

ECONOMIC IMPACT ASSESSMENT

TEEPSA OFFSHORE PRODUCTION
BLOCK 11B/12B



URBAN-ECON
Development Economists

PREPARED BY

Urban-Econ Development Economists (Pty) Ltd

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Acronyms and Abbreviations

| | |
|----------------|--|
| ALARP | As Low as Reasonably Practicable |
| BA | Basic Assessment |
| BOCP | Blow out Contingency Plan |
| CA | Competent Authority |
| CGR | Condensate Gas Ratio |
| EA | Environmental Authorisation |
| EMPr | Environmental Management Program |
| ESIA | Environmental and Social Impact Assessment |
| GDP | Gross domestic product |
| GHG | Greenhouse Gas |
| GTL | Gas To Liquids |
| GVA | Gross Value Added |
| IDP | Integrated Development Plan |
| IPAP | Industrial Policy Action Plan |
| IPF | Impact producing factor |
| IRP | Integrated Resource Plan |
| IZOI | Immediate zone of influence |
| IGUA-SA | Industrial Gas Users of Southern Africa |
| LED | Local economic development |
| MPRDA | Mineral and Petroleum Resources Development Act |
| MPRR | Mineral and Petroleum Resource Royalty |
| NDP | National Development Plan |
| OSCP | Oil Spill Contingency Plan |
| PEDS | Provincial Economic Development Strategy |
| PR | Production Right |
| SCC | Social Cost of Carbon |
| SDG | Sustainable Development Goals |
| SDU | Subsea Distribution Units |
| SLP | Social Labour Plan |
| SPS | Subsea production system |
| SR | Sensitive Receptor |
| TAC | Total Allowable Catch |
| TBC | To Be Confirmed |
| TEEPSA | TotalEnergies Exploration and Production South Africa B.V. |
| UN | United Nations |

| | |
|------------|----------------------------|
| VSP | Vertical Seismic Profiling |
| VU | Vulnerable |

Units of Measure

| Unit | Explanation |
|-----------------------|--|
| km | Kilometre |
| km² | Square Kilometre |
| m | Metre |
| MMstb | Millions of standard tank barrels of oil |
| MMbbls | Million barrels |
| Tcf | Trillion Cubic Feet |
| USD | United States Dollar |
| ZAR | South African Rand |
| % | Percentage |

Details of the specialist

A comprehensive CV is included in Appendix A.

| Details of Specialist | |
|-----------------------|--|
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| Company Name: | Urban-Econ Development Economists (Pty) Ltd |

Qualifications

| Specialist Qualifications | |
|-----------------------------------|---|
| Education: | BCom (Hons) Econometrics |
| Professional affiliations: | NA |
| Summary of experience: | Marietha Jacobs obtained her BCom Econometrics degree in 2012 and completed her BCom (Hons) Econometrics in 2013. Both degrees were obtained from the University of Pretoria and with distinction. After completing her studies, Marietha joined the Urban-Econ team in Mbombela as a Junior Development Economist and was promoted to Senior Development Economist in 2016. Marietha has conducted various economic research and impact studies in industries such as property, health, tourism, commercial fisheries and agriculture. |

Declaration of independence by specialist

I, Marietha Jacobs, declare that I –

- Act as the independent specialist for the undertaking of a specialist report 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.

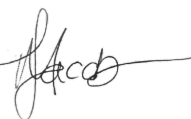
Specialist Report requirements in terms of NEMA

This report is compiled in such a manner that it adheres to the EIA Regulation requirements as detailed in Appendix 6 of the NEMA EIA Regulations of 2014, as amended.

| Section | Requirements | Section/ page addressed in report |
|------------|---|---|
| (a) | Details of | |
| | (i) the specialist who prepared the report; and | Page 14 |
| | (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; | Page 14 |
| (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 Section 4.1 Section 2 |
| (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 4 |

| Section | Requirements | Section/ page addressed in report |
|------------|--|-----------------------------------|
| (f) | Details of an assessment of the specifically 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; | NA |
| (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 4.1 |
| (j) | A description of the findings and potential implications of such findings on the impact of the proposed activity or activities; | Sections 7 and 8 |
| (k) | Any mitigation measures for inclusion in the EMPr; | Sections 7 and 8 |
| (l) | Any conditions for inclusion in the environmental authorisation; | Section 11 |
| (m) | Any monitoring requirements for inclusion in the EMPr or environmental authorization; | Section 10 |
| (n) | A reasoned opinion— | |
| | (i) whether the proposed activity, activities or portions thereof should be authorized regarding the acceptability of the proposed activity or activities; and | Section 11 |
| | (ii) if the opinion is that the proposed activity, activities, or portions thereof should be authorised, an avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan; | Section 11 |

| Section | Requirements | Section/ page addressed in report |
|------------|---|-----------------------------------|
| (o) | A description of any consultation process that was undertaken during the course of preparing the specialist report; | Section 4 |
| (p) | A summary and copies of any comments received during any consultation process and, where applicable, all responses thereto; and | Section 4 |
| (q) | Any other information requested by the competent authority. | NA |

Signature: 

Date: 19 September 2023

EXECUTIVE SUMMARY

Introduction

Urban-Econ Development Economists (Pty) Ltd was appointed by WSP Group Africa (Pty) Ltd to undertake an Economic Impact Assessment specialist study for an Environmental and Social Impact Assessment (ESIA) submission on behalf of TotalEnergies EP South Africa B.V (TEEPSA). TEEPSA, together with its joint venture partners, QatarEnergy International E&P LLC (previously Qatar Petroleum International Upstream LLC), 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) for gas and condensates over Block 11B/12B. TEEPSA is planning to develop Block 11B/12B if a PR is granted and if commercial agreements for the sale of the gas onto the domestic market can be achieved.

The Block 11B/12B production right for gas and condensates application area is located offshore. The closest northeastern point of the application area is about 75 km offshore from Cape St Francis. In contrast, the nearest north-western point is about 120 km offshore from Mossel Bay. 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 five (5) development and appraisal wells (with the option of drilling a 6th well);
- 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 F-A 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 pumped to the PetroSA existing F-A platform via a subsea production pipeline of approximately 109 km. The gas will be processed using the existing F-A Platform processing facilities, and the gas and associated condensates will be pumped 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.

This report investigates the potential economic impacts of the activities outlined above. The scope¹ of the economic impact analysis is limited to the activities set out in the ESIA application. While the cumulative impacts related to end-user options are considered, these impacts are not quantified

¹The scope of the Economic Impact Assessment does not include a cost benefit analysis to compare the benefits of gas extraction and production-related activities, against the perceived negative environmental and economic impacts related to climate change.

Baseline assessment

The IZOI has a large cohort of people that are of working age. Furthermore, the education levels in the IZOI are relatively high, with most people having attained Grade 12. There are fewer people in the IZOI with tertiary education than there are in the primary study area. The IZOI is becoming a regional hub of the southern Cape, and the proportion of people in the area with tertiary education will probably increase as highly skilled workers migrate to the IZOI. The Mossel Bay and George areas have a large cohort of people older than 65. This population segment plays an important role in the local economy and is one of the main drivers of the demand for property in the area.

The populations of the IZOI and the primary study area have a better standard of living and a higher average household income than residents of the secondary and tertiary study areas. This could affect migration patterns as people often relocate in search of jobs.

The economies of all the areas under review remain under pressure as they have not fully recovered from the severe downturn recorded in 2020. National challenges, including loadshedding and rising interest rates, are hampering full recovery. While GVA growth was recorded in most sectors in 2021, job losses continued. The finance, insurance, real estate and business services sector; the manufacturing sector; and the wholesale and retail trade/catering and accommodation sector play an important role in driving economic growth in the IZOI. In order to ensure full economic and employment recovery, targeted interventions in these sectors are essential. Job creation and skills development initiatives should particularly focus on semi- and low-skilled workers. Support for the informal sector is also essential.

This section also indicates that the economic sectors linked to the different project components have different local content opportunities which are determined based on the current status of each sector and their capacities. There is currently limited localisation opportunities within the steel fabrication and treatment (of pipes) as well as the construction of offshore pipelines, however work related to the FA platform upgrade and modification can largely be localised. There are also localisation opportunities in the transport, ware housing and auxiliary services industries.

Economic impacts

The economic impact of the exploration, construction, operational and decommissioning phases are measured using the estimated capital and operational expenditure that will occur in South Africa. A social accounting matrix (SAM) model was used to estimate direct, indirect and induced impacts on production, gross domestic product (GDP), employment and income in the different phases of the project. The proposed project is anticipated to have a direct economic benefit in South Africa. Economic benefits attributable to the exploration, construction and decommissioning phases are

considered short-term, while operational impacts are long-term. The operational phase will also result in substantial tax benefits for South Africa (income taxes, corporate taxes, and Mineral Petroleum and Resources Royalties).

The table below summarises the impact on production, GDP, employment, and income during the relevant project phases. The operational phase impacts only consider the activities outlined as part of the ESIA application and do not include any economic impacts related to the end-user options, which are anticipated to also contribute positively to the economy in terms of economic output, GDP, employment and household income.

Table: Economic Impact of all phases of development

| Impact | Direct | Indirect | Induced | Total |
|--|----------------|----------------|----------------|----------------|
| Economic output | R425.3 million | R248.9 million | R258.4 million | R932.5 million |
| GDP | R219.7 million | R113.5 million | R104.1 million | R437.3 million |
| Employment | 205 Employment | 331 jobs | 342 jobs | 878 jobs |
| Construction phase | | | | |
| TEEPSA Construction Phase | | | | |
| Economic output | R928.6 million | R674.0 million | R489.0 million | R2 billion |
| GDP | R353.6 million | R251.4 million | R197.5 million | R802.5 million |
| Employment | 634 jobs | 801 jobs | 651 jobs | 2 086 jobs |
| PetroSA Construction Phase (F-A Platform Refurbishment & Modifications) | | | | |
| Economic output | R13.0 billion | R7.5 billion | R4.6 billion | R25.1 billion |
| GDP | R2.7 billion | R2.9 billion | R1.9 billion | R7.5 billion |
| Employment | 4 913 jobs | 8 934 jobs | 6 123 jobs | 19 970 jobs |
| TEEPSA Construction Phase (Production Well Drilling, Subsea Infrastructure and Pipeline Installation) | | | | |
| Economic output | R13.9 billion | R8,1 billion | R5.0 billion | R27 billion |
| GDP | R3.0 billion | R3.2 billion | R2.0 billion | R8.2 billion |
| Employment | 5 547 jobs | 9 735 jobs | 6 774 jobs | 22 056 jobs |
| Production Phase | | | | |
| Economic output | R1 4 billion | R883.0 million | R790.1 million | R3.0 billion |
| GDP | R690.7 million | R376.5 million | R318.6 million | R1.4 billion |
| Employment | 266 jobs | 1 201 jobs | 1 011 jobs | 2 478 jobs |
| Decommissioning Phase | | | | |
| Economic output | R1.0 billion | R626,7 million | R563.9 million | R2.2 billion |
| GDP | R463.8 million | R253.8 million | R227,5 million | R945,1 million |
| Employment | 396 jobs | 737 jobs | 723 jobs | 1 856 jobs |

Impact assessment summary

In addition to the positive economic benefits that will be felt in the local, regional and national economic as a result of infrastructure spend, while not modelled, the project will generate royalties and taxes which accrue to the national government. Negative economic impacts are associated with adverse impacts. In the event of a well blowout or pipeline rupture, based on the Marine Impact Assessment (2023) and the oil spill modelling, the regional fishing (commercial, small-scale and recreational) industry can be affected due to the impact on fish or damages to gear and vessels. If spilled oil affects the shoreline, the tourism industry will also be negatively affected. However, the probability of this occurring from a well blowout or pipe rupture during the western Project Development Area during peak tourist seasons is very small. The likelihood of a well blow-out reaching the shore is estimated to be% between December and February and 1.9% during March and May (DHI Water & Environment Inc, 2023).

Commercial, small-scale and recreational fishing and the tourism industry will be significantly negatively affected in the case of a well blowout in the eastern Exploratory Priority Area, which can profoundly impact the coastal communities in the IZOI and the primary study area.

The positive impacts of the proposed project's exploration, construction, and operation phase are expected to outweigh the negative effects. No fatal flaws were identified from an economic perspective, and the project is deemed acceptable and should be authorised. Authorisation should occur subject to implementing recommended mitigation/ enhancement measures as indicated in Section 7. Applying these mitigation measures will ensure that any negative impacts are minimised, and positive impacts are enhanced. In addition to the mitigation measures, implementing the commitments contained in the SLP will also play an integral role in contributing to human resource development and local economic development in the IZOI (in the Mossel Bay and Goerge Municipalities). CSI initiatives will further enhance the positive impacts. Implementing controls as stipulated in the Marine Impact Assessment will contribute to the mitigation of any negative economic impacts on the fisheries and tourism industries in the case of a well blowout in the eastern Exploratory Priority Area, especially, which may have a significant negative impact on all types of fishing activities as well as tourism. The table sets out a summary of the potential economic impacts as a result of project activities and unplanned events.

| Phase | | Impact | Before mitigation/ enhancement | With mitigation/ enhancement |
|---------------------------------|-------------|--|-----------------------------------|---------------------------------|
| Exploration drilling | well | Positive impact on production and GDP | Very low (+) | Very low (+) |
| | | Positive impact on employment | Very low (+) | Very low (+) |
| | | Positive impact on household income | Very low (+) | Very low (+) |
| | | Negative impact on commercial fishing and small-scale fishing | Medium (-) | Medium (-) |
| | | Negative impact on recreational fishing and mariculture | Very Low (-) | Very Low (-) |
| Construction | | Positive impact on production and GDP (TEEPS Component) | Very Low (+) | Medium (+) |
| | | Positive impact on production and GDP (PetroSA Component) | High (+) | High (+) |
| | | Increased or sustained positive impact on employment (TEEPSA Component) | Very Low (+) | Medium (+) |
| | | Increased or sustained positive impact on employment (PetroSA Component) | High (+) | High (+) |
| | | Positive impact on household income (TEEPSA) | Very Low (+) | Medium (+) |
| | | Positive impact on household income (PetroSA) | High (+) | High (+) |
| | | Loss in Commercial Fishing and small-scale fishing Income | Low (-) | Very Low (-) |
| | | Loss in recreational fishing and mariculture | Negligible (-) | Negligible (-) |
| Operation | | Positive impact on production and GDP | Medium (+) | Medium (+) |
| | | Positive impact on employment | Medium (+) | Medium (+) |
| | | Positive impact on household income | Medium (+) | Medium (+) |

| Phase | Impact | Before mitigation/ enhancement | With mitigation/ enhancement |
|---|--|-----------------------------------|---------------------------------|
| | Positive impact on tax revenue | High | NA |
| | Loss in commercial fishing and small-scale fishing catch | Very Low (-) | Negligible (-) |
| | Loss in recreational catch and mariculture | Negligible (-) | Negligible (-) |
| Decommissioning (Procurement of goods and services for decommissioning activities) | Positive impact on production and GDP | Low (+) | Low (+) |
| | Positive impact on employment | Low (+) | Low (+) |
| | Positive impact on household income | Low (+) | Low (+) |
| Unplanned events – Western Project Development Area (Crude oil and condensate) | Negative impact on commercial, small scale, recreational fishing and mariculture | High (-) | Medium (-) |
| | Negative impact on tourism | Negligible (-) | Negligible (-) |
| Unplanned events – Eastern Area Discharge Points 1 and 2 (crude oil) | Negative impact on commercial, small-scale, recreational fishing and mariculture | Very High (-) | High (-) |
| | Negative impact on tourism | Very High (-) | High (-) |

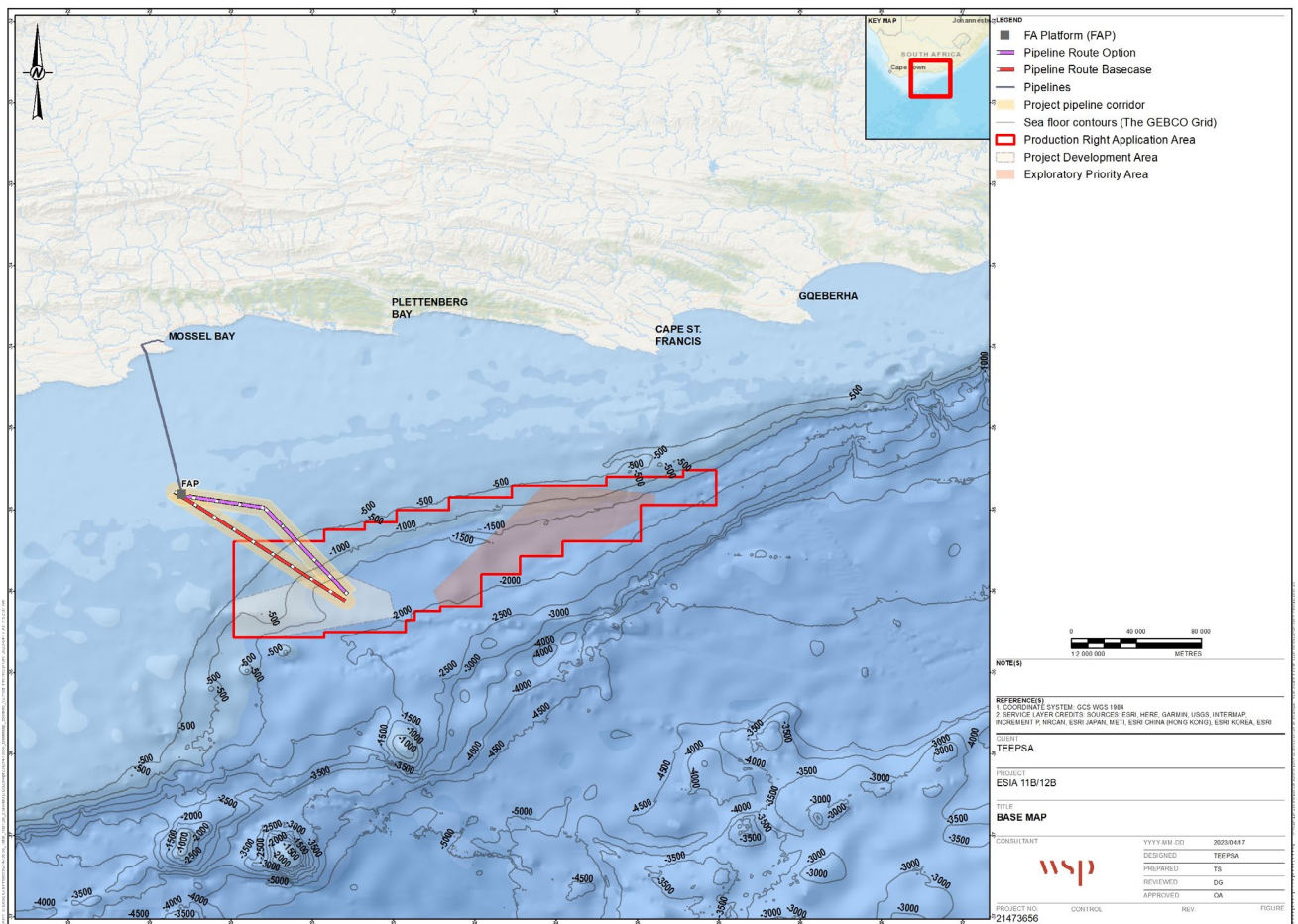
1 Introduction and Background

1.1 Project background and description

TotalEnergies EP South Africa B.V. (TEEPSA), together with its joint venture partners, QatarEnergy International E&P LLC (previously Qatar Petroleum International Upstream LLC), 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) submitted in September 2022. If a PR is granted and commercial agreements for the sale of the gas onto the domestic market can be achieved, TEEPSA plans 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 km². The closest north-eastern point of the application area is about 75 km offshore from Cape St Francis. In contrast, 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. Urban-Econ Development Economists have been appointed by TEEPSA to undertake the economic impact process in support of an environmental authorisation (EA) application.



Source: WSP, 2023

Figure 1-1 Localities of project Development Area, Exploration Priority Area and Pipeline Corridors

1.2 Project components, activities and timeframes

The section below and Table 1-1 provide information regarding these activities and summarise the Project activities and components together with the location and phasing. The following subsections are focused on the Project components considered in this assessment.

Table 1-1 – Details of Project Activities

| Aspect | Details |
|---|---|
| Proposed exploration and appraisal drilling activities (Eastern Portion of Block, Exploration Priority Area) | <ul style="list-style-type: none"> • Mobilisation of drill rig to site • Drilling of up to four (4) exploration and appraisal wells • Possible flow testing, VSP, and well logging for each well drilled. • Plugging and abandonment of each well • Demobilisation of drill rig from site • Onshore support |
| Proposed offshore surveys (Whole Block) | <ul style="list-style-type: none"> • Mobilisation of specialised vessels for survey work • Bathymetry and sonar surveys |

| Aspect | Details |
|--|--|
| | <ul style="list-style-type: none"> • Seafloor sampling surveys • Metocean surveys • Demobilisation of survey vessels • Onshore support |
| Proposed production and development activities (Western Portion of Block, Project Development Area) | |
| Construction Phase | <p>Offshore</p> <ul style="list-style-type: none"> • Mobilisation of drill unit to site • Drilling of up to five (5) production and appraisal wells (with the option of drilling a 6th well) and testing • Installation of Well-heads and Christmas-Trees (XMT) • Laying of deep-water subsea production manifolds and jumpers connecting the wells • Installation of subsea production pipeline • Connection of manifolds to the F-A Platform via the production pipeline, riser and umbilical • Demobilisation of drill rig from site • Demobilisation of pipeline installation and support vessels <p>Onshore</p> <ul style="list-style-type: none"> • Establishment of a logistics base within the Mossel Bay port • Support vessels transport of equipment, bulk materials and general supplies from shore to drill unit, survey and pipeline laying vessels • Helicopter flights for ship/shore personnel movement and in emergency events • Periodic bulk delivery (equipment) from Gqeberha and/or Cape Town port |
| Production Phase | <p>Operations</p> <p>Offshore</p> <ul style="list-style-type: none"> • Operation of the gas field, including subsea infrastructure to supply the F-A Platform • Operation of F-A Platform and associated infrastructure • Vessel movements for maintenance and inspections of subsea infrastructure and flowlines pigging <p>Onshore</p> <ul style="list-style-type: none"> • Movement of support vessels from shore to F-A Platform for transportation of equipment, bulk materials and general supplies. |

| Aspect | Details |
|------------------------------|---|
| | <ul style="list-style-type: none"> • Helicopter flights for ship/shore personnel rotation and in emergency events. • Periodic bulk delivery (equipment) from Gqeberha and/or Cape Town port |
| Decommissioning Phase | <p>Offshore</p> <ul style="list-style-type: none"> • Mobilisation of drill unit to site • Mobilisation of specialised vessels for survey/ROV work. • Movement of support vessels from shore to drill unit for transportation of equipment, bulk materials and general supplies. • Helicopter flights for ship/shore personnel movement and in emergency events. • Decommissioning of production manifold, flowlines, umbilical and riser. • Decommissioning of subsea distribution units and power cable(s). • Retrieval of shallow water infrastructure, such as production risers and umbilicals. • Pigging of production flowline, incl. subsea tie-in. • Abandonment of wells. • Demobilisation of drill unit and support vessels from the site. <p>Onshore</p> <ul style="list-style-type: none"> • Movement of support vessels from shore to drill unit for transportation of equipment, bulk materials and general supplies • Helicopter flights for ship/shore transport • Salvage of retrieved equipment and shipping to Gqeberha and/or Cape Town port |

The Project activities are associated with the timeframes as indicated in Table 1-2.

