigation is effective. Positive social impacts of low significance would be those where a few people or a small proportion of a community in a localised area may benefit for a few months.
VERY LOW	Very minor effects on resources or receptors are possible. Still, the predicted effect represents a minimal change to the affected receptor's distribution, presence, function or health, and no mitigation is required.
NEGLIGIBLE	Predicted impacts on resources or receptors of very low or low sensitivity are imperceptible or indistinguishable from natural background variations, and no mitigation is required.

ADDITIONAL ASSESSMENT CRITERIA

Additional criteria that are taken into consideration in the impact assessment process and specified separately to describe the impact further and support the interpretation of significance include the following:

- Probability (Likelihood) of the impact occurring (which is considered mainly for unplanned events).
- Degree of Confidence in the impact prediction.
- The degree to which the impact can be mitigated.
- Degree of Resource Loss (i.e., the extent to which the affected resource/s will be lost, considering irreplaceability).
- Reversibility – the degree to which the impact can be reversed.
- Cumulative potential – potential for cumulative impacts with other planned projects or activities.
- Definitions for these supporting criteria are indicated in Table B8 below.

Table B8 – Categorisation and Description of Additional Assessment Criteria

Criteria	Rating	Description
Criteria for determining the probability of impacts	UNLIKELY	The possibility of the impact to materialise is very low either because of design or historical experience, i.e. ≤ 5% chance of occurring.
	POSSIBLE	Where the impact could occur but is not reasonably expected to occur, i.e. 5-35% chance of occurring.

Criteria	Rating	Description
	LIKELY	Where there is a reasonable probability that the impact would occur, i.e. >35 to ≤75% chance of occurring.
	HIGH LIKELY	Where there is a high probability that the impact would occur, i.e. >75 to <99% chance of occurring.
	DEFINITE	Where the impact would occur regardless of any prevention measures, i.e. 100% chance of occurring.
Criteria for determining the degree of confidence of the assessment	LOW	Low confidence in impact prediction (≤ 35%).
	MEDIUM	Moderate confidence in impact prediction (between 35% and ≤ 70%).
	HIGH	High confidence in impact prediction (> 70%).
	CERTAIN	Absolute certainty in the impact prediction (100%).
Criteria for the degree to which impact can be mitigated	NONE	No mitigation is possible, or mitigation, even if applied, would not change the residual impact.
	VERY LOW	Some mitigation is possible but will significantly reduce the residual impact or its significance rating.
	LOW	Some mitigation is possible and may reduce the residual impact, possibly reducing the impact significance.
	MEDIUM	Mitigation is feasible and will reduce the residual impact and may reduce the impact significance rating.
	HIGH	Mitigation can be easily applied or is considered standard operating practice for the activity and will reduce the residual impact and impact significance rating.
Criteria for the degree of an irreplaceable resource loss	LOW	Where the activity results in a marginal effect on an irreplaceable resource.
	MEDIUM	Where an impact results in a moderate loss, fragmentation or damage to an irreplaceable receptor or resource.
	HIGH	Where the activity results in an extensive or high proportion of loss, fragmentation or damage to an irreplaceable receptor or resource.
Criteria for reversibility - the degree to which an impact can be reversed	IRREVERSIBLE	Where the impact cannot be reversed and is permanent.
	PARTIALLY REVERSIBLE	Where the impact can be partially reversed and is temporary.
	FULLY REVERSIBLE	Where the impact can be reversed entirely.
Criteria for the potential for cumulative impacts – the extent to which cumulative	UNLIKELY	Low likelihood of cumulative impacts arising.
	POSSIBLE	Cumulative impacts with other activities or projects may arise.

Criteria	Rating	Description
impacts may arise from interaction or combination of other planned activities or projects	LIKELY	Cumulative impacts with other activities or projects can be expected through interaction or in combination.

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