Table 1-2 – Exploration, development and production related timeframes

| Project Component | Phase | Timeframe | Duration of Activities | No. of wells |
|--------------------|--|------------------|------------------------|----------------|
| Exploration | Mobilisation | To be determined | • 120 days per well | Not applicable |
| | Operations, including plugging and abandonment | | | Up to four (4) |

| Project Component | Phase | Timeframe | Duration of Activities | No. of wells |
|---|--|-------------------|---|---|
| | De-mobilisation | | | No applicable |
| Offshore Surveys (for Development and Exploration) | Operations | To be determined | <ul style="list-style-type: none"> Sonar: 15 – 30 days for 1 survey Seafloor sampling: 15 – 30 days for 1 survey Metocean Buoy: 7 – 15 days for deployment for 1 year monitoring | Not applicable |
| | Final well site selection, pipeline alignment selection | To be determined | To be determined | Not applicable |
| Development | Construction (including mobilisation) | Year 0 | 120 days per well | Two (2) |
| | | Year 1 | 120 days per well | One (1) |
| | | Year 10 | 120 days per well | Two (2) |
| | Production | Year 1 to Year 25 | - | Year 1 to 10 – 3 wells Year 11 to 25 – 5 wells |
| | Decommissioning (including plugging and abandonment, and demobilisation) | Year 26 | - | Five (5) |

1.3 Consideration of alternatives

Alternatives are defined in terms of the NEMA as “different means of meeting the general purpose and requirements of the activity, which may include alternatives to –

- the property on which or location where it is proposed to undertake the activity;
- the type of activity to be undertaken;
- the design or layout of the activity;
- the technology to be used in the activity and
- the operational aspects of the activity.”

This section outlines the alternatives to the Project, specifically location sites, technology, design and operation that have been assessed by this specialist study in terms of potential environmental and social impacts in the ESIA.

1.3.1 Activity Design and Layout Alternatives

The following paragraphs outline design issues relevant to the Project and where decisions can be made regarding the preferred option as the design process progresses.

1.3.1.1 Pipeline Corridor

A subsea pipeline is required to connect the production wells to the F-A Platform. Given the approximate location of the production wells within the field and the F-A Platform, the production pipeline alignment options are limited. However, two pipeline alignments have been identified:

- The (base case) pipeline alignment corridor is a direct route of approximately 109 km from the anticipated well location to the F-A platform and
- The (alternative) pipeline alignment corridor is approximately 115 km, routing slightly northeast from the base case with a bend to reach the F-A Platform.

The pipeline alignment options are shown in Map 1-1.

The diameter of the pipeline is also under consideration, as the specified diameter pipeline will need to be imported. In contrast, a slightly smaller diameter pipeline can be locally manufactured. This would contribute to the project's local content and will be considered part of the economic study, with the relevant information being derived from the SLP currently under development as part of the PR application.

A longer pipeline corridor will increase the economic impact of the construction period. However, the economic benefits do not differ to such a degree to alter the decision-making process between the two alternatives.

1.3.2 Onshore Support Location(s)

The logistics base's onshore location to support the project's construction and production phase is most likely to be located within the existing infrastructure in Mossel Bay port.

As the closest port to the existing F-A Platform and onshore pipeline, Mossel Bay will likely be used as the base for support vessels conveying equipment and supplies to the drill rig during construction and to the F-A Platform during operations.

Additional onshore support for the proposed project could be based in either the port of Cape Town or the port of Gqeberha. These locations will likely be used to ship large imported equipment that needs to be transported to the drill rig.

Alternatives to the Mossel Bay port for onshore support location will be assessed in the ESIA in terms of potential environmental and social impacts and cumulative effects. To maximise the economic and employment benefits in the IZOI, as far as possible and feasible, goods and services should be sourced from the IZOI.

1.3.3 Operational Aspects

The operational aspects involve the transportation of products through the production pipeline that connects the production wells to the F-A Platform. The existing F-A Platform will process the gas and condensate and handling of waste streams.

The base case scenario involves that the processed gas and condensate will be pumped to shore via existing infrastructure from the F-A Platform. PetroSA will be responsible for the operation of the field once commissioned.

This scenario implies that appropriate upgrades to existing equipment on the Platform will be done if the PR application is granted. PetroSA will be responsible for obtaining operational permits and licences to ensure compliance with safety and environmental standards.

Using existing infrastructure to transport and process products will reduce the risk of stranded assets.

1.3.4 End-user Options

Three end-user scenarios are envisaged, not in any particular order, namely:

- Scenario 1 - PetroSA is the purchaser of the gas and condensate to use as feedstock for the Gas-to-Liquid plant, which is not currently operational
- Scenario 2 – ESKOM or an independent power producer (IPP) is the purchaser of the gas to use in the Gourikwa power plant that is currently powered by diesel or in another power plant that could be built.
- Scenario 3 is a combination of the above scenarios where PetroSA and ESKOM (or an IPP) purchase a proportion of the gas and condensate for uses described above.

Negotiations are ongoing, and the outcome will determine the preferred end-user option.

The gas and condensates produced by the proposed project would allow the Gas-to-Liquid plant to restart operations, as the plant has been idle since the end of 2020 (the plant is currently under care and maintenance – see Section 2.5). The restart/ resuming of operations will have a long-term positive impact on the operations of PetroSA.

Utilising gas for power generation (whether directly by Eskom or through an IPP) will assist with increasing ESKOM's ability to meet consumer demand. Still, it will also promote South Africa's transition

to a more sustainable energy mix. Utilising gas for electricity generation is in line with government policy, as the aim is to increase the contribution from gas in South Africa's energy mix from 2.6% to 15.7%. Therefore, utilising gas from the proposed project contributes to realising policy objectives for gas-to-power without relying on imports. This would be the alternative as no other local gas resource is currently in production. PetroSA's existing facilities could be used to process the condensate and/or gas upon their arrival onshore.

1.3.5 No-Go Option

The No-Go alternative represents the option to not proceed with the development and exploration activities on Block 11B/12B. If the Project does not proceed, the project area of influence (i.e., offshore licence block, southern coastline and near shore of South Africa) remains unchanged in terms of environmental and socioeconomic impacts, other than variations arising from natural events in or around Block 11B/12B and the continued use of the area for fisheries and shipping purposes.

The No-Go option precludes the opportunity of replacing the depleted supply of gas and condensate from the Block 9 field that provides feedstock for the F-A platform, which provides feedstock for the PetroSA GTL plant. With the fast depletion of the Block 9 gas field, PetroSA has, over the years, investigated several initiatives at replacing the feedstock, including, among others:

- 2012 – PetroSA considered investing between \$375 million and \$510 million in an LNG import facility;
- 2017 – PetroSA signs an agreement with the geological exploration company of the Russian Federation for geological exploration work, including seismic operations, gravity-magnetic exploration works and the drilling of exploratory wells along the south coast that envisages up to four million cubic metres of gas daily delivered to the Gas-To-Liquids refinery in Mossel Bay; and
- 2018 – the South African Energy Minister rejects a PetroSA plan to reduce gas-to-liquid processing and increase refining crude oil purchased from Nigeria to produce petroleum products

However, the shortage of feedstock has resulted in the GTL plant being put into care and maintenance in November 2020, with a loss in employment and local economic and social benefits for the Mossel Bay area. PetroSA plays a valuable role in the economy of Mossel Bay, particularly in terms of job creation. According to the 2019 PetroSA annual report,² the operations of PetroSA benefitted the economy of Mossel Bay and surrounding areas during that year in that the company:

- employed approximately 800 people;
- spent R10.2 million on skills development;
- spent R5.1 million on employee development;

² The GTL plant was last operational in 2019.

- spent an estimated R59.6 million on B-BBEE suppliers, of which R41.6 million was spent on exempted micro enterprises (EMEs) and
- R16 million on corporate social investment (CSI) initiatives.

The No-Go option will result in this situation remaining unless gas or oil is imported to provide feedstock for the GTL plant. The employment losses will have a substantial negative impact on the local economy of the IZOI, as it will affect local household purchasing power and increase the unemployment rate if workers cannot find employment in other local industries.

Regarding electricity production, the No-Go option will also result in missing an opportunity to use domestic gas for power generation and to reduce reliance on coal-fired electricity and positively impact emissions. Utilising domestic gas will also reduce the need to import LNG for gas-fired power generation. Compared to domestic gas, LNG is more expensive, bringing more price volatility as it is linked to international markets, with limited direct job opportunities and linked economic activities and tax revenues for South Africa.

1.4 Specialist study scope

The scope of work for the Economic Impact Assessment is as follows:

- Delineate the zones of influence (ZOI) in consultation with other specialists on the team;
- Determine the affected industries and economic activities located in the ZOI and identify sensitive receptors and beneficiaries within the delineated study areas;
- Determine the data required to assess potential impacts and review secondary data available to determine the suitability of the data for the analysis and the data gaps;
- Create an economic profile of the potentially affected and benefiting environment, which would then represent a description of the existing impacts exerted on the ZOI and would be used to assess the potential changes that ensued from the proposed project;
- Assess the sensitivities of the identified sensitive receptors relative to the proposed development and analyse potential positive and negative economic effects of the proposed development on the local and regional economic activities;
- Assess the cumulative effects of the project given the existing and planned developments in the area;
- Evaluate the potential positive and negative impacts following the environmental specialist's methodology;
- Develop a mitigation plan by proposing mitigation measures to reduce the impacts of negative effects and measures to enhance positive impacts;
- Provide a reasoned opinion on whether the proposed project should be authorised and whether the associated activities are acceptable from the economic perspective and

- Compile Scoping and Economic Impact Assessment reports.

The scope of work does not include an economic cost benefit analysis. Such a study can be used to consider the economic benefits (direct, indirect and induced impacts on output, GDP, employment and household income as well as government revenue) of the various phases of the project, including the direct, indirect and induced economic benefits of the utilisation of the gas against the negative environmental impacts, negative impacts on other industries, such as fisheries and tourism and the cost of mitigating any potential negative environmental impacts.

2 Method of study

2.1 Methodology

The objective of the study is to quantify, as far as possible, the direct, indirect and induced economic impacts of the proposed project on the local and national economy. The research will follow a mixed-method approach by combining qualitative and quantitative methods.

2.1.1 Data collection and analysis

Secondary data sources are used to construct a baseline profile consisting of the leading demographic and economic indicators of the areas of influence. Sources include Quantec Standardised Regional Data (local municipal level up to 2021) and Stats SA Census 2011. The baseline profile includes an overview of key demographic indicators such as population, number of households, population and household growth, education, and household income. These indicators provide an understanding of the skills base of the areas of influence and the need for employment (currently and in the future). Also included in the baseline profile is a discussion of economic and employment growth trends and sectoral economic activity in the study areas,

2.1.2 Impact Modelling

A social accounting matrix (SAM) model was utilised to determine the impact of the direct activities of the proposed project. A SAM represents the flows of all economic transactions within an economy (regional or national). It is, in essence, a matrix representation of the national accounts of a given region but can be extended to include non-national accounting flows.

A SAM provides a static picture of the economy over a year based on national accounting statistics and input-output tables. Stats SA compiles and publishes the latter using South African Reserve Bank national accounts data. Nonetheless, the model has been amended to reflect the conditions of the Western Cape. The fundamental assumptions with regard to the model (as well as the use of this model for analytical purposes) are:

- Production activities in the economy are grouped into homogeneous sectors;
- The mutual interdependence of sectors is expressed in meaningful input functions;

- Each sector's inputs are only a function of the specific sector's production;
- The production by different sectors is equal to the sum of the separate sectors of production;
- The technical coefficients remain constant for the period over which forecast projections are made, and
- There will be no major change in technology.

It should also be noted that:

- All the Rand values in this report represent 2022 Rand values – cost excluding 15% value-added tax (VAT);
- The different measures of economic impact – jobs, Gross Domestic Product (GDP), and new business sales – cannot be added together and should be interpreted as separate economic impacts and
- The model quantifies direct and indirect economic impacts for a specific amount of time. Therefore, the derived estimates do not refer to gradual impacts over time.

Three types of economic impacts can be measured, namely direct, indirect, and induced impacts.

- Direct impacts: Considered to be the “on-site” impacts. These are changes in local business activity occurring as a direct result or consequence of the capital expenditure (CAPEX) or operational expenditure (OPEX). Direct economic effects are generated when the new business creates jobs and purchases goods and services to operate the new facility. Direct impacts result in an increase in job creation, production, business sales, and household income. In this case, it is assumed that the direct impact will accrue to the IZOL.
- The multiplicative effects of the proposed project can be grouped into two distinct effects, namely:
 - Indirect impacts occur when the suppliers of goods and services to the new business experience larger markets and the potential to expand. Indirect impacts increase job creation, GDP, and household income; and
 - Induced impacts represent further shifts in spending on food, clothing, shelter, and other consumer goods and services due to the change in workers and payroll of directly and indirectly affected businesses. This leads to further business growth/decline throughout the local economy. Examples include the income of employees and shareholders of the project as well as the income arising through the backward linkages of this spending in the economy. The impact is sometimes confused with the forward linkages of a project.

Economic impacts can also be viewed in terms of their duration or the stage of the life cycle in which the development takes place, namely (1) the construction phase (CAPEX), (2) the operational phase

(OPEX) and (3) the decommissioning phase. Construction and decommissioning phase impacts are temporary; they have, therefore, a temporary effect. On the other hand, the operational phase is more permanent.

The economic impacts experienced during the construction, operational and decommissioning phases can be viewed in terms of changes to the following:

- Economic output – the change in output³ of the economy as a result of the investment;
- GDP – the change of the value-added in the economy as a result of the investment;
- employment – the change in jobs available in the economy as a result of the investment; and
- household income – the change in the income generated through the employment created due to the investment.

The economic impact of the procurement of goods and services during the various phases of the project is directly linked to the areas from which goods and services are sourced, whether in the IZOI or the primary study area.

2.2 Study Area Delineation:

Given input requirements, the production location of the project, and the potential downstream activities of the project, the areas to consider when evaluating the potential economic impact of the project may be delineated as follows:

2.2.1 Immediate zone of influence (IZOI)

The IZOI comprises the areas where most of the development- and production-related activities will occur. The IZOI is the area that will supply auxiliary services to offshore activities, including accommodation, catering, and transport. The IZOI encompasses the Mossel Bay, George, and Knysna local municipal areas.

2.2.2 Primary study area

The primary study area encompasses towns close to the shore that can accommodate marine servicing and manufacturing industries to supply goods and services required during the development and operations phases of the project. Such towns include Cape Town, Gqeberha, Saldanha Bay, and East London. Thus, the primary study area for the economic impact assessment was delineated as the stretch of land along the Indian and Atlantic Oceans between Saldanha Bay and East London.

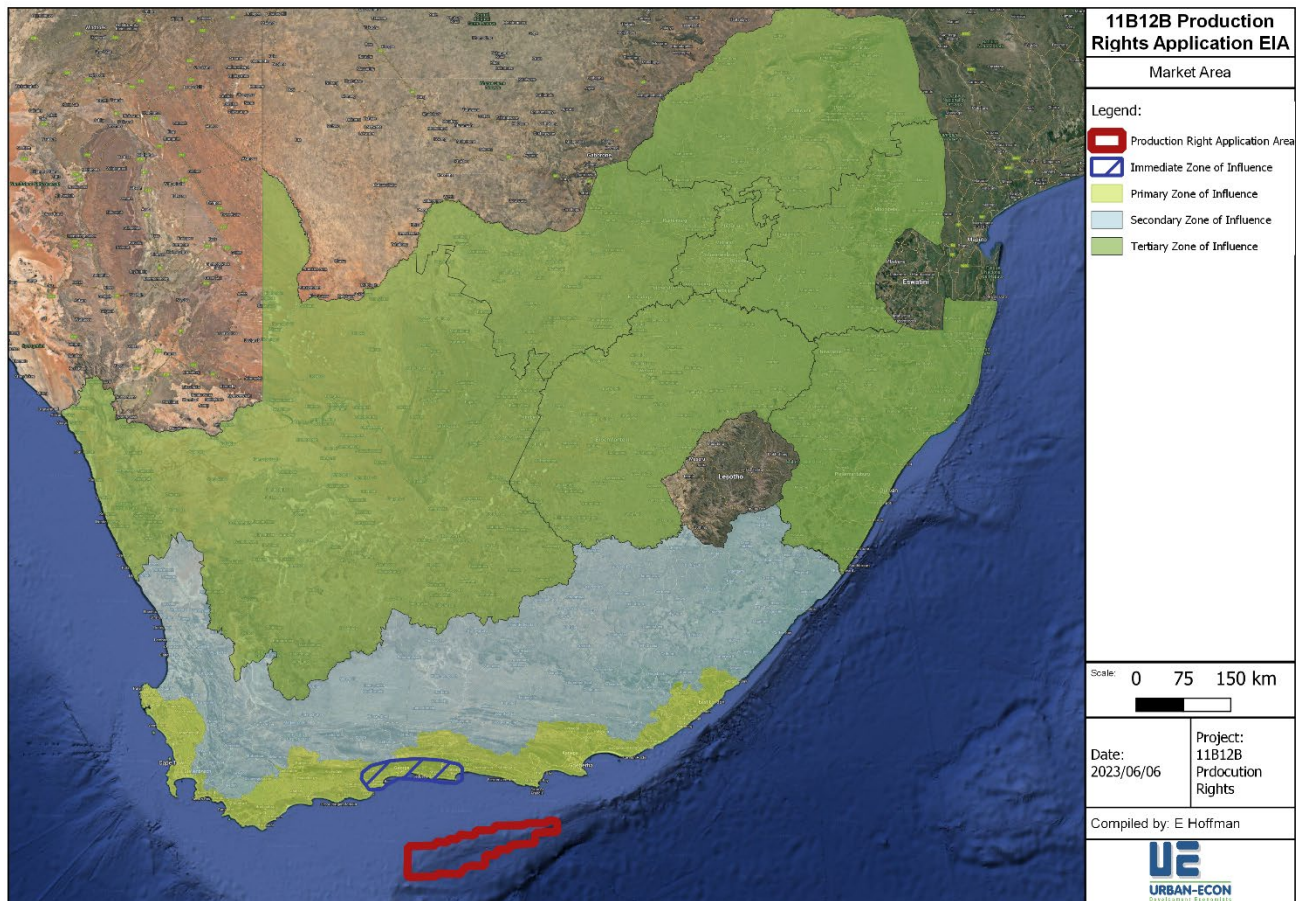
³ Output (or sales volume) – the value of all inter- and intra-sectoral business sales generated in the economy because of the exploration, construction, operational and decommissioning phases.

2.2.3 Secondary study area

The secondary study for the economic impact assessment area includes the provinces in which the IZOI and primary study area are located, namely the Western Cape and the Eastern Cape. While the production activities of the project are within the Western Cape, the proximity to the Eastern Cape may lead to this province benefitting from the initiative through the procurement of goods and services.

2.2.4 Tertiary study area

The rest of South Africa is seen as the tertiary study area for the economic impact assessment, due to potential procurement benefits and downstream impacts of an increase in local gas production on the national economy.



Source: Urban-Econ, 2023

Map 2-1 Study area

2.3 Stakeholder consultation

The table details the comments relevant to the economic impact assessment received during the scoping phase public participation period of the ESIA process undertaken by WSP, as detailed in the Final Scoping Report.

Table 2-1 Public participation comments and responses

| Comment | Response |
|---|--|
| <p>“That this project has the potential to exclude or reduce catch rates for large pelagic longline fisheries and small-scale fishers for years could prove catastrophic for some of them. These fisheries spend most of its time at sea searching for fish with actual fishing events taking place over a relatively short period of time. These fisheries will be severely disadvantaged, being unable to work in their operational areas. The significance of the impact of both cumulative effects and extended duration should be considered high, and compensation for loss of income must be established through a Cost Benefit Analysis.”</p> | <p>The scope of work does not entail a cost benefit analysis. The impact on the industry is considered in the literature review and Section 8 (Impact Assessment – Unplanned Events) of this report. Under normal operation, the impact on fisheries is considered negligible.</p> |
| <p>“TESA has not included the need for research focused on the impact on the tourism industry along the Bitou coastline and how the proposed TESA activity may affect our tourism industry. The town of Plettenberg Bay and the area known as ‘Bitou’ relies on its tourism industry as the main economic contributor. Plett’s most unique selling points include its beaches, rivers and lagoons which is then followed by marine life and coastal activities.”</p> | <p>The potential impact on tourism is considered in the literature review and in Section 8 (Impact Assessment – Unplanned events). Given the location of the proposed project, under normal operations, no impact on tourism is anticipated.</p> |
| <p>As part of the need to consider a full cost benefit analysis, scope for the consideration of natural capital accounting should be extended. Natural Capital Accounting (NCA) provides a common framework for measuring and tracking over time the contribution of ecosystems and natural resources to social and economic goals, such as water security, food security and job creation, and provides a wealth of information that can</p> | <p>A cost benefit analysis and NCA is not in the scope of the assessment. However, the cost of carbon against the GDP benefit of the proposed project is reviewed in Section 7 (Impact Assessment – Normal Operations)</p> |

| Comment | Response |
|--|----------|
| <p>improve planning and decision-making related to the management of natural resources. The underlying premise for NCA is that since the environment is important to society and the economy, it should be recognized as an asset that must be maintained and managed, and its contributions better integrated into decision making. Ecosystem accounting incorporates a wider range of benefits to people than those captured in standard economic accounts and provides a structured approach to assessing the dependence and impacts of economic and human activity on the environment.</p> | |

2.4 Data used for specialist report

Data sources include:

- Statistics SA Census 2011
- Quantec Standardised Regional Data (published in June 2022 and contains data on a local municipal level up to 2021)
- Anticipated capital expenditure and operational expenditure received from TEEPSA for the proposed development
- PetroSA Annual Report (2019)
- Annual commercial fishing industry values and employment, dated 2019, from FishSA
- Findings from the Marine Impact Assessment Report (Wright, et al., 2023) with reference to the unplanned events impacts on fishing.

2.5 Impact assessment methodology

This section sets out the approach and method for assessing the impacts for the Project. It defines the terminology applied and the steps used to evaluate impact significance. See Appendix B for the Impact Assessment methodology.

2.6 Assumptions, uncertainties or gaps in knowledge

Assumptions and data limitations relating to the baseline analysis:

- While the Stats SA Census 2011 is outdated, using historical growth rate estimates from Quantec Standardised Regional Data (up to 2021), 2022 values were forecast.

- Quantec Standardised Regional Data is only available on a municipal level. It is assumed that town-level trends have been similar to those of the broader municipal area.

Assumptions and data limitations relating to the economic impact assessment:

The quantification of economic impacts has only been done on the activities that make up the proposed project. This project is anticipated to have a significant economic impact in its operational phase if the gas and condensates extracted are productively utilised. Given the scope of this report, the economic impacts of end-user options are considered but not quantified.

Financial estimates (in US dollars) for each phase were obtained from TEEPSA, and assumptions were applied to estimate the amounts that will be spent in South Africa. Alternative decommissioning cost estimates were obtained from WSP. The estimated assumptions around local content spend were based on the sector analysis undertaken as part of the baseline study and the estimated work that could be undertaken by South African companies utilising existing South African skills. These assumptions are unpacked in more detail in Section five, which presents the findings of the economic modelling.

The US dollar ZAR exchange rates used to determine Rand values used an exchange of 1 USD is equal to R16.37.

3 Applicable policies, Legislation, guidelines and standards

This section provides an overview of key legislation, regulations, policies and guidelines applicable to the Project.

Table 3-1 – Applicable policies, legislation, guidelines and standards - local

| Policy, legislation, guideline or standard | Relevance to Project |
|---|---|
| New Growth Path (2010) | The New Growth Path recognises that joblessness, poverty, and inequality are among the main constraints faced by South Africans. The New Growth Path aims to support labour-absorbing activities and promote private sector investment, as this is recognised as an effective way to create large-scale employment. Critical sectors identified for job creation include the agriculture and mining value chains, manufacturing, services, and tourism, as well as the knowledge and green economies. |
| National Development Plan (NDP) (2012) | The NDP emphasises the importance of employment creation and economic growth. The NDP focuses explicitly on lowering the |

| Policy, legislation, guideline or standard | Relevance to Project |
|---|--|
| | unemployment rate, increasing the labour force participation rate, and adding jobs to the economy. These targets could be achieved through supporting investment and human development, promoting employment in labour-absorbing industries, and promoting exports. |
| Operation Phakisa (2014) | One of the main objectives of this initiative concerns unlocking the economic potential of South Africa's oceans. Critical areas to achieve this include marine transport and manufacturing, offshore oil and gas exploration, aquaculture, marine protection services and ocean governance. |
| South African Economic Reconstruction and Recovery Plan (2020) | The plan is an attempt to stimulate equitable and inclusive economic growth. It highlights the following interventions: aggressive infrastructure investment; employment-orientated strategic localisation, reindustrialisation, and export promotion; energy security; support for tourism recovery and growth; gender equality and economic inclusion of women and youth; green economy interventions; mass public employment interventions; strengthening food security; and macroeconomic interventions. |
| Industrial Policy Action Plan (IPAP), 2018/19 – 2020/21 | IPAP includes growing the ocean economy. Through the Aquaculture Development and Enhancement Programme, the Department of Trade, Industry and Competition aims to create and sustain jobs, broaden participation in the industry and increase local production. This programme highlights the importance of managing valuable marine resources to maximise the economic benefit of those who make a living from such resources. The IPAP also includes a long-term objective to have a gas industry that delivers an affordable and secure gas supply to the heavy industry, manufacturing, and transport sectors. |
| Integrated Resource Plan (IRP) (2019) | The IRP is an electricity infrastructure development plan that seeks to ensure stable, diversified, low-cost electricity provision while minimising negative environmental impacts. Ensuring electricity generation that can meet the demand of consumers (both domestic and commercial) is an essential part of creating an enabling environment for investment and economic growth. The IRP indicates that gas should form part of the energy mix of South Africa for the country to reach the objectives of the |

| Policy, legislation, guideline or standard | Relevance to Project |
|--|--|
| | IRP. In this regard, existing diesel-fired power plants should be converted to gas-powered facilities. |
| Gas Master Plan Basecase Report (2021) | This study notes that if the South African gas market can be developed and expanded, opportunities will emerge to attract new industries. Such opportunities, in turn, will stimulate economic growth and job creation. The Gas Master Plan recognises that the sector's development may come at the cost of the environment and that the industry must, therefore operate in a way that maximises economic benefits while minimising environmental impact. |
| Charter for the South African Petroleum and Liquid Fuels Industry | The Charter has several key focus areas, including ownership, management control, capacity building, employment equity, and procurement. The provisions in this Charter seek to ensure that the benefits of a proposed project flow to previously disadvantaged individuals. |
| OneCape 2040 (2012) | This Strategy greatly emphasises reducing unemployment in the Western Cape and improving local productivity to grow the economy. The strategy recognises these elements as essential to building cohesive and inclusive communities in the Western Cape. |
| Western Cape Provincial Strategic Plan (2019 – 2024) | The plan aims to create safe and cohesive communities through economic growth and job creation, empowering people and mobility, and spatial transformation. The Plan seeks to improve the competitiveness of the province by facilitating the development of a skilled labour force, excellent infrastructure, and improved productivity to ensure that the province becomes the investment destination of choice. Ensuring resource resilience is crucial in creating an enabling environment for economic growth. The proposed measures to this effect encompass climate change resilience, energy security, water security, and waste management. |
| Western Cape Economic Recovery Plan (2021) | The Recovery Plan reaffirms the importance of creating an enabling environment for job creation. Key actions to achieve this include boosting investment, exports, and infrastructure, ensuring energy and water resilience, and facilitating skills development. |

| Policy, legislation, guideline or standard | Relevance to Project |
|---|--|
| | Sectors promoted for attracting investment into the Western Cape include agribusiness, oil and gas, the green economy, healthcare, hotels and real estate, manufacturing, financial and business services, and the ocean economy and technology. |
| Eastern Cape Provincial Economic Development Strategy (PEDS) | The Plan aims for “a growing, inclusive and equitable economy, which is larger and more efficient, and optimally exploits the province's competitive advantages, increases employment, and reduces income and wealth inequalities”. The Eastern Cape PEDS identifies six sectors with significant potential to stimulate economic growth in the province: agri-industry, sustainable energy, the ocean economy, the automotive industry, light manufacturing, and tourism. |
| Eastern Cape Vision 2030 Provincial Development Plan (2019) | Includes the attainment of an innovative and inclusive growing economy, environmental sustainability, rural development, and an innovative and high-value agricultural sector. The Plan reaffirms the potential of high-priority sectors as identified in the Eastern Cape PEDS. |
| Garden Route District Municipality Integrated Development Plan (IDP) 2022 – 2027 | The IDP emphasises the importance of growing an inclusive district economy while promoting sustainable environmental management. Unlocking the full potential of available resources is essential for equitable, prosperous, and sustainable development in the municipality. |
| Garden Route Growth and Development Strategy (2021) | The municipality aims to facilitate growth and development in the Garden Route area. Regional priorities supported by the document include a water-secure future, a circular economy, resilient agriculture, sustainable tourism, supporting well-being and resilience, promoting a connected economy (through transport, rural-urban integration, information and communication technology), and a sustainable energy transition. The Strategy acknowledges the importance of the coastal economy, describing it as a resource that must be utilised for integrated economic development opportunities. |
| Garden Route Recovery Plan (2021) | This strategy indicates various ways the priority areas identified in the Garden Route Growth and Development Strategy can recover from the pandemic's impacts and how they can be utilised to fast-track growth in the region. The Brulpadda/Luiperd and Paddavissie gas fields are mentioned as a potential long-term opportunity for the municipality. |

| Policy, legislation, guideline or standard | Relevance to Project |
|---|---|
| | Other vital initiatives in the Plan include supporting the tourism industry's recovery and promoting exports and skills development. |
| Mossel Bay Local Municipality Local Economic Development (LED) Strategy (2022) | <p>By implementing the LED Strategy, the Municipality seeks credible economic growth to create high-quality jobs. Furthermore, the Municipality wants to break its dependency on the state and facilitate economic recovery from the COVID-19 pandemic. Relevant economic focus areas outlined in the Strategy include the green economy, rural development, the ocean economy, tourism development and promotion, and investment promotion. Proposed interventions for development mentioned in the LED strategy include ocean conservation and clean-up projects, the development of an industrial park geared towards the offshore oil and gas industry, the development of a Special Economic Zone in Mossel Bay, promoting alternative energy, tourism development (by assisting entrepreneurs and small businesses), and promoting exports.</p> |
| George Local Municipality Integrated Economic Growth Strategy (2021) | <p>This plan aims to reignite the tourism sector (supporting the informal sector and small, medium and micro-enterprises), promote spatial transformation through planning and infrastructure tools, and develop tools to optimise resources and enhance data and knowledge management.</p> |
| Knysna Local Municipality Amended IDP, 2017 – 2022 | <p>One of the focus areas for the Municipality is to establish an enabling environment for the creation of decent jobs. According to the IDP, this can be achieved through various mechanisms, including empowering local contractors, investment in the tourism industry, and training and skills development. Another focus area of the Municipality is environmental management. Extreme weather events (e.g., droughts) and pollution negatively impact the local economy through their linkages with the tourism and fishing industries.</p> |

Table 3-2 – Applicable policies, legislation, guidelines and standards - international

| Policy, legislation, guideline or standard | Relevance to Project |
|--|--|
| <p>Sustainable Development Goals (SDGs) – United Nations (UN), 2015</p> | <p>These goals revolve around people, prosperity, peace, and partnership. Several SDGs are particularly relevant:</p> <p>SDG 7: Affordable and clean energy: The goal is to ensure universal access to affordable, reliable, and modern energy sources by 2030. It also aims to substantially increase the share of renewable energy in the global energy mix.</p> <p>SDG 8: Decent work and economic growth: This goal focuses on sustaining per capita economic growth and achieving higher levels of economic productivity.</p> <p>SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. It aims to develop quality, reliable, sustainable, and resilient infrastructure to support economic development. It also promotes inclusive and sustainable industrialization and encourages upgrading infrastructure and retrofitting industries to make them sustainable, with increased resource-use efficiency and adopting clean technologies.</p> <p>SDG 12: Ensure sustainable consumption and production patterns: This goal aims to achieve sustainable management and efficient use of natural resources. It also emphasizes the development and implementation of tools to monitor sustainable development impacts, particularly in the context of sustainable tourism.</p> <p>SDG 14: Conserve and sustainably use oceans, seas, and marine resources. The goal focuses on preventing and reducing marine pollution, managing and protecting marine and coastal ecosystems, and providing access to marine resources and markets for small-scale artisanal fishers.</p> |

| Policy, legislation, guideline or standard | Relevance to Project |
|--|---|
| | These SDGs provide a framework for addressing critical aspects of decarbonization and promoting sustainable practices within the oil and gas industries, such as transitioning to clean energy sources, ensuring decent work and economic growth, developing resilient infrastructure, adopting sustainable consumption and production patterns, and conserving marine resources. |

Table 3-3 – Applicable TEEPSA policies and standards

| Policy or standard | Relevance to Project |
|---|---|
| Social and Labour Plan (SLP) | The SLP document is required to be submitted with the production right application (in terms of Section 34(2)(j) of the MPRDA). It describes the social and labour plans associated with the block's future proposed production project. Such plans include human resource development, community development, procurement, supplier and enterprise development; employee housing and living conditions, and downscaling and retrenchment. These plans are essential to enhance the economic benefits for businesses and communities in the areas where the proposed project is set to occur. |
| TotalEnergies Corporate Social Responsibility Strategy | TotalEnergies aims to contribute to the SDGs by achieving carbon neutrality by 2050, developing the well-being of its people, and caring for the environment, which includes promoting the circular economy and creating value for society through fostering the development of economic opportunities for local communities. |
| TEEPSA Corporate Social Investment Policy (CSI) | Through the CSI policy, TEEPSA aims to ensure a sustainable contribution to the areas in which they operate by focusing on areas such as road and ocean safety, climate, coastal areas and oceans conservation, youth inclusion and education, and cultural dialogue and heritage. Such CSI initiatives increase the direct and indirect benefits of the operational aspects of the proposed project. |

The proposed project aligns with several international, national, provincial, and local objectives. This project will attract new investment to South Africa, and the country's economic growth and job creation will be boosted by strengthening the oil and gas value chain. Supporting this industry is of particular importance for the Western Cape.

The project could also promote a better energy mix in South Africa and reduce the national reliance on coal (depending on the off-take agreements secured for the project). Given the current energy crisis, this will have numerous benefits for businesses and households in the country. During its construction phase, the project could boost the local hospitality industry, which is an essential contributor to the tourism sector.

However, these potential benefits must be weighed against the possible negative impacts of the project concerning other strategic objectives, particularly those linked to the fishing and tourism sectors. Lastly, this project will rely heavily on imports (goods and skills), even though there is a local drive to promote exports.

4 Baseline description

4.1 Introduction

This section provides a demographic profile of the areas likely to be affected by the proposed project. The profile comprises socioeconomic information concerning the population, households, age, income, education level, and employment dynamics of the areas under consideration. Concurrently, it identifies trends to assess potential impacts on areas that are being reviewed. This section also includes an economic and labour profile for which historical trends and sectoral performances are unpacked. This section also provides the baseline information for economic sectors which would be involved in the construction and operation of the project so that local content assumptions (and the subsequent spend of investment in the South African economy) can be determined in the following section. Data sources include Stats SA Census 2011 and Quantec Standardised Regional data (2022) and primary research and interviews undertaken by Urban-Econ.

4.2 Social conditions

4.2.1 Population and households:

Table 4-1 shows the population, number of households, average household size, and average population and household growth rates of the IZOI and for the towns of Mossel Bay and George for 2022, which are the economic hubs in the IZOI.

Table 4-1 Estimated population and households, 2022

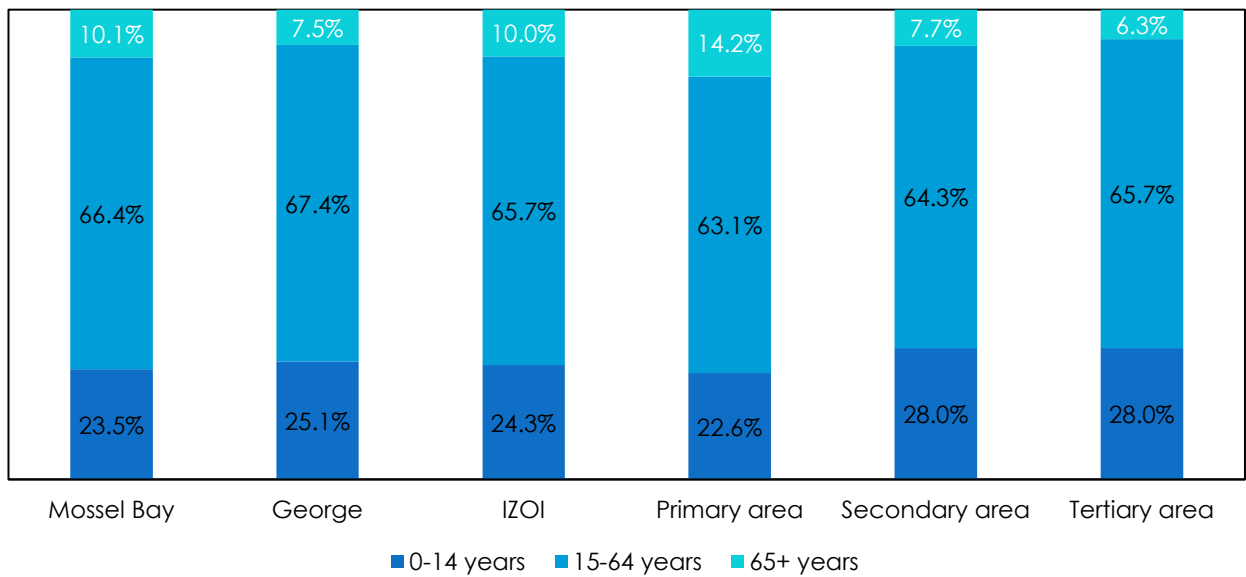
| | Mossel Bay (town) | George (town) | IZOI | Primary area | Secondary area | Tertiary area |
|----------------------------------|-------------------|---------------|---------|--------------|----------------|---------------|
| Population (Number) | 66 601 | 179 511 | 388 700 | 8 017 308 | 13 862 494 | 60 730 689 |
| Households (Number) | 21 528 | 50 620 | 112 773 | 2 285 241 | 3 698 798 | 16 982 055 |
| Average household size | 3.1 | 3.5 | 3.4 | 3.5 | 3.7 | 3.6 |
| Average population growth | 0.9% | 1.2% | 1.1% | 1.1% | 1.1% | 1.5% |
| Average household growth | 1.2% | 1.3% | 1.2% | 1.5% | 1.2% | 1.4% |

Source: Urban-Econ, using data from Census 2011 & Quantec Standardised Regional Data (2022)

The towns of Mossel Bay and George are seen as the hubs of the IZOI, with 17.1% of the population of the IZOI residing in the town of Mossel Bay. In comparison, the town of George makes up approximately 46.2% of the population. The town of George is also a focal point for in-migration as seen from the above- average population and household growth rates compared to the broader IZOI area.

4.2.2 Age

Figure 4-1 shows the age structure of the various areas being reviewed for this study. The age structure of an area indicates the potential availability of labour but also the dependency on the working-age population of those too young or old to work. It has implications for the future need for employment opportunities within an area.



Source: Urban-Econ, using data from Census 2011 & Quantec Standardised Regional Data (2022)

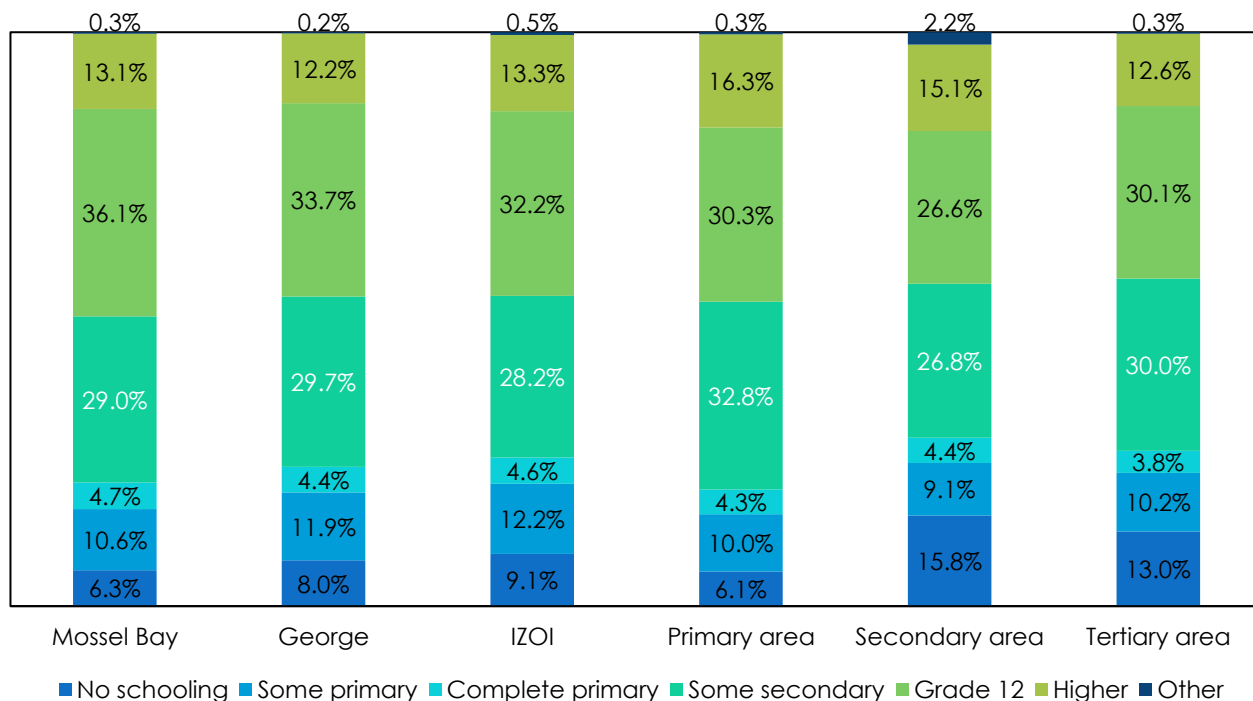
Figure 4-1 Estimated age profile, 2022

The observable high presentation of the working-age population (15 to 64 years) in Mossel Bay (66.4%), George (67.4%), and the IZOI (65.7%) means that there is a large labour force that could benefit from job creation initiatives. The working-age population is similarly distributed across the primary study area (63.1%), the secondary study area (64.3%), and the tertiary study area (65.7%). Significantly, Mossel Bay and the primary study area have large populations of people older than 65 years (10.1% and 14.2%, respectively). This means that these coastal areas are popular amongst retirees. In contrast, the secondary and tertiary study areas have large proportions of children (28.0% in each instance), which will influence the future demand for education and skills development initiatives and employment opportunities.

4.2.3 Education

Source: Urban-Econ, using data from Census 2011 & Quantec Standardised Regional Data (2022)

Figure 4-2 shows education levels for people aged 20 and older in Mossel Bay, George, and the IZOI, as well as in the primary, secondary, and tertiary study areas.



Source: Urban-Econ, using data from Census 2011 & Quantec Standardised Regional Data (2022)

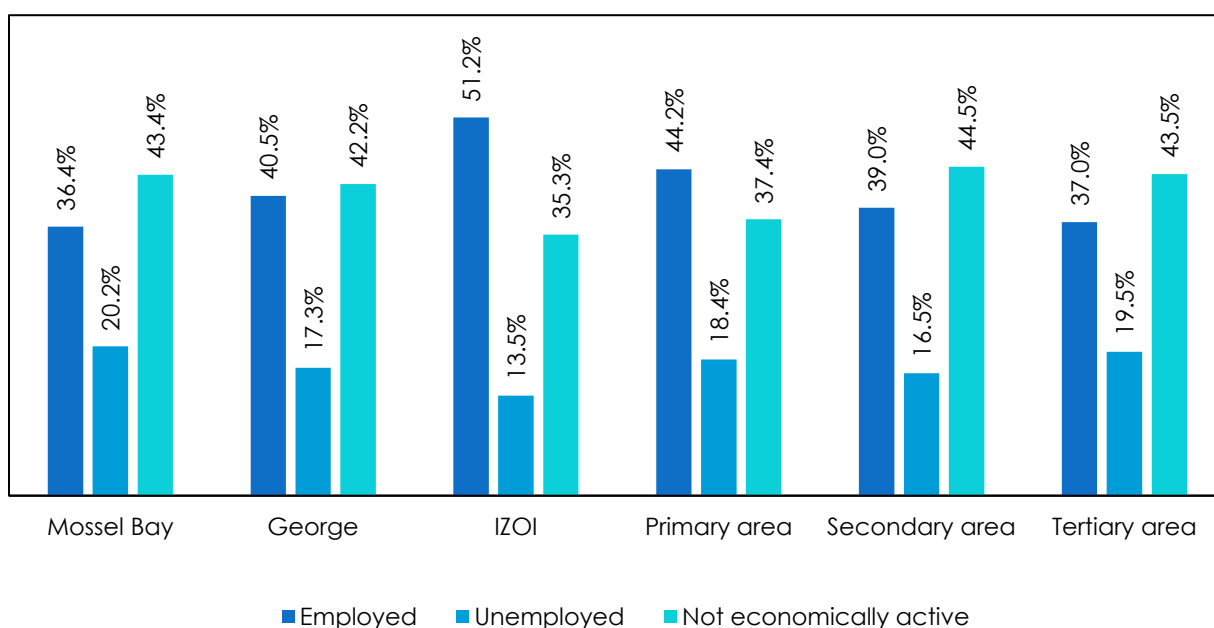
Figure 4-2 Estimated education levels, 2022

Compared with the other areas under review, Mossel Bay has a larger proportion of residents who have completed Grade 12 (36.1%). The proportion of the population with higher education is estimated at 13.1% for Mossel Bay, 12.2% for George and 13.3% for the IZOI. This is somewhat lower than the proportions for the primary (16.3%) and secondary (15.1%) study areas. Therefore, some specialised labour for the project will probably need to be recruited from the primary study area.

4.2.4 Employment

The educational attainments discussed previously are an important predictor of labour market outcomes. Such attainments are likely to influence employment across the areas under study, as illustrated in **Source:** Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

Figure 4-3.



Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

Figure 4-3 Estimated employment levels, 2021

In 2022, approximately 26.6% of the working-age population in Mossel Bay and 30.5% of working-age residents in George were employed. This was against the 25.3% and 22.3%, respectively, that were unemployed and the 48.1% and 47.2% of persons classified as not economically active.⁴ George and Mossel Bay are seen as the region's economic hubs, resulting in a large influx of unemployed job seekers. Importantly, the IZOI labour force featured the highest number of employed people (49.6%) and the lowest proportion of the unemployed (14.3%). The primary, secondary, and tertiary study areas recorded a better employment outlook than Mossel Bay and George across all the labour force categories in 2022.

4.2.5 Household income

Table 4-2 shows the estimated average monthly household incomes for the various study areas whilst

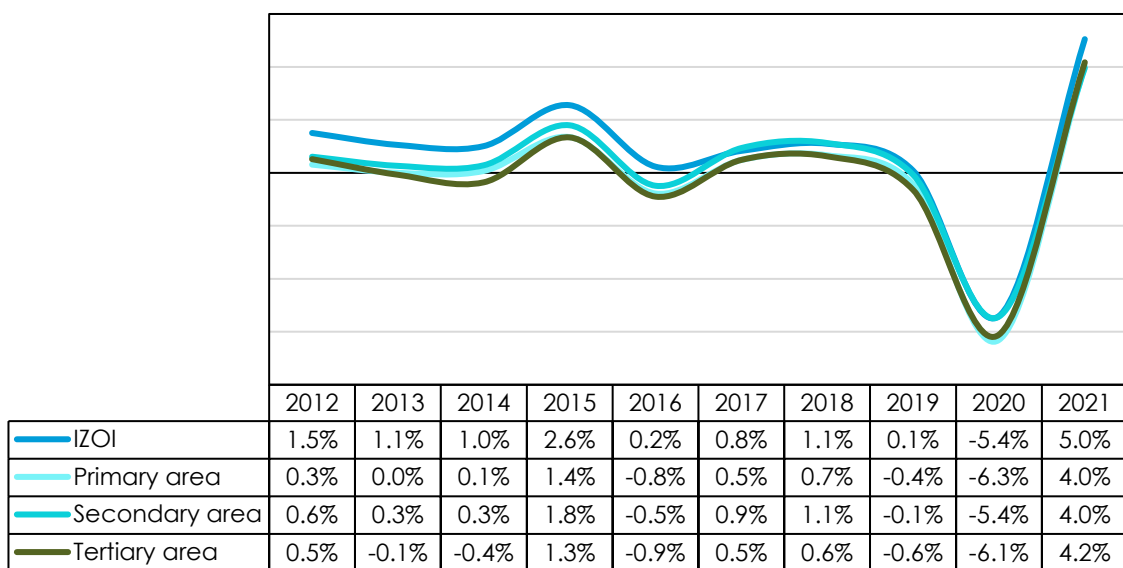
⁴ Individuals who are out of the labour market (i.e., not economically active) are those aged 15 to 65 who are not available for work. This category includes full-time scholars and students, full-time homemakers, those who are retired, and those who are unable or unwilling to work (Statistics SA, 2023).

Table 4-2 Estimated average household monthly income, 2022

| Area of Influence | Amount (Rand) |
|-----------------------|---------------|
| IZOI | R29 546 |
| Primary area | R24 029 |
| Secondary area | R24 809 |
| Tertiary area | R23 578 |

Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

Figure 4-4 shows the average income growth rates between 2012 and 2021.



Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

Figure 4-4 Household income growth, 2012 – 2021

The IZOI has a high average monthly household income compared with the primary, secondary, and tertiary study areas. This is in line with the high levels of education and employment estimated for the IZOI. However, since 2012, household income has been declining (except for a small increase in 2015). Average household incomes were negatively affected in 2020 across all areas, especially the primary study area, which fell by 6.3%. In 2021, lifting COVID-19 restrictions enabled many sectors to resume operations, allowing people to return to work. As a result, household income grew by 5.0% in the IZOI. It is important to note, however, that this remains below inflation. This suggests that households and the economy remain under pressure despite the improved economic growth of 2021.

4.3 Economic conditions

4.3.1 Gross Value Added (GVA)

The sizes of the various economies in terms of GVA⁵ are outlined in the table below. Given the different population sizes of the IZOI and the primary, secondary, and tertiary study areas, the total GVA of each cannot be used as an indicator of wealth. Therefore, the GVA per capita is also shown. GVA per capita is a valuable economic indicator as it can be used to show the well-being of a population (United Nations, 2007).

Table 4-3 Total GVA and GVA per capita, 2021

| | GVA (R billion current prices) ⁶ | GVA per capita (current prices) |
|-----------------------|--|------------------------------------|
| IZOI | R39.0 (0.7%) | R101 443 |
| Primary area | R899.1 (16.2%) | R114 350 |
| Secondary area | R1 183.7 (21.3%) | R86 308 |
| Tertiary area | R5 563.5 (100%) | R92 954 |

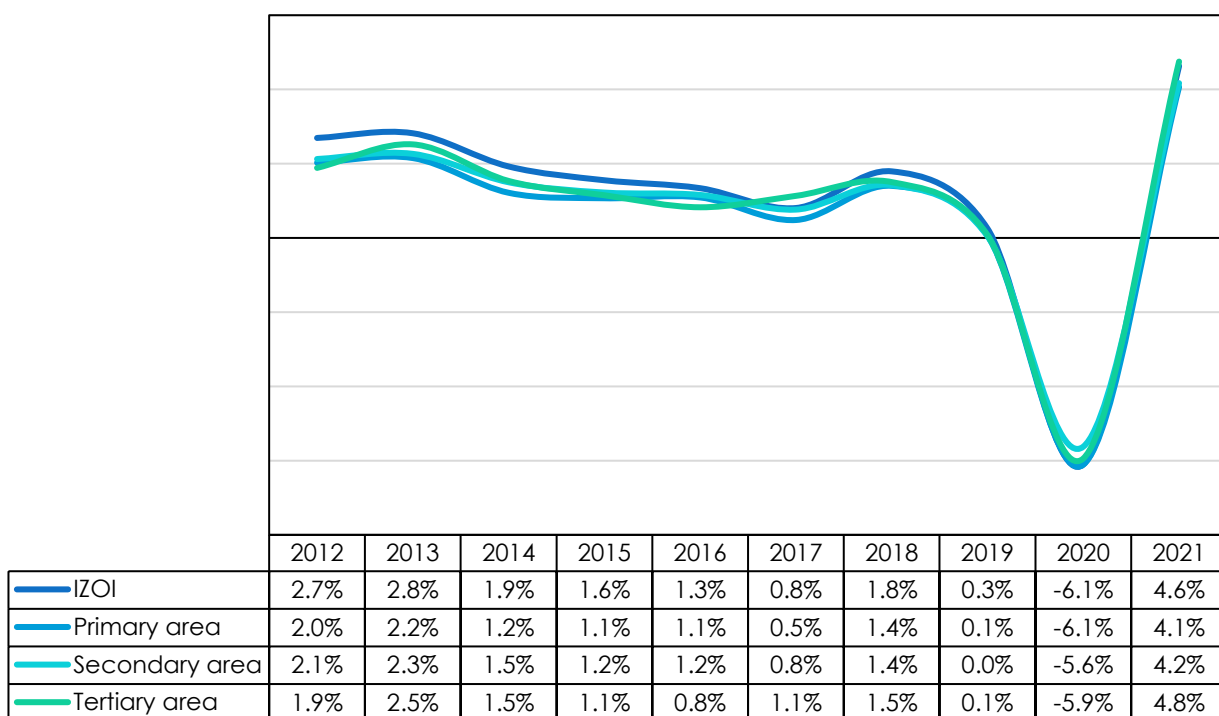
Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

The economy of the IZOI is relatively small (R39.0 billion), contributing 0.7% to the national economy and 5.1% to the economy of the Western Cape. However, the GVA per capita of the zone is significantly higher than the GVA per capita of the secondary (R86 308) and tertiary (R92 954) study areas. This indicates that populations in the IZOI and the primary study area have a better standard of living than those in the secondary and tertiary study areas.

Figure 4-5 below illustrates the GVA growth rates in the study areas between 2012 and 2021.

⁵ "GVA measures the contribution to the economy of each individual producer, industry or sector and is used in the estimation of GDP. GVA therefore is the difference between output and intermediate consumption for any given sector/industry. That is the difference between the value of goods and services produced and the cost of raw materials and other inputs, which are used up in production." (O'Connor,2018:7)

⁶ Values in brackets indicate the contribution to the South African economy.



Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

Figure 4-5 GVA growth trends, 2012 – 2021

Since 2012, the economy of the IZOI has been declining. This trend may be attributed to various factors, including drought across the Western Cape, the impact of loadshedding, and other national economic challenges. The primary, secondary, and tertiary study areas registered growth trends over the period in question. In 2020, the economy was impacted by the COVID-19 pandemic, leading to a sharp contraction of 6.1% in both the IZOI and the primary study area. This was marginally worse than the decline in the tertiary (5.9%) and secondary (5.6%) study areas, probably due to the importance of tourism as an economic driver in the IZOI.

In 2021, the economy of the IZOI partially recovered, with a growth rate of 4.6%. The tertiary study area yielded a better economic performance at 4.8% in 2021, while the secondary study area grew by 4.2%. The GVA contribution of the primary study area recorded the slowest recovery in 2021, namely 4.1%. As seen in **Table 4-4**

, the economies of the IZOI and the primary and secondary study areas are structured differently from that of the tertiary study area. Therefore, it is important to understand sector dynamics to unpack the growth performance.

Table 4-4 - Sectoral GVA contribution, 2021

| | IZOI | Primary area | Secondary area | Tertiary area |
|---|-------|--------------|----------------|---------------|
| Agriculture, forestry and fishing | 3.8% | 2.0% | 3.1% | 2.7% |
| Mining and quarrying | 0.4% | 0.2% | 0.3% | 8.6% |
| Manufacturing | 13.9% | 15.3% | 13.9% | 13.1% |
| Electricity, gas and water | 2.3% | 2.2% | 2.2% | 3.1% |
| Construction | 3.6% | 3.2% | 3.2% | 2.5% |
| Wholesale and retail trade, catering and accommodation | 16.6% | 16.8% | 16.8% | 13.7% |
| Transport, storage and communication | 7.8% | 7.9% | 7.3% | 7.1% |
| Finance, insurance, real estate and business services | 33.1% | 30.1% | 27.5% | 23.7% |
| General government | 8.2% | 9.5% | 10.3% | 8.6% |
| Community, social and personal services | 10.2% | 12.9% | 15.4% | 16.9% |
| Total | 100% | 100% | 100% | 100% |

Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

The sectors that contributed the most to the economy of the IZOI in 2021 were the finance, insurance, real estate and business services sector (33.1%), the wholesale and retail trade/catering and accommodation sector (16.6%), and the manufacturing sector (13.9%). The large contribution from the wholesale and retail trade/catering and accommodation sector to the economies of both the IZOI and primary study area indicates a prominent tourism industry, as many tourist activities are captured in this sector.

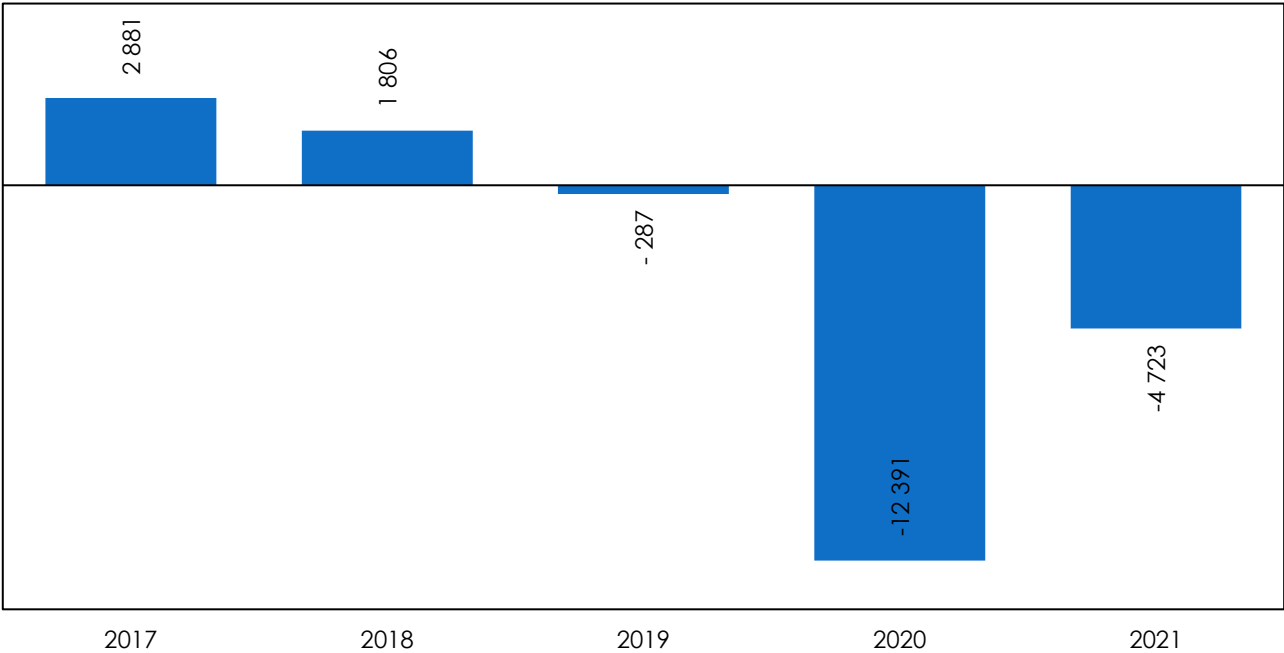
The manufacturing sector's contribution to the economy of the primary study area (15.3%) was greater than the contribution of this sector to the economies of the IZOI and the secondary and tertiary study areas. The metros included in the primary study area are all prominent manufacturing hubs. Goods from these hubs will probably be utilised for the proposed project, which will broaden the initiative's economic impact beyond the IZOI.

The economic structure of the IZOI and the structure of the primary and secondary study areas differ most from that of the tertiary study area regarding the mining sector's contribution. This sector contributes less than 1% to the IZOI's economies and the primary and secondary study areas. In comparison, it contributes 8.6% to the economy of the tertiary area. Fewer mining and quarrying resources exist in the Western and Eastern Cape than in provinces such as the North West, Gauteng, and Mpumalanga. Consequently, the mining sector's contribution to the economies of the Western

and Eastern Cape is smaller. Therefore, global and national occurrences that affect this sector have a larger impact on the economy of the tertiary study area than they would on the economies of the IZOI and the primary and secondary study areas.

4.3.2 Employment

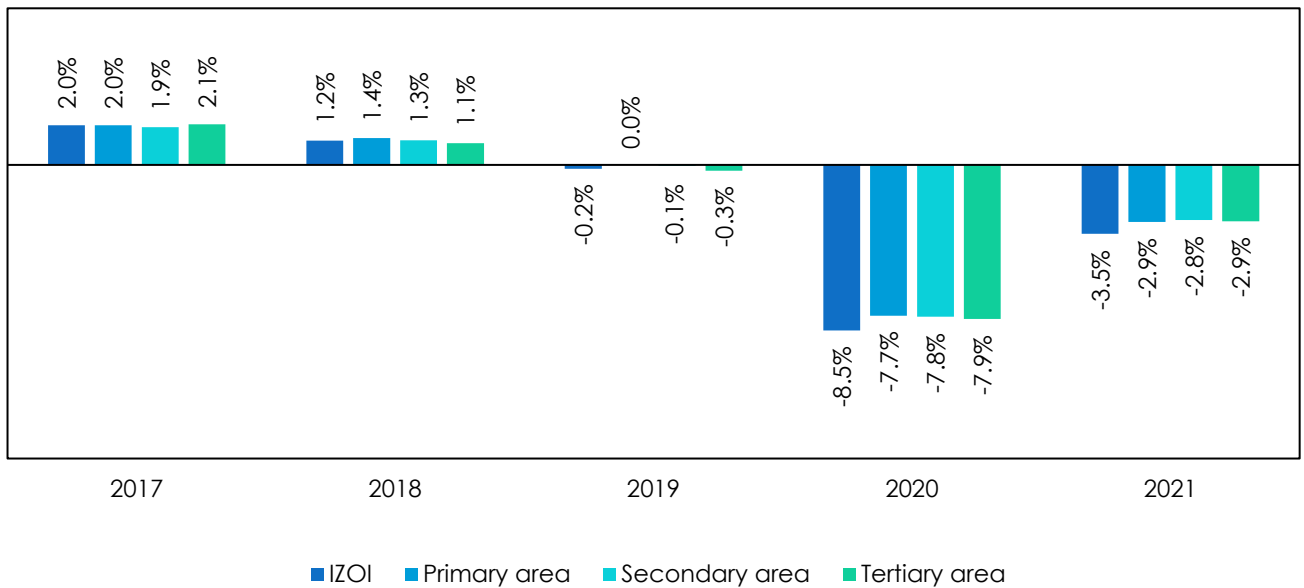
Figure 4-6 indicates the changes in employment in the IZOI between 2017 and 2021. To compare changes in employment across the various areas under consideration, Figure 4-6 shows the employment growth rates for the IZOI and the primary, secondary, and tertiary study areas between 2017 and 2021.



Source: Urban-Econ, calculated from Quantec Standardised Regional data (2022)

Figure 4-6 IZOI employment changes, 2017 – 2021

In 2021, the IZOI recorded 129 298 employed people; however, since 2019, the economy of this area has shed jobs. The COVID-19 pandemic resulted in large-scale job losses in 2020 (12 391 jobs), and while the economy partially recovered in terms of GVA growth in 2021, continued job losses were recorded in that year (4 723 jobs).



Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

Figure 4-7 Employment growth across all study areas, 2017 – 2021

Employment growth followed the same trajectory across all the study areas, emphasising that the local economic performance and subsequent impact on jobs cannot be separated from the national economy's performance. However, due to unique local conditions, variances do occur. In 2020 and 2021, the IZOI recorded job losses of 8.5% and 3.5%, respectively, which were marginally higher than the losses registered in the primary, secondary, and tertiary study areas. The IZOI is highly dependent on seasonal tourism, and the severe impact of the COVID-19 pandemic on this industry could have contributed to the substantial number of job losses.

Table 4-5 indicates employment per sector in the IZOI and the primary, secondary, and tertiary study areas.

Table 4-5 Sectoral employment composition, 2021

| | IZOI | Primary area | Secondary area | Tertiary area |
|---|-------|--------------|----------------|---------------|
| Agriculture, forestry and fishing | 9.8% | 5.2% | 9.3% | 7.1% |
| Mining and quarrying | 0.1% | 0.1% | 0.1% | 3.4% |
| Manufacturing | 9.0% | 11.0% | 9.4% | 9.3% |
| Electricity, gas and water | 0.4% | 0.4% | 0.3% | 0.4% |
| Construction | 5.8% | 5.6% | 5.4% | 5.4% |
| Wholesale and retail trade, catering and accommodation | 24.0% | 23.0% | 22.0% | 21.1% |

| | IZOI | Primary area | Secondary area | Tertiary area |
|--|-------|--------------|----------------|---------------|
| Transport, storage and communication | 4.2% | 4.2% | 3.8% | 4.0% |
| Finance, insurance, real estate and business services | 21.4% | 20.5% | 17.9% | 18.5% |
| General government | 5.6% | 7.3% | 7.5% | 6.7% |
| Community, social and personal services | 19.7% | 22.7% | 24.3% | 23.9% |
| Total | 100% | 100% | 100% | 100% |

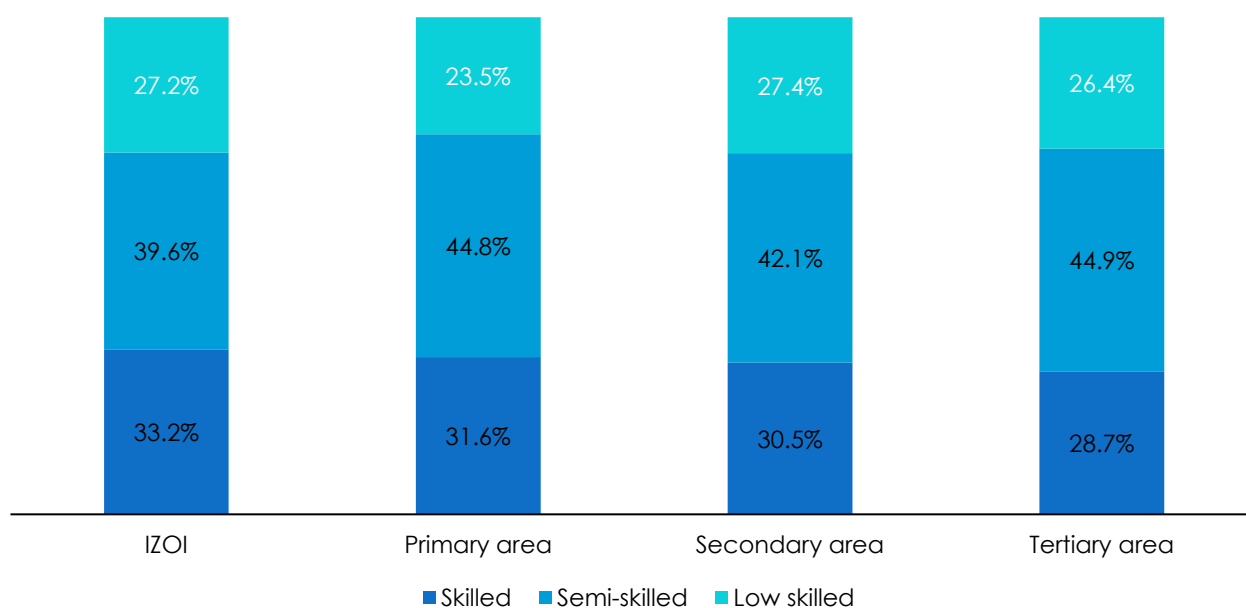
Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

The sectors that contributed the most to employment in the IZOI were the wholesale and retail trade/catering and accommodation sector (24.1%), the finance, insurance, real estate and business services sector (21.4%), and the community, social and personal services sector (19.7%). The IZOI has a comparatively larger proportion of workers in the trade and finance centres, emphasising that the towns in the IZOI collectively serve as the economic hub of the Garden Route District and that tourism⁷ plays an important role in creating employment in the local economy.

Compared to the primary, secondary, and tertiary study areas, the IZOI employs a smaller proportion of manufacturing workers (9.0%). The primary study area includes large manufacturing hubs such as Saldanha Bay, Cape Town, Gqeberha, and East London, resulting in the manufacturing sector contributing 11.0% to employment in this area.

Figure 4-8 illustrates the skills profile for 2021 of formally employed workers in the IZOI and in the primary, secondary, and tertiary study areas.

⁷ A large proportion of tourist activities are captured in the wholesale and retail trade/catering and accommodation sector. However, this is not the only sector boosted by tourist activities.



Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

Figure 4-8 Formal employment skills profile, 2021

The skills profiles of the various study areas are similar, with most formal workers being semi-skilled. Notably, the IZOI has a larger proportion of skilled workers (33.3%) than the other areas and a relatively large proportion of low-skilled workers (27.2%). This reflects the large cohort of agriculture, forestry and fishing workers in the IZOI.

The table below indicates the average annual employment growth rates for skilled, semi-skilled, and low-skilled workers between 2017 and 2021.

Table 4-6 Employment growth per skill level, 2017 – 2021

| | IZOI | Primary area | Secondary area | Tertiary area |
|---------------------|-------|--------------|----------------|---------------|
| Skilled | 1.8% | 1.0% | 1.2% | 1.0% |
| Semi-skilled | -0.4% | 0.0% | 0.1% | 0.0% |
| Low-skilled | -0.9% | -0.6% | -0.6% | -0.4% |

Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022),

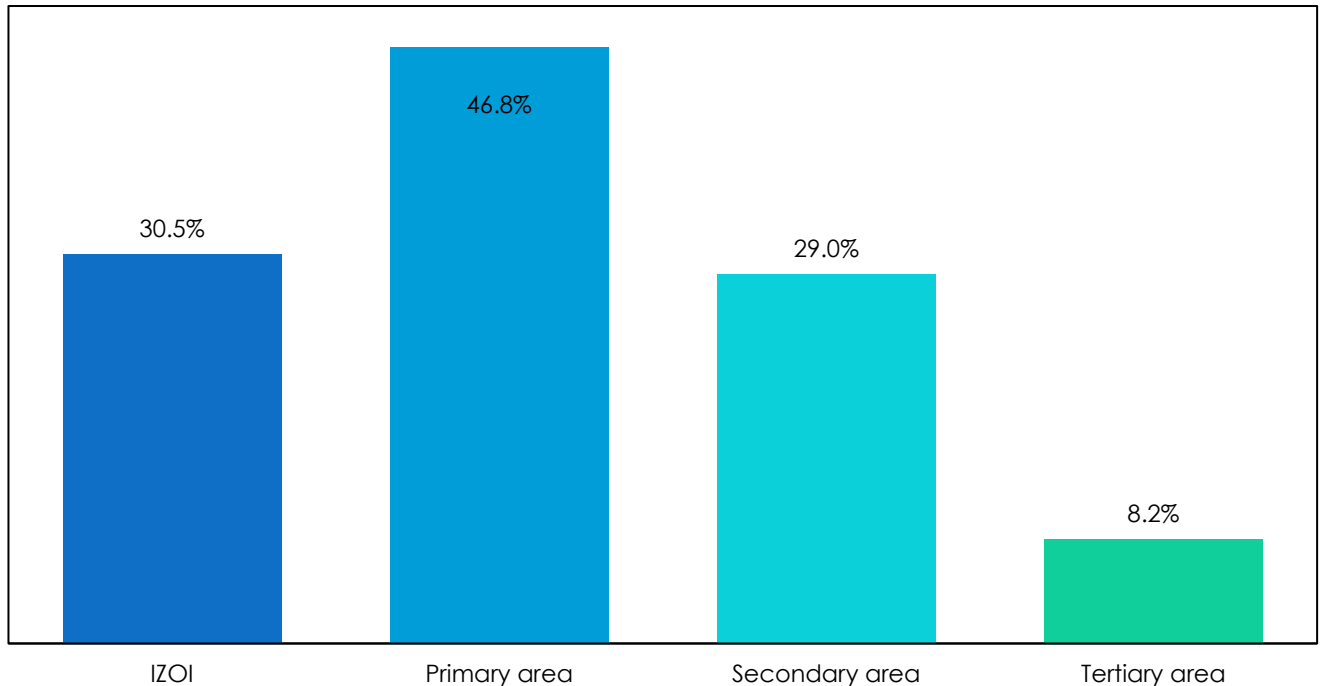
The number of skilled workers in the IZOI increased substantially from 2017 to 2021 (1.8% per annum). The primary, secondary, and tertiary study areas also recorded positive growth rates for skilled workers over the reference period (1.0%, 1.2%, and 1.0%, respectively). Contrastingly, job losses were recorded in the IZOI for semi-skilled and low-skilled workers at a rate of 0.4% and 0.9% per annum, respectively. The primary and tertiary study areas recorded a stagnation in job creation for semi-skilled workers. In contrast, the secondary study area recorded marginal annual growth in employment for such workers

(0.1%). Job creation favours skilled workers. There is, therefore, a need either to upskill workers or create employment opportunities for the low- and semi-skilled, especially in the IZOI.

4.4 Economic industries and activities relevant to the project

4.4.1 Fishing Activities

Given the proposed project's location, it is important to consider the fishing subsector and its contribution to the various economies under consideration.

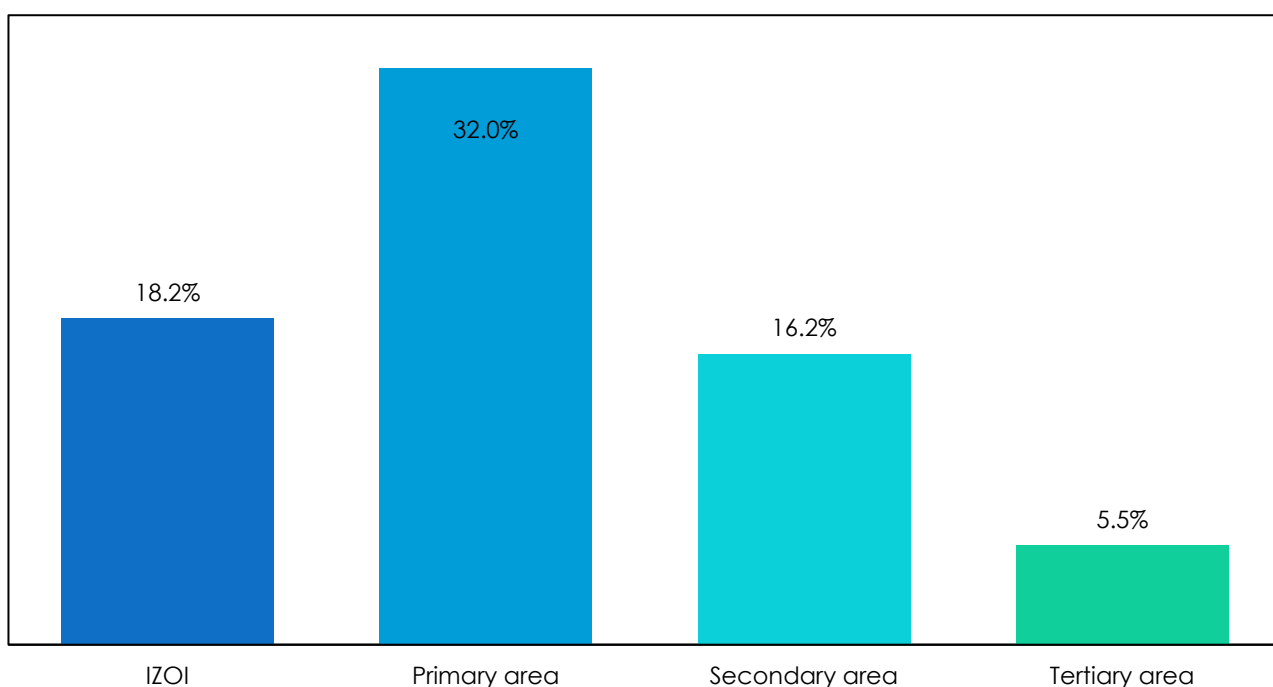


Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

Figure 4-9 Contribution of the fishing subsector to agriculture, forestry and fishing, 2021

The fishing subsector makes up a substantial proportion of the agriculture, forestry and fishing sector, particularly in the IZOI and primary study area. Fishing contributed 30.5% and 46.8% to the agriculture, forestry and fishing sectors of the IZOI and the primary study area, respectively, in 2021.

In the IZOI, the fishing subsector employed an estimated 2 294 people directly in 2021, contributing 18.2% to agriculture, forestry and fishing sector employment. The subsector's contribution to employment is particularly important in the primary study area, where it contributed 32.0% to employment in the agriculture, forestry and fishing sector in 2021.



Source: Urban-Econ, calculated from Quantec Standardised Regional Data (2022)

Figure 4-10 Fishing subsector labour contribution to agriculture, forestry and fishing, 2021

The South Coast fish community supports a diversity of commercial, small-scale and recreational fisheries. The South African commercial fishing industry is an essential source of employment and income for coastal communities. It is also an important source of food security in the country. The industry is valued at approximately R8 billion. This sector is particularly valuable to communities in the Western Cape, where 11 of the 13 proclaimed fishing harbours are situated. Direct employment in the sector is believed to stand at 27 000 workers, of which 59.3% are in the primary sector, while indirect employment stands at 81 000 people (Department of Government Communications and Information System, 2022). Lastly, the industry also contributes substantially to exports.

The table below outlines the number of members and the estimated employment, annual catch and catch value, and proportion of catch exported by the active fishing associations along the southern coast.

Table 4-7: Economic value of fishing activities, 2019

| Association | Members | Direct Employment | Estimated annual catch | Estimated annual catch value | Exports |
|---------------------------------------|---------|-------------------|------------------------|------------------------------|---------|
| South African Squid Management | 54 | 2 943 | 6 000 to 11 000 tons | R750 million to R1.4 billion | 99% |

| Association | Members | Direct Employment | Estimated annual catch | Estimated annual catch value | Exports |
|---|---------|-------------------|------------------------|------------------------------|--|
| Industrial Association (SASMIA) | | | | | |
| South African Pelagic Fishing Industry Association (SAPFIA) | 37 | 5 800 | 350 000 tons | R3.2 billion | Approx. 90% (fishmeal, frozen and canned sardines) |
| South Coast Rock Lobster Industry Association (SCRLIA) | 12 | 400 | 321 tons | R300 million | 99% |
| South Coast Inshore Fishing Association (SECIFA)⁸ | 38 | 1 500 | 12 000 tons | R350 million | 30% |
| South African Deep-sea Trawling Industry Association (SADSTIA)⁹ | 32 | 7 300 | 122 000 tons | R4.5 billion | 67% |
| South Africa Hake Long Line Association (SAHLLA) | 112 | 1 500 – 2 000 | 9 550 tons | R363 million | 65% |
| South Africa Midwater Trawl Association (SAMTA)¹⁰ | 6 | 250 | 30 000 tons | R400 million | 50% |

⁸ Inshore trawl of Cape hake and Agulhas sole.

⁹ Deep-sea trawl of hake. The fishery catches approximately 84% of the annual hake total allowable catch.

¹⁰ Focuses on Cape horse mackerel.

| Association | Members | Direct Employment | Estimated annual catch | Estimated annual catch value | Exports |
|---|-----------------------------|-------------------|------------------------|------------------------------|---------|
| South Africa Tuna Longline Association | 70% of active rightsholders | 500 | 1 500 tons | Information not available | 90% |

Source: FishSA, 2019

While many fishing industries are active in the area of the proposed project, the Block 11B/12B production rights application area mainly overlaps with the large pelagic longline sector. There is also a small spatial overlap with the demersal trawl fishery and the Chokka squid fishery effort (to the north and northeast of the block) (Wright, et al., 2023), which reduces the potential for any negative impact on the industry as a whole.

Another fishing industry not included in Table 4-7 is the mariculture industry, which mostly includes dusky kob, abalone, Pacific oysters, Mediterranean mussels and black mussels. Although in general the contribution of this species to the country's fish production is relatively small, estimated to be 0.8% of the country's fish production (Wright, et al., 2023), the abalone industry has grown in size and importance due to its high export value and demand amongst the Asian countries. In 2015 there were four farms registered in the Northern Cape, twelve farms in the Western Cape and two farms in the Eastern Cape. The Marine Impact Study (Wright, et al., 2023), identified no spatial overlap with proposed offshore infrastructure or routine production activities.

Small-scale fishing activities are an essential source of food and income for some coastal households (Mbatha, 2021). In the Western Cape, the main species targeted by small-scale fishers include lobster, yellowtail and carpenter/silverfish, and fishing is mostly line fishing or intertidal harvesting. Small-scale fishers typically have larger household sizes (four per household) than average and low educational attainment (mostly incomplete high school education) (Mbatha, 2021). Low educational attainment affects the likelihood of obtaining employment, which emphasizes the importance of small-scale fishing activities on the livelihoods of those living in coastal areas. There is however no overlap with these small-scale fishers who operate close to the shore, however there may be a handful who operate further from shore and who are able to access the fishing grounds through cooperative means and/or as crew on commercial line fish or squid fishing vessels ((Wright, et al., 2023).

Recreational fishing is a popular activity amongst South Africans and contributes substantially to the local economy. It's estimated that the industry (which includes freshwater and marine angling activities) contributed R36.2 billion to production, which sustained 94 070 jobs and contributed R32.6 billion to income in 2016. The spending of recreational anglers benefits particularly the transport,

trade, and accommodation sectors (Potts, et al., 2022). While there is no information on recreational fishing volumes in the IZOI, it is anticipated that recreational fishing activities will increase in the area over peak domestic tourist periods such as December and March and will add to the overall tourist appeal of the area.

Offshore gas extraction may impact the commercial fishing industry's economic contribution by negatively affecting the quality and quantity of fish by contributing to environmental changes impeding access to target species (Andrews, et al., 2021). Other potential negative economic impacts on the fishing industry could stem from the loss of equipment due to interactions with pipelines or other debris (Rouse, et al., 2020). Developments (on-shore and off-shore) that could affect access to the quality and quantity of fish targeted by small-scale fishers could have a significant social and economic impact on households that engage in small-scale fishing activities as their primary source of income, given the lack of other stable employment. Mbatha (2021), found that small-scale fishers view themselves as unemployed, and their small-scale fishing activities are for survival, not employment, with other sources of income typically being government grants. The Marine Ecology and Fisheries Impact Assessment for the proposed offshore production right and environmental authorisation applications for block 11B/12B (Wright, et al., 2023) found no overlap with small-scale fishers' fishing grounds. As such, there will not be any negative impacts on small-scale and recreational fishers during the project's exploration, production and operational phases except for an unplanned event. However, the Social Impact Assessment (WSP, 2023) indicated that during public participation meetings, concerns were raised by small-scale fishers regarding the possible loss of access to fishing grounds, which will affect not only their livelihoods but, ultimately, their way of life, as highlighted in the Cultural Heritage Impact Assessment for Block 11B/12B (Boswell, 2023).

4.4.2 Tourism

The activities of tourists are captured in a range of economic sectors, including the retail trade, catering and accommodation, and transport. The South African tourism industry is still recovering from the severe impact of travel restrictions imposed in 2020 to contain the COVID-19 pandemic. It is estimated that tourism contributed 3.7% (R209.2 billion) to the national GDP in 2019. Furthermore, it is estimated that the industry created 773 533 jobs in the same year (Statistics SA, 2021).

The South African coastline is an important tourist attraction. In 2015, coastal destinations accounted for 28% of all tourist trips, 33% of bed nights, and 40% of tourist spending. The main coastal destinations in South Africa included the following municipal areas: the City of Cape Town, eThekweni (Durban), the Garden Route and Overberg (Western Cape), and Ugu (KwaZulu-Natal) (Rogerson & Rogerson, 2019).

The tourism sector is particularly important locally, contributing an estimated 19.5% to the regional economy in the Garden Route District in 2019. While this contribution declined to 8.0% in 2020, the

industry rebounded in 2021 with an estimated 17.4% contribution to the economy (Western Cape Provincial Treasury, 2022).

In 2021, the Garden Route District was especially popular amongst domestic tourists (79.3% of visitors, particularly those from the Western Cape (50.7%), Gauteng (11.9%), and the Eastern Cape (10.4%). International tourists are mainly from the United States (20.0%), France (14.3%), Germany (14.3%), and the United Kingdom (14.3%). Visitors to the region stay mostly overnight (81.7%); 31.9% of tourists indicated staying there for more than seven days.

Approximately 35.5% of tourists indicated that they spend between R1 000 and R2 000 per day in the Garden Route District. This enhanced the economic impact that tourists have in the region. The top activities undertaken in the Garden Route District include visiting the beaches (28.4% of all activities), outdoor activities (20.1%), sampling cuisine (18.9%), and scenic drives (18.3%).¹¹ Therefore, preserving the beaches and environment of the Garden Route District is essential for sustaining the tourism industry in the region.

From mobile location data collected by Wesgro in Mossel Bay in the first half of 2022, the following tourist characteristics can be identified (Wesgro, 2022):

- Most tourists that stay overnight in Mossel Bay are international tourists (63%).
- Approximately 45% of repeat visitors are domestic, while 25% are international.
- Most domestic tourists only stay in the area for one day, while international tourists mostly stay for two days.

International tourists are, therefore, a critical market for the tourism industry in the Mossel Bay area.

According to Stoddart and Graham (2018), while the oil and gas industry typically has a larger per capita economic impact, tourism provides more employment opportunities. Since the proposed project will utilise existing infrastructure, it is unlikely to introduce the visual impacts seen in projects with new gas infrastructure development, which generally affect tourism. However, as mentioned previously, if, in an unlikely event, an oil spill were to reach shore, it could have a substantial negative impact on the industry and the local economy, which is reliant on tourism. However, these negative impacts are anticipated to be a short-term impact.

4.4.3 Gas Industry

Gas consumption in South Africa is mainly driven by the petrochemical and chemical industries and the industrial sector (National Business Initiative, 2022a). While gas currently contributes a small share

¹¹ Based on a visitor survey conducted by Wesgro between January and June 2022. The survey had 169 responses that were collected in George and Wilderness (Wesgro, 2022).

of the South African energy mix, its value chain has a significant economic impact. It is estimated that between 46 000 and 56 000 jobs were sustained in 2020 throughout the value chain, contributing between 1% and 2% to the national GDP that year (National Business Initiative, 2022a). According to the Industrial Gas Users of Southern Africa (IGUA-SA) (2022) demand for gas exceeds supply. Sectors that could benefit from switching to gas include the mining, agriculture, manufacturing, and transport sectors, the cornerstones of the South African economy. Growing this industry could enhance these economic benefits while unlocking new opportunities.

Through strategic documents such as the IRP and the Gas Master Plan Basecase Report, the South African government has recognised the potential of the local gas industry and the need to develop it. Gas is recognised as playing an essential role in supporting the energy needs of South Africa. It is also seen as an interim energy solution that can facilitate the country's transition from coal as its principal energy source. Gas can also be considered an enabler for hydrogen as gas boilers often work on hydrogen with limited adjustment works. According to the National Business Initiative (2022a), gas would need to be substituted by greener alternatives and phased out by 2050 if South Africa is to meet its net-zero 2050 target.

Other macroeconomic benefits of the development of the gas industry include revenue collection for the South African government through taxes and royalties, as well as the reduction of imports. Growing the industry will provide a valuable injection of revenue for the fiscus, which remains under pressure with a high debt-to-GDP ratio (National Treasury, 2023).

While the country presently has some plans to import Liquefied Natural Gas (LNG) to meet the domestic challenges of the imbalance between energy supply and demand, domestic gas would be a cheaper and safer option than LNG imports. As it wouldn't be sourced from international markets, it wouldn't have to be linked to international commodity prices, [and its price could have a portion in ZAR], making its cost more controllable and beneficial for the country's balance of payments. South Africa typically has a negative balance of payments, meaning that the country imports more than it exports. Reducing imports will thus reduce the trade deficit, which can strengthen local industries. In the case of the use of domestic gas for power generation, such stable gas prices are also much more suited than LNG or diesel prices.

Despite these positive economic impacts of developing the local gas industry, the following potential negative economic impacts should also be considered. With any extraction of natural resources, there is the potential for "Dutch disease". Therefore, due to the inflow of foreign currency prompted by investment into the development of offshore gas fields, the South African Rand could appreciate, thereby increasing the value of other exports for other countries to buy. At the same time, imports become cheaper, altogether rendering other manufacturing and agricultural industries (The Green

Connection, 2021) less competitive. Ground, De Wet and Leoka (2013), however, argue that while the South African government must be cognisant during policy and decision-making of the possibility of this phenomenon, the diversity and size of the South African economy make its occurrence unlikely.

While the national government may benefit as a result of taxes and royalties, there could be increased pressure on local government budgets if developing the industry leads to an influx of work seekers as this might increase the demand for housing and other social services (The Green Connection, 2021), however, such risks are not isolated to the oil and gas industry. They would exist for any new large-scale industry development.

The economic costs of negative environmental impacts (oil spills, other ocean damage, etc.) could significantly affect industries such as fishing and tourism (The Green Connection, 2021).

4.5 Industries involved in the development of the proposed project and potential for localisation of products

The different activities (as described in Section 1 for the proposed project) were unpacked in terms of their linkage to a particular industry. The industries related to the different activities include the following:

- Manufacture of basic metals and structural metal products (pipe and steel fabrication)
- Manufacture of fabricated metal products; metal working service activities (coating and welding)
- Manufacture of other non-metallic mineral products (cement – subsea support concrete)
- Construction (Pipe and well installation and platform welding and assembly)
- Architectural and engineering activities; professional services
- Transportation (land transport, water transport and transport via pipelines (off shore transport of employees, pipe on/ off loading, off shore transportation, road transportation)
- Warehousing and support activities for transportation (port infrastructure)
- Auxiliary services (accommodation, catering, cleaning, etc)

Each of these industries is discussed, and this baseline information is utilised to determine (in the following section) the proportion of the total project costs that can be absorbed locally.

4.5.1 Manufacture of basic metals and structural metal products (pipe and steel fabrication)

Although once the cornerstone of the manufacturing sector, the steel industry has constantly declined since 1990. The industry is dominated by Arcelor Mittal, the largest steel producer in South Africa, and it supplies 80% of local flat steel requirements and approximately 50% of the local long steel products (WhoOwnsWhom, 2020). Most metal product fabrication occurs inland (Gauteng), with some companies also operating in the Western Cape; however, there are no companies operating in the

IZOL. Suppliers operate all over South Africa, and companies include the core production of steel, iron and steel products, and construction companies.

South Africa only has the capability to manufacture seamless carbon steel of up to 6", and anything bigger needs to be produced by Acerlor Mittal's sister company in Europe (Interview, Acerlor Mittal, 2021). The pipes required as part of the project are estimated to be 18" and 24" Class 300 X65 Seamless Carbon Steel pipes and therefore is assumed that this component of the project cannot be localised.

Other steel uses will be for upgrading and refurbishing the Petro SA platform. South Africa currently has the capability to supply weldable normalised steel for large offshore structures (dependent on local yards capacity to manufacture different modelled). Therefore, this component of the project could be localised. In discussions with PetroSA, it was stated that the current FA Platform was constructed in South Africa (Interview: PetroSA, 2021).

Several yards are available in South Africa, particularly around the existing port. However, there are only two yards (outside port facilities) larger than 250 000m², which include the Hall Longmore yard in Germiston and the SA Five Engineering port in Saldanha Bay.

4.5.2 Manufacture of fabricated metal products; metal working service activities (coating and welding)

Activities such as welding and onsite assemble of pipelines and components, as well as components of upgrading the FA Platform from this industry, will be involved in the project. Other activities will include painting, coating and lining. In South Africa, this sector is advanced and diversified. Several companies vertically integrate and provide metalwork activities as part of their broader range of services (particularly in the broader engineering field where companies such as Fluor ad PRDW Consulting Port and Coastal Engineers work within the oil and gas industry). Most of these companies are located inland (tertiary study area); however, there are also capacities in this sector in the secondary study area (Western Cape). Therefore, the opportunity for localising this activity is high (except for pipeline fabrication, which it is assumed will be done abroad) for any assembly and metal work.

4.5.3 Manufacture of other non-metallic mineral products (cement – subsea support concrete)

South Africa has many manufacturers and suppliers linked to cement, aggregate and ready-mix; four companies located in the IZOL supply ready-mix concrete; however, their production capacity is not sufficient to meet the requirement of the project, and therefore, additional capacity would need to be sought from companies located in the primary and secondary study areas (Urban-Econ research, 2021)

4.5.4 Construction (Pipe and well instillation and platform welding and assembly)

The project is envisaged to involve many activities linked to the installation of pipelines and other services, which are generally classified under the construction industry. Several large engineering firms in South Africa have the capability and experience in all phases of project development in the oil and gas, mining, ship and rig repairs, and structural steelwork sectors. This includes services from concept development to engineering design, procurement, EPC/ turnkey, construction, operation and maintenance. Many of these companies are also linked to international companies.

While there are a number of construction-related businesses in South Africa, offshore installation is a specialised service not provided by any of the companies. This relates to both lifting installation and subsea installation of pipelines. Therefore, the localisation opportunities in respect of these activities are null, and due to the highly specialist nature and future demand in South Africa, they are unlikely to be localised (Urban-Econ research, 2021).

4.5.5 Architectural and engineering activities; professional services

Potential localisation opportunities in the consulting engineering industry are linked to providing specialist engineering and professional services such as subsea surveys, which will be outsourced to an international company. Therefore, there will be no current localisation opportunities. If opportunities to manufacture the pipelines in South Africa are unlocked, however, South Africa does have representation of the global firms that operate in the industry, such as Fluor and PRDW Consulting Port and Coastal Engineers, that could be approached.

4.5.6 Transportation (land transport, water transport and transport via pipelines (off shore transport of employees, pipe on/ off loading, off shore transportation, road transportation)

South Africa has a well-developed freight infrastructure consisting of road, rail, air, and port infrastructure. South Africa has a road network that spans approximately 750 000 km, a railway network that spans approximately 30 000 km, and eight commercial ports and eleven airports (Gain Group, 2020).

Several companies operate water-related transport, and four air transport service providers are identified in the IZOI. They provide passenger travel, freight and cargo transportation, and air ambulance services to the oil & gas industry. Considering this, all costs associated with land, air and water transportation between the domestic ports, offshore sites, and onshore base of operations are expected to be localised.

4.5.7 Warehousing and support activities for transportation (port infrastructure)

South Africa has eight (8) port facilities, operated by Transnet, located in Gqeberha, Cape Town, Mossel Bay, Saldanha Bay, East London, Richards Bay, Port Nolloth and Durban. The ports of Cape

Town, Mossel Bay and Saldanha Bay are key to the oil and gas industry in South Africa.

The Port of Mossel Bay is relatively small. Still, the petroleum, oil and gas industry occupies approximately 45% of the terminal area. The port plans to commercially develop vacant Transnet land adjacent to the port and CBD. It is expanding its infrastructure to be the premier port for Southern Cape to support oil and gas exploration and to maximize the benefit of its geographical position. The improved infrastructure will enable Oil and Gas companies to use the Port of Mossel Bay as a logistics base for all oil and gas activities during exploration and extraction. The Port's footprint will be increased by incorporating the adjacent Transnet Property into the Port. The Port will expand the utilization of the CBM and SPM for importing and exporting petroleum products and LPG. The Port will continue to support the local fishing industry by ensuring that available land within Port limits is maximized for this industry (Transnet, 2019).

The Port of Cape Town is an established port in the western region of South Africa. The port provides container, bulk and general cargo handling services to the Western Cape and its mostly agricultural hinterland. The port also provides ship repair services in the Western Cape maritime region. It hosts local and foreign fishing fleets, passenger liners, and recreational users. The Port of Cape Town will probably continue in its existing role as the primary container and general cargo port for the Western Cape region, with the support of the Port of Saldanha Bay as the region's primary dry bulk and liquid bulk port (Transnet, 2019).

The Port of Saldanha Bay handles two major commodities: iron ore (export) and crude oil (import). For this reason, the Port of Saldanha Bay is identified as the primary dry and liquid bulk for the Northern and Western Cape. A Special Economic Zone (SEZ) has been declared in Saldanha Bay, and construction is well underway to establish infrastructure to stimulate economic development in and around the Port. Oil and gas strategic initiatives include the reconfiguration of the oil jetty, offshore supply base, Moss gas jetty marine manufacturing facility and providing one new berth for ship repair facilities. The oil and gas strategic initiatives are specifically aligned with establishing the Saldanha Bay IDZ (Transnet, 2019).

4.5.8 Marine traffic

Approximately 30 000 ships are estimated to sail around South Africa annually, while 13 000 enter the country's ports (Wessels, 2022). The ports in Cape Town and Gqeberha attract maritime traffic for resupply, repairs and maintenance, which substantially contribute to these towns' economy. It is estimated that the ship repairs and maintenance industry contributed R4 billion to the economy and sustains 4 000 jobs. However, given South Africa's strategic location on global trade routes and the availability of infrastructure and skilled labour, there is potential for these metrics to be increased to between R15 and R21 billion and between 15 000 and 21 000 jobs (InvestSA, 2017). The Port of Mossel

Bay is typically used by fishing boats (commercial and recreational) and trawlers and boats serving the oil and gas industry. Given the project's location between the Ports of Cape Town and Gqeberha and the traffic from the Port of Mossel Bay, marine traffic can be affected if collisions occur with project-related vessels during the construction and operational phase.

4.5.9 Auxiliary services (accommodation, catering, cleaning, etc)

In 2021, research by Urban-Econ indicated that more than 71 accommodation providers were identified in Mossel Bay and many more in the rest of the IZOI, given the importance of tourism in the region. It is estimated that there is sufficient accommodation and catering facilities to localise this component of the project.

There are also several spill response, industrial cleaning and hazmat services available in the primary study area, as well as security and fire and rescue services; thus, it is envisioned that most of these activities can also be localised.

4.6 Conclusion

The IZOI has a large cohort of people that are of working age. Furthermore, the education levels in the IZOI are relatively high, with most people having attained Grade 12. There are fewer people in the IZOI with tertiary education than there are in the primary study area. The IZOI is becoming a regional hub of the southern Cape, and the proportion of people in the area with tertiary education will probably increase as highly skilled workers migrate to the IZOI. The Mossel Bay and George areas have a large cohort of people older than 65. This population segment plays an important role in the local economy. It is one of the main drivers of the demand for property in the area.

The populations of the IZOI and the primary study area have a better standard of living and a higher average household income than residents of the secondary and tertiary study areas. This could affect migration patterns as people often relocate in search of jobs.

The economies of all the areas under review remain under pressure as they have not fully recovered from the severe downturn recorded in 2020. National challenges, including loadshedding and rising interest rates, hamper full recovery. While GVA growth was recorded in most sectors in 2021, job losses continued. The finance, insurance, real estate and business services, manufacturing, and wholesale and retail trade/catering and accommodation sectors play an important role in driving economic growth in the IZOI. To ensure full economic and employment recovery, targeted interventions in these sectors are essential. Job creation and skills development initiatives should focus on semi- and low-skilled workers. Support for the informal sector is also essential.

This section also indicates that the economic sectors linked to the different project components have different local content opportunities, which are determined based on each sector's current status and capacities. There is currently limited localisation opportunities within the steel fabrication and treatment (of pipes) as well as the construction of offshore pipelines. However, work related to the FA-platform upgrade and modification can largely be localised. There are also localisation opportunities in the transport, ware housing and auxiliary services industries.

5 Environmental and social screening of potential impacts

This section provides a high-level screening of the interaction between the Project activities and the receiving environment that was undertaken during the Scoping phase. It also presents a project-specific Aspects and Impacts Register, which was developed to ensure that all environmental and social aspects of the proposed Project and the associated impacts were identified. Lastly, this section also screens out insignificant impacts, with justification for impacts that have been screened out.

5.1.1 Environmental and social interaction matrix

The first step of the screening is to identify potential sources of impacts, called impact-producing factors (IPFs), corresponding to the various activities that may affect the host environment for all phases of the Project. Normal operations of the Project as well as unplanned events are considered. A preliminary screening was provided in the Scoping phase for the various Project activities. The preliminary screening considered all the production-related activities associated with the Project. The construction, operational, and decommissioning phases are considered, along with unplanned events. The IPFs are listed in accordance with the relevant phase activities. The exploration and appraisal activities and the offshore surveys were grouped together with the construction phase activities.

5.1.2 Aspects and impacts register

The Aspects and Impacts Register lists all Project activities and associated environmental and social aspects and impacts and has been prepared to further elaborate on the impacts identified through the initial screening for potential interactions in the Scoping phase. For each of the Project activities, different aspects¹² associated with the activity and their potential impacts¹³ are tabulated.

¹² An "aspect" is the element of an organisation's activities, products or services that can interact with the environment.

¹³ An "impact" is any change to the environment, whether adverse or beneficial, wholly or partially resulting from the organisation's activities, products or services.

Table 5-1 - Matrix

| Receptors Impact-Producing Factors | Economic Conditions | | | | | | | |
|---|----------------------|--|------------------------|----------------|-----------------------|---------------------------|-----------------------|--|
| | Commercial Fisheries | Small-scale Fisheries and Related Activities | Tourism and Recreation | Marine Traffic | Employment & Business | Population and Demography | Community Livelihoods | National Government National Government and National Economy |
| NORMAL OPERATIONS - CONSTRUCTION PHASE | | | | | | | | |
| Physical presence at sea in Block 11B/12B and pipeline corridor areas (including physical structures, lights and sounds from drillship) | • | • | | • | • | | • | • |
| Maritime exclusion safety zones | • | • | • | • | | | | |
| Vessel and helicopter traffic (including movements and noise) | • | • | | • | • | | | |
| Air emissions | | | | | | | | |
| Discharges (including sewage, muds during drilling, etc. and associated chemicals) | • | | | | | | | • |
| Drill cuttings | • | • | | | | | | • |
| Onshore logistic activities | | | | | • | | | • |
| Marine surveys | • | | | • | • | | | • |
| Metocean buoy deployment | • | | | | | | | |
| NORMAL OPERATIONS - PRODUCTION OPERATIONS PHASE | | | | | | | | |
| Physical presence at sea in Block 11B/12B and pipeline corridor areas (including physical structures, lights and sounds from drillship) | • | • | | • | | • | • | |
| Maritime exclusion safety zones | • | • | • | • | | | | |
| Vessel and helicopter traffic (including movements and noise) | • | • | | • | • | | | • |
| Air emissions | | | | | | | | |
| Discharges (including sewage, muds during | • | | | | | | | |

| Receptors | Economic Conditions | | | | | | | |
|---|---------------------|---|---|---|---|---|---|---|
| | | | | | | | | |
| drilling, etc. and associated chemicals) | | | | | | | | |
| Onshore logistic activities | | | | | • | • | • | • |
| NORMAL OPERATIONS - DECOMMISSIONING PHASE | | | | | | | | |
| Physical presence at sea in Block 11B/12B and pipeline corridor areas (including physical structures, lights and sounds from drillship) | • | • | | • | | | • | |
| Maritime exclusion safety zones | • | • | • | • | | | | |
| Vessel and helicopter traffic (including movements and noise) | • | • | | • | • | | | • |
| Air emissions | | | | | | | | |
| Discharges (including sewage, muds during drilling, etc. and associated chemicals) | • | | | | | | | |
| Onshore logistic activities | | | | | • | | | • |
| UNPLANNED EVENTS | | | | | | | | |
| Small spills of hydrocarbons or other chemicals (pipeline leak) | • | • | • | • | | • | • | |
| Well blowout (oil spill) | • | • | • | • | | • | • | • |
| Subsea production system and vessel collision | • | • | | • | | | • | |
| Vessel collisions | • | • | • | • | | | • | |

Table 5-2 – Aspect and Impact Register – Offshore surveys

| Activity Phase | Activity | Aspect | Potential Impact |
|--------------------------|---|-----------------------------------|--|
| Normal Operations | Operations Metocean survey mooring buoys | Safety zones around mooring buoys | Disruption of commercial fishing activities Reduced fishing ground and catch. |

Table 5-3 – Aspects and Impacts Register – Development

| Activity Phase | | Activity | Aspect | Potential Impact |
|-------------------|--------------|--|--|--|
| Normal Operations | Construction | All activities related to drilling, installing well-heads, laying of subsea production manifolds and jumpers, installation of subsea production pipeline and connection manifolds to the F-A Platform via the production pipeline, riser and umbilical | Spending on local goods, services and labour | Increased economic activity and employment and government revenue through taxes (most of the impact will be felt as a result of the upgrading and modification of the FA platform, with very limited impact on the drilling and subsea production due to capacity for local content spend. |
| | | | Safety zones | Disruption of commercial fishing activities Disruption of recreational and subsistence fishing Reduced fishing grounds and catch |
| | | Establishment of a logistics base within the Mossel Bay port | Spending on local goods, services and labour | Increased economic activity and employment and government revenue through taxes |
| | | Helicopter flights for ship/shore personnel movement and in emergency events | Spending on local goods, services and labour | Increased economic activity and employment and government revenue through taxes |
| | | Support vessels transport of equipment, bulk materials and general supplies from shore to drill rig, survey and pipeline laying vessels | Spending on local goods, services and labour | Increased economic activity and employment and government revenue through taxes |
| | | Periodic bulk delivery (equipment) from Gqeberha and/or Cape Town port | Spending on local goods, services and labour | Increased economic activity and employment and government revenue through taxes |

Table 5-4 – Aspects and Impact Register – Production operations

| Activity Phase | | Activity | Aspect | Potential Impact |
|-------------------|-----------|--|--|---|
| Normal Operations | Operation | Operation of the gas field, including subsea infrastructure to supply the F-A Platform | Spending on local goods, services and labour | Increased economic activity and employment and government revenue through taxes and royalties |
| | | Operation of F-A Platform and associated infrastructure | Spending on local goods, services and labour | Increased economic activity and employment and government revenue through taxes |
| | | Vessel movements for maintenance and inspections of subsea infrastructure and flowlines pigging | Spending on local goods, services and labour | Increased economic activity and employment and government revenue through taxes |
| | | Movement of support vessels from shore to drill rig for transportation of equipment, bulk materials and general supplies | Spending on local goods, services and labour | Increased economic activity and employment and government revenue through taxes |
| | | Helicopter flights for ship/shore personnel rotation and in emergency events | Spending on local goods, services and labour | Increased economic activity and employment and government revenue through taxes |

| Activity Phase | Activity | Aspect | Potential Impact |
|----------------|--|---|--|
| | Periodic bulk delivery (equipment) from Gqeberha and/or Cape Town port | Spending on local goods, services, and labour | Increased economic activity and employment and government revenue through taxes |
| | | Safety zones | Disruption of commercial fishing activities Disruption of recreational and subsistence fishing Reduced fishing grounds and catch |

Table 5-5 – Aspects and Impact Register – Exploration

| Activity Phase | Activity | Aspect | Potential Impact |
|--------------------------|--------------|--|---|
| Normal Operations | Mobilisation | Mobilisation of drill rig to site | Spending on local goods, services and labour Increased economic activity and employment and government revenue through taxes |
| | | Drilling of up to four (4) exploration and appraisal wells | Spending on local goods, services and labour Increased economic activity and employment and government revenue through taxes |
| | | | Safety zones Disruption of commercial fishing activities Reduced fishing grounds and catch |
| | | Plugging and abandonment of each well | Spending on local goods, services and labour Increased economic activity and employment and government revenue through taxes |
| | | Onshore support | Spending on local goods, services and labour Increased economic activity and employment and government revenue through taxes |

Table 5-6 – Aspects and Impacts Register – Unplanned Events

| Activity Phase | Activity | Aspect | Potential Impact |
|-------------------------|---|--|---|
| Unplanned Events | Spillage of solid waste or accidental release of other objects at sea | Marine and coastline pollution | Decline in tourist activity Reduced fishing activity |
| | Accidental hydrocarbon spills/releases (minor) (e.g. vessel accident, bunkering and pipe rupture) | Marine and coastline pollution | Decline in tourist activity Reduced fishing activity |
| | Dropped objects / Lost equipment | Loss of equipment | Loss of economic assets |
| | Subsea production system and vessel collision | Damage to vessels and subsea production system | Loss of economic assets Economic cost of clean-up |
| | Vessels collisions | Damage to vessels | Loss of economic assets Economic cost of clean-up |

6 Economic Modelling

The estimated investment and spending in the South African economy due to the project has been modelled using the SAM model (as discussed in Section 2 under methodology). It is important to note that only income spent in South Africa has been modelled (local content). Any investment abroad or goods and services imported have therefore been excluded from the modelling, as this impact is not felt in the South African economy.

Each of the different phases of the project was modelled separately, namely the exploration well drilling, construction, production and decommissioning phases. In addition, the impacts as a result of TEEPSA activities were modelled separately from those of PetroSA. The end-user impacts have been discussed in the report; however, these impacts have not been modelled as there is no final decision as to who will be the end user.

6.1 Exploration Phase

It is estimated that during the exploration well drilling phase, a total of USD\$136.4 million will be spent, or USD\$19,4 million per annum over the exploration period. The estimated local content spend was then calculated using figures provided by TEEPSA, which show the local percentage spend on previous but similar projects (Exploration activities on block 11B/12B for 4 wells). It was assumed that the project would capture a similar local content spend (19% of total project costs), which equates to USD\$25.9 or R425 million. Of this local content spend, the industries (as classified by the Standard Industrial Classification (SIC) Code) which would benefit include the following:

- Business Activities (13.6%)
- Other Manufacturing (0.2%)
- Trade (5.3%)
- Real estate (7.4%)
- Transport Services (71.4%)
- Community, Social and Personal Services (0.3%)
- Other Fabricated Metal Products (0.2%)
- Accommodation (1.1%)
- Communication (0.1%)
- Insurance (0.5%)

Based on the local spend of R425 million spread across the above economic sub-sectors, the economic impact of the production well drilling phase is illustrated in Table 6-1.

Table 6-1 – Exploration well drilling phase on economic impact

| Impact | Direct | Indirect | Induced | Total |
|------------------------|----------------|----------------|----------------|----------------|
| Economic output | R425.3 million | R248.9 million | R258.4 million | R932.5 million |
| GDP | R219.7 million | R113.5 million | R104.1 million | R437.3 million |
| Employment | 205 Employment | 331 jobs | 342 jobs | 878 jobs |

Source: Urban-Econ SAM modelling, 2023

The main sectors that will be impacted during the exploration well drilling phase will include the mining, transport and storage, real estate and business and manufacturing sectors.

6.2 Construction Phase

It is estimated that during the construction phase, a total of USD\$2.8 billion will be spent during the construction period. Of this spend, USD\$2 billion will be TEEPSA spend (mostly subsea pipeline installation), whilst USD\$818 million will be Petro SA spend (upgrading and modifying the existing FA platform).

For the TEEPSA component of the project, there will be very few local content opportunities (3% of the spend) due to the highly specialised nature of the work as well as the pipe specification, which would require the pipes to be imported from Europe. However, most of the spend on the FA Platform can be localised (98%) as the skills and capacity are available in South Africa.

The local spend is therefore estimated to be USD\$57.1 million (or R928.6 million) for the TEEPSA component and USD\$801 million or (13 billion) for the PetroSA component. Based on this local spend, the economic impact of the construction phase is illustrated in Table 6-2.

Table 6-2 – Construction phase on economic impact

| Impact | Direct | Indirect | Induced | Total |
|------------------------|----------------|----------------|----------------|----------------|
| TEEPSA Phase | | | | |
| Economic output | R928.6 million | R674.0 million | R489.0 million | R2 billion |
| GDP | R353.6 million | R251.4 million | R197.5 million | R802.5 million |
| Employment | 634 jobs | 801 jobs | 651 jobs | 2 086 jobs |
| PetroSA Phase | | | | |
| Economic output | R13.0 billion | R7.5 billion | R4.6 billion | R25.1 billion |
| GDP | R2.7 billion | R2.9 billion | R1.9 billion | R7.5 billion |
| Employment | 4 913 jobs | 8 934 jobs | 6 123 jobs | 19 970 jobs |
| Total | | | | |

| Impact | Direct | Indirect | Induced | Total |
|------------------------|---------------|--------------|--------------|--------------|
| Economic output | R13.9 billion | R8,1 billion | R5.0 billion | R27 billion |
| GDP | R3.0 billion | R3.2 billion | R2.0 billion | R8.2 billion |
| Employment | 5 547 jobs | 9 735 jobs | 6 774 jobs | 22 056 jobs |

Source: Urban-Econ SAM modelling, 2023

The main sectors that will be impacted during the construction phase will include the manufacturing, transport and storage and, real estate and business services and trade and accommodation sectors.

6.3 Production Phase

It is estimated that a total of USD\$102.6 million will be spent during the operational phase. Of this spend, it is estimated that 51.7% could be spent locally in South Africa (R1.4 billion (per annum over the production period)). This is based on figures provided by PetroSA, which indicated their local content spending when the FA Platform was operational. The main local economic sectors which will be impacted will include:

- General Government: 70% (Royalties and Levies)
- Transport: 13% (Supply boats and Helicopters)

Based on this local spend, the economic impact of the construction phase is illustrated in Table 6-3.

Table 6-3 – Production phase on economic impact

| Impact | Direct | Indirect | Induced | Total |
|------------------------|----------------|----------------|----------------|--------------|
| Economic output | R1 4 billion | R883.0 million | R790.1 million | R3.0 billion |
| GDP | R690.7 million | R376.5 million | R318.6 million | R1.4 billion |
| Employment | 266 jobs | 1 201 jobs | 1 011 jobs | 2 478 jobs |

Source: Urban-Econ SAM modelling, 2023

The main sectors estimated to benefit from the production phase include mining, transport and storage, real estate and business, and manufacturing.

6.4 Decommissioning Phase (5 wells)

It is estimated that during the decommissioning phase, a total of USD\$294.1 million will be spent. Of this, USD\$25.6 million will be used to decommission the FA-Platform. Of this spend, it is estimated that 17% could be spent locally in South Africa for the decommissioning of the wells, and 100% could be spent to decommission the FA-Platform. This translates into a total local spend of USD\$61.9 million or R1 billion. This is based on figures provided by WSP from which local content assumptions were made. The main local economic sectors which will be impacted will include:

- Transportation and Logistics
- Cement
- Steel

Based on the estimated local spend, the economic impact of the construction phase is illustrated in Table 6-4.

Table 6-4 – Decommissioning on economic impact

| Impact | Direct | Indirect | Induced | Total |
|------------------------|----------------|----------------|----------------|----------------|
| Economic output | R1.0 billion | R626,7 million | R563.9 million | R2.2 billion |
| GDP | R463.8 million | R253.8 million | R227,5 million | R945,1 million |
| Employment | 396 jobs | 737 jobs | 723 jobs | 1 856 jobs |

Source: Urban-Econ SAM modelling, 2023

The main sectors estimated to benefit from the decommissioning phase include transport and storage, manufacturing and mining.

6.5 Conclusion

Given the socioeconomic characteristics and current economic challenges of the study areas outlined above, the proposed project could have a significant economic impact. This would predominantly be through strengthening the local oil and gas industry value chain (particularly its linkages to the manufacturing sector). However, the project's direct impacts will be influenced by the availability of suitably skilled local labour and input manufacturers.

7 Impact assessment – normal operations

7.1 Exploration well drilling

7.1.1 Impact on economic output and GDP

Procuring goods and services in South Africa for the exploration well drilling Procuring goods and services in South Africa for the exploration well drilling activities related to the proposed project will result in an increase in local economic activities, resulting in GDP growth. This impact will only occur for the exploration well drilling period, including up to four (4) exploration wells at three to four months per well.

Potential Impact Description

Procuring goods and services will benefit suppliers directly involved in the exploration activities, resulting in indirect benefits through backward linkages in the value chain. Those employed in direct and indirect activities will earn an income, resulting in induced spending in the economy.

TEEPSA has developed a draft Social and Labour Plan (SLP) dated 10 June 2023, which states that 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 programs, 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 maximize 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 programs, aiming at enhancing the performance/capacity of local companies in petroleum activities to encourage local investment and participation.”

The increased production activities because of the procurement processes will positively impact the GDP. The combined impact for the exploration well drilling phase (in 2022 prices) is indicated in Table 7-1.

Table 7-1 – Exploration well drilling impact on economic output and GDP

| Impact | Direct | Indirect | Induced | Total |
|------------------------|----------------|----------------|----------------|----------------|
| Economic output | R425.3 million | R248.9 million | R258.4 million | R932.5 million |
| GDP | R219.7 million | R113.5 million | R104.1 million | R437.3 million |

Source: Urban-Econ SAM modelling, 2023

Spending in South Africa during the exploration well drilling phase of the project will result in an increase in economic output to the value of R932.5 million, of which R425.3 million will be directly related to the goods and services required for the proposed project. The increase in economic output will positively impact the GDP of R437.3 million. The main sectors estimated to benefit from production and GDP during the exploration well drilling phase include mining, transport and storage, real estate and business, and manufacturing.

Project Controls

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. The recommendations from this plan need to be adhered to.

Sensitivity of Receptors

It is anticipated that the majority of the positive impact during the exploration well drilling phase on economic output and GDP will be in the primary study area. Considering the GDP impact relative to the size of the primary study area economy, the positive impact is considered **low sensitivity**.

Impact Magnitude (or Consequence)

The positive impact on economic output and GDP is anticipated to be mainly regional. However, this impact is considered to be a **short-term** impact, as it will only occur for the duration of exploration activities. Considering the total impact of local expenditure during the exploration well drilling phase, and the duration of the project, the intensity of the positive impact on economic output and GDP is considered to be **medium**. The magnitude of the proposed positive impact on economic output is therefore considered to be **low**.

Impact Significance

Given the low sensitivity of receptors and the low magnitude of the potential positive impact on economic output and GDP during the exploration well drilling phase of the proposed project, it is considered to be of **very low significance**.

Identification of Enhancement Measures

In order to enhance the positive impact on economic output and GDP during the exploration well drilling phase, the following enhancement measure is proposed:

| No | Enhancement measure | Classification |
|----|--|--------------------------------|
| 1 | Increase procurement of goods and services from South African businesses as appropriate. | Abate offsite/ at the receptor |

Residual Impact Assessment

The proposed enhancement measures will increase the positive impact on economic output and GDP during the exploration well drilling phase. However, the extent of the impact of this phase of the proposed project will remain the same. Since the degree to which local spending can be increased for the exploration well drilling phase cannot be determined with the information available at the time of report writing, the residual impact assessment will remain of **very low significance**.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-2. The positive impact on economic output and GDP due to spending during the exploration well drilling phase is considered **irreversible**. There could be potential during the exploration well drilling phase to increase local spending. However, it is unlikely (due to the lack of local capabilities and skill levels) that all spending during this phase can be local. The mitigation impact is, therefore, considered to be **very low**. There will be no loss of resources.

Table 7-2 – Impact on production and GDP during exploration well drilling phase

| Project Phase: | Exploration well drilling | |
|-------------------------|------------------------------|-----------------|
| Type of Impact | Direct, indirect and induced | |
| Nature of Impact | Positive | |
| Sensitivity of Receptor | LOW | |
| | Pre-Enhancement Impact | Residual Impact |
| Magnitude (Consequence) | LOW | LOW |
| Intensity | MEDIUM | MEDIUM |
| Extent | REGIONAL | REGIONAL |
| Duration | SHORT-TERM | SHORT-TERM |
| Significance | VERY LOW | VERY LOW |
| Probability | DEFINITE | DEFINITE |
| Confidence | HIGH | MEDIUM |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | N/A | N/A |

| Project Phase: | Exploration well drilling | |
|-----------------------|---------------------------|----------|
| Enhancement Potential | | LOW |
| Cumulative potential | UNLIKELY | UNLIKELY |

7.1.2 Impact on jobs

Source of Impact

The increased levels of economic output due to local spending in the exploration well drilling phase will positively impact jobs. This impact will only occur for the period of exploration well drilling (between three and four months per well).

Potential Impact Description

Procuring goods and services (direct expenditure) will positively impact jobs either by sustaining existing jobs or creating new jobs (on-shore and off-shore). Those employed in direct and indirect activities will earn an income, resulting in induced spending in the economy. The combined impact for the exploration well drilling phase (in 2022 prices) is indicated in Table 7-3.

Table 7-3 – Exploration well drilling impact on employment

| Impact | Direct | Indirect | Induced | Total |
|------------|----------------|----------|----------|----------|
| Employment | 205 Employment | 331 jobs | 342 jobs | 878 jobs |

Source: Urban-Econ SAM modelling, 2023

Local spending during the exploration well drilling phase of the project will support 878 jobs, of which 205 will be directly related to the proposed project. The direct jobs can mainly be attributed to the contractors and suppliers involved in the project and not direct jobs created by TEPSA during the exploration well drilling phase, as these are anticipated to be minimal. The main sectors estimated to benefit from employment during the exploration well drilling phase include mining, trade and accommodation, real estate and business services, and transport and storage.

Sensitivity of Receptors

It is anticipated that the majority of the positive impact during the exploration well drilling phase on employment will be in the primary study area. Taking into consideration the employment impact relative to employment in the primary study area, the positive impact is considered to be of **low sensitivity**.

Impact Magnitude (or Consequence)

The positive impact on employment is anticipated to have mainly a **regional impact**. However, this impact is considered to be a **short-term** impact, as it will only occur for the duration of exploration activities. Considering the total impact of local expenditure during the exploration well drilling phase and the duration of the project, the intensity of the positive impact on employment is considered to

be **medium**. Therefore, the magnitude of the proposed positive impact on employment is considered **low**.

Impact Significance

Given the low sensitivity of receptors and the low magnitude of the potential **positive impact** on employment during the exploration well drilling phase of the proposed project, it is considered to be of **very low significance**.

Identification of Enhancement Measures

In order to enhance the positive impact on employment during the exploration well drilling phase, the following mitigation measure is proposed:

| No | Enhancement measure | Classification |
|----|--|--------------------------------|
| 1 | Employ local labour (IZOI) to increase benefits to the local community where feasible. | Abate offsite/ at the receptor |
| 2 | Community/ stakeholder engagement on procurement/ employment/ skills development opportunities | Abate offsite/ at the receptor |
| 3 | Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/ or concerns. | Abate offsite/ at the receptor |

Residual Impact Assessment

The mitigation measures are anticipated to enhance the positive impact on employment during the exploration well drilling phase. However, the extent of the impact of this phase of the proposed project will remain the same. Since the degree to which local spending can be increased for the exploration well drilling phase cannot be determined with the information available at the time of report writing, the residual impact assessment will remain of **very low significance**.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-4. The positive impact on employment due to spending during the exploration well drilling phase is considered **irreversible**. There could be potential during the exploration well drilling phase to increase local spending, enhancing the positive impact on employment. However, it is unlikely (due to the lack of local capabilities and skill levels) that all spending during this phase can be local. The mitigation impact will therefore remain **very low**. There will be no loss of resources.

Table 7-4 – Impact on employment during exploration well drilling phase

| Project Phase: | | Exploration | |
|-------------------------|------------------------------|-----------------|--|
| Type of Impact | Direct, indirect and induced | | |
| Nature of Impact | Positive | | |
| Sensitivity of Receptor | LOW | | |
| | Pre-Enhancement Impact | Residual Impact | |
| Magnitude (Consequence) | LOW | LOW | |
| Intensity | MEDIUM | MEDIUM | |
| Extent | REGIONAL | REGIONAL | |
| Duration | SHORT-TERM | SHORT-TERM | |
| Significance | VERY LOW | VERY LOW | |
| Probability | DEFINITE | DEFINITE | |
| Confidence | HIGH | MEDIUM | |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE | |
| Loss of Resources | N/A | N/A | |
| Enhancement Potential | | LOW | |
| Cumulative potential | UNLIKELY | UNLIKELY | |

7.1.3 Impact on household income

Source of Impact

The positive impact on employment during the exploration well drilling phase will positively impact household income. This impact will only occur for the exploration period (between three and four months per well).

Potential Impact Description

New and sustained employment opportunities will have a positive impact on household income. Household spending will also result in induced positive economic effects. The combined impact for the exploration well drilling phase (in 2022 prices) is indicated in Table 7-5.

Table 7-5 – Exploration well drilling impact on household income

| Impact | Direct | Indirect | Induced | Total |
|------------------|---------------|---------------|---------------|----------------|
| Household income | R79.5 million | R43.8 million | R41.9 million | R165.2 million |

Source: Urban-Econ SAM modelling, 2023

The jobs that will be supported through the exploration well drilling phase of the project will benefit household income to the value of R165.2 million, of which R79.5 million will be directly related to the

proposed project. The main sectors estimated to benefit from household income during the exploration well drilling phase include mining, trade and accommodation, real estate and business services, and transport and storage.

Project controls

Per Section 41 of the Mineral Petroleum Resources Development Plan Regulations (MPRD regulations), a social and labour plan (SLP) is required for the proposed project and the development of a Procurement Progression Plan. Based on the draft SLP (2025 – 2029), the following points that directly link to employment will be considered when procurement occurs:

- “Contractors will be required to maximize 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.”

Sensitivity of Receptors

It is anticipated that the majority of the positive impact during the exploration well drilling phase on employment will be in the primary study area. Taking into consideration the employment impact relative to employment in the primary study area, the positive impact is considered to be of **low sensitivity**.

Impact Magnitude (or Consequence)

The positive impact on household income is anticipated to be mainly regional. However, this impact is considered to be a **short-term** impact, as it will only occur for the duration of exploration activities. Considering the total impact of local expenditure during the exploration well drilling phase and the duration of the project, the intensity of the positive impact on household income is considered to be **medium**. The magnitude of the proposed positive impact on household income is therefore considered to be **low**.

Impact Significance

Given the low sensitivity of receptors and the high magnitude of the potential positive impact on employment during the exploration well drilling phase of the proposed project, it is considered to be of very **low significance**.

Identification of Enhancement Measures

In order to enhance the positive impact on household income during the exploration well drilling phase, the following enhancement measure is proposed:

| No | Enhancement measure | Classification |
|----|--|------------------------------------|
| 1 | Investigate opportunities to increase local procurement and localise expenditure. | Intensify offsite/ at the receptor |
| 2 | Explore opportunities to employ as many people from the local communities as possible. | Intensify offsite/ at the receptor |
| 3 | Community/ stakeholder engagement on procurement/ employment/ skills development opportunities | Intensify offsite/ at the receptor |

Residual Impact Assessment

The mitigation measures are anticipated to enhance the positive impact on employment during the exploration well drilling phase. However, the extent of the impact of this phase of the proposed project will remain the same. Since the degree to which local spending can be increased for the exploration well drilling phase cannot be determined with the information available at the time of report writing, the residual impact assessment will remain of **low significance**.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-6. The positive impact on employment due to spending during the exploration well drilling phase is considered **irreversible**. There could be potential during the exploration well drilling phase to increase local spending, which will enhance the positive impact on employment. However, it is unlikely (due to the lack of local capabilities and skill levels) that all spending during this phase can be local. The enhancement impact is therefore expected to remain **very low**. There will be no loss of resources.

Table 7-6 – Impact on household income during exploration well drilling phase

| Project Phase: | Exploration well drilling | |
|-------------------------|------------------------------|-----------------|
| Type of Impact | Direct, indirect and induced | |
| Nature of Impact | Positive | |
| Sensitivity of Receptor | LOW | |
| | Pre-Enhancement Impact | Residual Impact |
| Magnitude (Consequence) | LOW | LOW |
| Intensity | MEDIUM | MEDIUM |
| Extent | REGIONAL | REGIONAL |
| Duration | SHORT-TERM | SHORT-TERM |
| Significance | VERY LOW | VERY LOW |
| Probability | DEFINITE | DEFINITE |

| Project Phase: | Exploration well drilling | |
|-----------------------------|---------------------------|--------------|
| Confidence | HIGH | MEDIUM |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | N/A | N/A |
| Mitigation Potential | | LOW |
| Cumulative potential | UNLIKELY | UNLIKELY |

7.1.4 Exploration well drilling Impact on the fishing sector (commercial, small-scale and recreational fishing and mariculture)

Source of Impact

The Marine Ecology and Fisheries Impact Assessment Study (2023) indicates that there are two direct and indirect impacts as a result of exploration well drilling activities, and these include:

1. The temporary exclusion of all fishing activities during exploration (drilling, flaring, etc.)
2. The potential exclusion of demersal fisheries from operating in the areas around an abandoned well head due to the risk of obstruction or snagging of fishing gear.

Potential Impact Description

According to the Marine Ecology and Fisheries Impact Assessment Study (2023), a temporary statutory safety zone of 500 m would be required from the drilling unit during drilling operations. Following installation, a safety zone of 500 m from each well would be requested.

TEEPSA also proposes mobilising metocean buoys within the Block to measure oceanographical and meteorological data. The wave buoy would require a temporary safety zone of between 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.

Exploration activities would directly overlap the three commercial fisheries (Deepsea trawl, large pelagic and the squid fishery) as well as potentially the small-scale fishers. The squid fishery impact could be significant due to the importance of the catch in the study area, and exclusion zones and underwater noise impact could cause the catch to drop significantly. However, the impact on the offshore demersal trawl fishery would be less severe as it is estimated that less than 1% of their fishing ground would be impacted.

There is also an overlap with the Large Pelagic fishery, with some 90% of the eastern Production Right Application Area overlapping, which is an estimated 38.9% of the Large Pelagic fishery, which is regularly fished. These species also have more sensitive hearing; therefore, it is estimated that catch rates could drop significantly in areas where exploration activities occur (CapMarine 2017).

There will also be an overlap with the small fishers, particularly around the squid catch opportunities (TAC of the squid catch is to be reapportioned to the small-scale sector), which could translate into 0.44% of the overall squid catch (Wright, et al., 2023).

Project controls

The Marine Ecology and Fisheries Impact Assessment Study (2023) recommends that prior to commencement, stakeholders in the fishing industry and sector bodies should be notified, as well as other organs of state such as PASA, DAFF, Transnet National Ports Authority, SAMSA and the South African Navy Hydrographic office. These stakeholders should again be notified at the completion of exploratory activities when the survey vessel and support vessels are off-location. The Notice to Mariners should give notice of (1) the co-ordinates of the exploration survey area, (2) an indication of the proposed timeframes of surveys and day-to-day location of the survey vessel(s), and (3) an indication of the 500 m safety zones and the proposed safe operational limits of the exploratory activities. These Notices to Mariners should be distributed timeously to fishing companies and directly onto vessels where possible.

Sensitivity of Receptors

It is anticipated that the majority of the negative impact during the exploration well drilling phase on the fishing industry will be in the IZOL study area. The negative impact is considered to be of **medium sensitivity** for commercial fishing (Deepsea trawl, Large pelagic and squid industries and for small fisherman) and **low sensitivity** for the rest of the fishing industry including recreational fishing and mariculture.

Impact Magnitude (or Consequence)

The negative impact on the fishing industry is anticipated to have mainly a **local impact**. However, this impact is considered to be a **long-term** impact. Considering the project's duration, the negative intensity and magnitude of the impact on commercial fishing are considered **low**, (except for the Large Pelagic and squid industry where the impact was **medium**). For small-scale fishers the magnitude is considered **medium**, whilst for recreational fishing and mariculture, it is considered **low to very low**.

Impact Significance

Given the low sensitivity of receptors and the high magnitude of the potential negative impact on the fishing sector during the exploration well drilling phase of the proposed project, it is considered to be of **very low significance** for commercial fishing, except for Deepsea trawl, where it is **low** and Large Pelagic and Squid fishing where it is considered **medium**. The significant for the small-scale fishers is also **medium**, however it is **very low** and **negligible for** recreational and mariculture fishing.

Identification of Enhancement Measures

In order to mitigate the negative impact on the fishing industry during the exploration well drilling phase, the following mitigation measures are proposed:

| No | Mitigation measure | Classification |
|----|--|------------------------------------|
| 1 | Notify the operators of pelagic long-line vessels of the timing, area and safety clearance requirements prior to the commencement of the exploratory activities through the SATLA. | Intensify offsite/ at the receptor |
| 2 | Maintain adequate safety clearance between fishing vessels and exploratory vessels and equipment through at-sea communications with vessels in the vicinity of the survey area. | Intensify offsite/ at the receptor |

Residual Impact Assessment

The mitigation measures are anticipated to reduce the negative impact on the fishing sector during the exploration well drilling phase. However, the residual impact assessment will remain of **very low significance** (commercial fishing, except for Large pelagic and squid fishing as well as the small-scale fishers where it remains **medium**) and **very low or negligible** (recreational fishing and mariculture).

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-7 and Table 7-8. The negative impact on the fishing sector due to exclusion zones during the exploration well drilling phase is considered **irreversible**.

Table 7-7 – Impact on commercial fishing income (including small-scale fishing) during exploration well drilling phase

| Project Phase: | | Exploration well drilling | |
|-------------------------|------------------------|---------------------------|--|
| Type of Impact | Direct | | |
| Nature of Impact | Negative | | |
| Sensitivity of Receptor | MEDIUM | | |
| | Pre-Enhancement Impact | Residual Impact | |
| Magnitude (Consequence) | MEDIUM | MEDIUM | |
| Intensity | MEDIUM | MEDIUM | |
| Extent | LOCAL | LOCAL | |
| Duration | LONG-TERM | LONG-TERM | |
| Significance | MEDIUM | MEDIUM | |
| Probability | DEFINITE | DEFINITE | |
| Confidence | HIGH | MEDIUM | |

| Project Phase: | Exploration well drilling | |
|----------------------|---------------------------|--------------|
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | N/A | N/A |
| Mitigation Potential | LOW | LOW |
| Cumulative potential | UNLIKELY | UNLIKELY |

Table 7-8 – Impact on recreational fishing and mariculture during exploration well drilling phase

| Project Phase: | Exploration well drilling | |
|-------------------------|---------------------------|-----------------|
| Type of Impact | Direct | |
| Nature of Impact | Negative | |
| Sensitivity of Receptor | LOW | |
| | Pre-Enhancement Impact | Residual Impact |
| Magnitude (Consequence) | LOW | LOW |
| Intensity | LOW | LOW |
| Extent | LOCAL | LOCAL |
| Duration | LONG-TERM | LONG-TERM |
| Significance | VERY LOW | VERY LOW |
| Probability | DEFINITE | DEFINITE |
| Confidence | HIGH | MEDIUM |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | N/A | N/A |
| Mitigation Potential | | LOW |
| Cumulative potential | UNLIKELY | UNLIKELY |

7.2 Construction period

7.2.1 Construction Impact on economic output and GDP

Source of Impact

Procuring goods and services in South Africa for the construction activities of the proposed project will result in an increase in local economic output activities, resulting in GDP growth. This impact will only occur in years of construction activity (i.e., Year 0, Year 1, and 10).

Potential Impact Description

The procurement of goods and services will benefit suppliers directly involved in the construction period, resulting in indirect and induced benefits through backward linkages in the value chain and additional employment opportunities that will be created. The increase in economic output will have a positive impact on the GDP. The combined impact for the construction period (in 2022 prices) is

indicated in Table 7-9. These impacts have been separated into impacts that will be directly as a result of TEEPSA activities as well as impacts that will result from PetroSA activities.

Table 7-9 – Construction period impact on economic output and GDP

| Impact | Direct | Indirect | Induced | Total |
|------------------------|----------------|----------------|----------------|----------------|
| TEEPSA Phase | | | | |
| Economic output | R928.6 million | R674.0 million | R489.0 million | R2 billion |
| GDP | R353.6 million | R251.4 million | R197.5 million | R802.5 million |
| PetroSA Phase | | | | |
| Economic output | R13.0 billion | R7.5 billion | R4.6 billion | R25.1 billion |
| GDP | R2.7 billion | R2.9 billion | R1.9 billion | R7.5 billion |
| Total | | | | |
| Economic output | R13.9 billion | R8,1 billion | R5.0 billion | R27 billion |
| GDP | R3.0 billion | R3.2 billion | R2.0 billion | R8.2 billion |

Source: Urban-Econ SAM modelling, 2023

The total local spend on goods and services during the project's construction period (3 years) will increase economic output by R27 billion, of which R13.9 billion will be direct impacts. This will increase the GDP by R8.2 billion rand. Most of these impacts will result from PetroSA activities, which it is assumed could achieve a much higher local content percentage than the TEEPSA activities, which rely on high-tech equipment and supplies that are not always available in the local economy.

The main sectors estimated to benefit from production and GDP during construction include mining, transport and storage, real estate and business, and manufacturing.

Project Controls

Per Section 41 of the Mineral Petroleum Resources Development Plan Regulations (MPRD regulations), a social and labour plan (SLP) is required for the proposed project and the development of a Procurement Progression Plan. Based on the draft SLP (2025 – 2029), 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 programs, 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 maximize 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 programs, aiming at enhancing the performance/capacity of local companies in petroleum activities to encourage local investment and participation.”

Sensitivity of Receptors

The table below outlines the anticipated impact on economic output and the GDP impact of the spending on goods and services during the construction phase in the various areas of study. These are based on the information presented in the baseline section, which indicates what activities can be localised and which areas of influence they are most prevalent.

Table 7-10 – Construction period impact on economic output and GDP distribution

| Study area | Distribution | Total economic output impact | Total GDP impact |
|-------------------------------------|--------------|------------------------------|------------------|
| IZOI | 18% | R378.4 million | R171.7 million |
| Primary/ secondary study area | 34% | R736.9 million | R334,5 million |
| Tertiary study area | 48% | R1 billion | R470.5 million |

Source: Urban-Econ SAM modelling, 2023

The impact is based on the assumed availability of goods and services that will be used during this phase of the proposed project. Based on the size of the economy of the IZOI, a **very low** impact on the IZOI is presumed (for TEEPSA components) as most of the goods and services will be imported; however, for the PetroSA component, a **high** impact is presumed as most accommodation and transport services will be sourced from the IZOI. Goods and services utilised for the pipeline, and modifications to the F-A platform must be sourced from the primary and tertiary study areas. Given the relative size of the impact to that of the study area economies, the impact will be very low (for the TEEPSA component and medium for the PetroSA components).

Impact Magnitude (or Consequence)

The positive impact on economic output and GDP will have local, regional and national impact. However, this impact is considered to be a **short-term** impact, as it will only occur in Year 0, Year 1 and Year 10 of the project. Considering the total impact of the capital expenditure of the project on economic output activities and the duration of the project, the intensity of the positive impact on economic output is considered to be **low** for TEEPSA activities and **high** for PetroSA activities. Therefore, the magnitude of the proposed positive impact on economic output is considered **low** for TEEPSA activities. However, it will be **high** for PetroSA activities.

Impact Significance

Given the sensitivity of receptors and the magnitude of the potential positive impact on economic output and GDP during the construction phase of the proposed project, it is considered to be of **very low significance** for the TEEPSA component and **high significance** for the PetroSA component.

Identification of Enhancement Measures

In order to enhance the positive impact on economic output during the construction phase, the following enhancement measure is proposed:

| No | Enhancement measure | Classification |
|----|--|--------------------------------|
| 1 | Investigates options for local procurement for pipeline construction to enhance local economic benefits. | Abate offsite/ at the receptor |
| 2 | Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/ or concerns. | Abate offsite/ at the receptor |
| 3 | Project procurement policy to prioritise supply of goods and services from local suppliers, as appropriate | Abate offsite/ at the receptor |

| No | Enhancement measure | Classification |
|----|--|--------------------------------|
| 4 | Sub-contractor procurement policies for non-local (IZOI) suppliers | Abate offsite/ at the receptor |
| 5 | Preferential contracting of local (IZOI) companies for goods and services | Abate offsite/ at the receptor |
| 6 | Community/ stakeholder engagement on procurement/ employment/ skills development opportunities | Abate offsite/ at the receptor |

Residual Impact Assessment

The mitigation measures will positively impact economic output and GDP during the construction phase. For the TEEPSA component, the extent of the project will increase to **medium significance** if more goods can be localised in South Africa. However, the extent of the project will remain the same for the PetroSA component since the local content is assumed to be very high at 98%. The residual impact assessment, therefore, remains of **high significance**.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-11 (TEEPSA component) and Table 7-12 (PetroSA component). The positive impact on economic output and GDP due to spending during the construction phase is considered **irreversible**. There could be potential during the construction phase to increase local spending. However, it is unlikely (due to the lack of local production capabilities and skill levels) that all spending during this phase can be local. The enhancement impact is therefore considered to be **medium**. There will be no loss of resources.

Table 7-11 – Impact of economic output and GDP during construction phase (TEEPSA Component)

| Project Phase: | | Construction | |
|-------------------------|------------------------------|------------------------------|--|
| Type of Impact | Direct, indirect and induced | | |
| Nature of Impact | Positive | | |
| Sensitivity of Receptor | VERY LOW | | |
| | Pre-Enhancement Impact | Residual Impact | |
| Magnitude (Consequence) | LOW | HIGH | |
| Intensity | LOW | HIGH | |
| Extent | LOCAL, REGIONAL AND NATIONAL | LOCAL, REGIONAL AND NATIONAL | |
| Duration | SHORT-TERM | SHORT-TERM | |
| Significance | VERY LOW | MEDIUM | |
| Probability | DEFINITE | POSSIBLE | |
| Confidence | HIGH | MEDIUM | |

| Project Phase: | | Construction | |
|-----------------------|--------------|--------------|--------------|
| Reversibility | IRREVERSIBLE | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | | | |
| Enhancement Potential | | | MEDIUM |
| Cumulative potential | POSSIBLE | POSSIBLE | POSSIBLE |

Table 7-12 – Impact of economic output and GDP during construction phase (PetroSA Component)

| Project Phase: | | Construction | |
|-------------------------|------------------------------|------------------------------|----------|
| Type of Impact | Direct, indirect and induced | | |
| Nature of Impact | Positive | | |
| Sensitivity of Receptor | MEDIUM | | |
| | Pre-Enhancement Impact | Residual Impact | |
| Magnitude (Consequence) | HIGH | HIGH | |
| Intensity | HIGH | HIGH | |
| Extent | LOCAL, REGIONAL AND NATIONAL | LOCAL, REGIONAL AND NATIONAL | |
| Duration | SHORT-TERM | SHORT-TERM | |
| Significance | HIGH | HIGH | |
| Probability | DEFINITE | POSSIBLE | |
| Confidence | HIGH | HIGH | |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE | |
| Loss of Resources | | | |
| Enhancement Potential | | MEDIUM | |
| Cumulative potential | POSSIBLE | POSSIBLE | POSSIBLE |

7.2.2 Construction Impact on jobs

Source of Impact

Spending in South Africa on suppliers of goods and services during the project's construction phase will generate economic activity that will sustain or generate additional employment opportunities. This impact will only occur in years of construction activity (i.e., Year 0, Year 1, and 10).

Potential Impact Description

Procuring goods and services will positively impact jobs either by sustaining existing jobs or creating new jobs (on-shore and off-shore). Those employed in direct and indirect activities related to the construction phase will earn a household income, resulting in induced spending in the economy. The impact on employment for the construction period is indicated in Table 7-13.

Table 7-13 – Construction period impact on employment

| Impact | Direct | Indirect | Induced | Total |
|----------------------|------------|------------|------------|-------------|
| TEEPSA Phase | | | | |
| Employment | 634 jobs | 801 jobs | 651 jobs | 2 086 jobs |
| PetroSA Phase | | | | |
| Employment | 4 913 jobs | 8 934 jobs | 6 123 jobs | 19 970 jobs |
| Total | | | | |
| Employment | 5 547 jobs | 9 735 jobs | 6 774 jobs | 22 056 jobs |

Source: Urban-Econ SAM modelling, 2023

The total local spend on goods and services during the construction period (3 years) of the project will support 22 056 jobs, the majority of which will be created by PetroSA activities. The TEEPSA activities will create 634 direct jobs, which can mainly be attributed to the contractors and suppliers involved in the project and not direct jobs created by TEEPSA during the construction phase, as these are anticipated to be modest. The main sectors estimated to benefit from employment during construction include mining, manufacturing, trade and accommodation, and general government and community services.

Project controls

Per Section 41 of the MPRD regulations, an SLP is required for the proposed project and the development of a Procurement Progression Plan. Based on the draft SLP (2025 – 2029), the following points that directly link to employment will be considered when procurement occurs:

- “Contractors will be required to maximize 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.”

Sensitivity of Receptors

The impact from employment is based on the assumed availability of goods and services that will be used during this phase of the proposed project. Based on the employment numbers in the IZOI, the TEEPSA activities will have a **very low** impact as most of the activities require highly skilled jobs, many of which are not available in the IZOL. The TEEPSA activities will, however, have a **medium** impact on the. Mostly, accommodation and transport services will be sourced from the IZOI, and individuals capable of working in these sectors can benefit from the proposed project. Goods and services utilised for the pipeline, and modifications to the F-A platform must be sourced from the primary and tertiary study areas. Given the relative size of the impact to that of the study area economies, the impact will be **medium** for both of these study areas.

Impact Magnitude (or Consequence)

The positive impact on employment will have a local, regional and national impact. However, this impact is considered to be a **short-term** impact, as it will only occur in Year 0, Year 1 and Year 10 of the project. Considering the total impact of capital expenditure on employment and the duration of the project, the intensity of the positive impact on economic output is considered to be **low** for TEEPSA activities but **high** for PetroSA activities. Therefore, the magnitude of the proposed positive impact on employment is considered **low** for TEEPSA activities but **high** for PetroSA activities.

Impact Significance

Given the medium and high sensitivity of receptors and the low magnitude of the potential positive impact on employment during the construction phase of the proposed project, it is considered to be of **very low significance** for TEEPSA activities. For PetroSA activities, however, the impact is **high** as most of the activities can be localised within South Africa.

Identification of Enhancement Measures

In order to enhance the positive impact on employment during the construction phase, the following enhancement measure is proposed:

| No | Enhancement measure | Classification |
|----|--|--------------------------------|
| 1 | Investigate options for local procurement for pipeline construction to enhance local economic benefits. | Abate offsite/ at the receptor |
| 2 | Increase procurement spend in South Africa as appropriate | Abate offsite/ at the receptor |
| 3 | Sub-contract to local construction companies where possible | Abate offsite/ at the receptor |
| 4 | Skills transfer and knowledge sharing to build local skills bases where possible | Abate offsite/ at the receptor |
| 5 | Community/ stakeholder engagement on procurement/ employment/ skills development opportunities | Abate offsite/ at the receptor |
| 6 | Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/ or concerns. | Abate offsite/ at the receptor |

Residual Impact Assessment

The mitigation measures will enhance the positive impact on employment during the construction phase. During the TEEPSA phase, if investigations allow the pipeline construction to become more localised, which in turn allows the enhancement of local economic benefits (for the construction of pipes within South Africa), the residual impact can be increased to **medium significant**. However, for

the PetroSA, the extent of the project will remain the same. Since the feasibility of increasing local procurement cannot be determined, the residual impact assessment remains **highly significant**.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-14 for the TEEPSA components/ activities and Table 7-15 for the PetroSA component. The positive impact on employment due to spending during the construction phase is considered **irreversible**. There could be potential during the construction phase to increase local spending. However, it is unlikely (due to the lack of local production capabilities and skill levels) that all spending during this phase can be local. The enhancement impact is therefore considered to be **medium**. There will be no loss of resources.

Table 7-14 – Impact on employment during construction phase (TEEPSA Component)

| Project Phase: | | Construction | |
|-------------------------|------------------------------|------------------------------|--|
| Type of Impact | Direct, indirect and induced | | |
| Nature of Impact | Positive | | |
| Sensitivity of Receptor | VERY LOW | | |
| | Pre-Enhancement Impact | Residual Impact | |
| Magnitude (Consequence) | LOW | HIGH | |
| Intensity | LOW | HIGH | |
| Extent | LOCAL, REGIONAL AND NATIONAL | LOCAL, REGIONAL AND NATIONAL | |
| Duration | SHORT-TERM | SHORT-TERM | |
| Significance | VERY LOW | MEDIUM | |
| Probability | DEFINITE | POSSIBLE | |
| Confidence | HIGH | MEDIUM | |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE | |
| Loss of Resources | NA | | |
| Enhancement Potential | | MEDIUM | |
| Cumulative potential | POSSIBLE | POSSIBLE | |

Table 7-15 – Impact on employment during construction phase (TEEPSA Component)

| Project Phase: | | Construction | |
|-------------------------|------------------------------|-----------------|--|
| Type of Impact | Direct, indirect and induced | | |
| Nature of Impact | Positive | | |
| Sensitivity of Receptor | MEDIUM | | |
| | Pre-Enhancement Impact | Residual Impact | |
| Magnitude (Consequence) | HIGH | HIGH | |

| Project Phase: | Construction | |
|------------------------------|------------------------------|------------------------------|
| Intensity | HIGH | HIGH |
| Extent | LOCAL, REGIONAL AND NATIONAL | LOCAL, REGIONAL AND NATIONAL |
| Duration | SHORT-TERM | SHORT-TERM |
| Significance | HIGH | HIGH |
| Probability | DEFINITE | POSSIBLE |
| Confidence | HIGH | HIGH |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | NA | NA |
| Enhancement Potential | | MEDIUM |
| Cumulative potential | POSSIBLE | POSSIBLE |

7.2.3 Construction Impact on household income

Source of Impact

The positive impact on employment will generate additional household income. This impact will only occur in years of construction activity (i.e., Year 0, Year 1, and 10).

Potential Impact Description

Procuring goods and services will positively impact jobs either by sustaining existing jobs or creating new jobs (on-shore and off-shore). Those employed in direct and indirect activities related to the construction phase will earn an income, resulting in induced spending in the economy. The combined impact on household income for the construction period (in 2022 prices) is indicated in Table 7-16.

Table 7-16 – Construction period impact on household income

| Impact | Direct | Indirect | Induced | Total |
|---|----------------|----------------|----------------|--------------|
| Household income- TEEPSA Component | R148.4 million | R100.3 million | R79.6 million | R328.3 |
| Household Income PetroSA Component | R1.2 billion | R1.2 billion | R746.4 million | R3,1 billion |
| Household Income (TOTAL) | R1,4 billion | R1.3 billion | R826.0 million | R3.5 billion |

Source: Urban-Econ SAM modelling, 2023

The positive impact on employment will increase household income by R3.2 billion for the duration of the construction period for both the TEEPSA and PetroSA components, of which R328.3 million will be

a direct benefit from the construction activities for the TEEPSA component. The main sectors estimated to benefit from household income during construction include mining, manufacturing, trade and accommodation, and real estate and business services.

Sensitivity of Receptors

The impact is based on the assumed availability of goods and services that will be used during this phase of the proposed project. Based on the current household income levels in the IZOI, for the TEEPSA component, a **very low** impact on the IZOI is presumed. Mostly, accommodation and transport services will be sourced from the IZOI, and individuals capable of working in these sectors can benefit from the proposed project. Goods and services utilised for the pipeline, and modifications to the F-A platform must be sourced from the primary and tertiary study areas. Given the relative size of the impact to that of the study area economies and, the impact will, therefore, be **medium** for both of these study areas.

Impact Magnitude (or Consequence)

The positive impact on household income will have a local, regional and national impact. However, this impact is considered to be a **short-term** impact, as it will only occur in Year 0, Year 1 and Year 10 of the project. Considering the total impact of capital expenditure on employment and, subsequently, household income and the duration of the project, the intensity of the positive impact on economic output is considered to be **low** for the TEEPSA component but **high** for the PetroSA component. The magnitude of the proposed positive impact on employment is therefore considered to be **low** for the TEEPSA component but **high** for the PetroSA component.

Impact Significance

Given the very low sensitivity of receptors for the TEEPSA component and the medium and high sensitivity of receptors, and the high magnitude of the potential positive impact on employment during the construction phase for the PetroSA component of the proposed project is considered to be of **very low** significance for the TEEPSA component and **high significance** for the PetroSA component.

Identification of Enhancement Measures

In order to enhance the positive impact on household income during the construction phase, the following enhancement measures are proposed:

| No | Enhancement measure | Classification |
|----|---|--------------------------------|
| 1 | Investigate options for local procurement for pipeline construction to enhance local economic benefits. | Abate offsite/ at the receptor |
| 2 | Increase procurement spend in South Africa as appropriate | Abate offsite/ at the receptor |

| No | Enhancement measure | Classification |
|----|--|--------------------------------|
| 3 | Sub-contract to local construction companies where possible | Abate offsite/ at the receptor |
| 4 | Skills transfer and knowledge sharing to build local skills bases where possible | Abate offsite/ at the receptor |
| 5 | Community/ stakeholder engagement on procurement/ employment/ skills development opportunities | Abate offsite/ at the receptor |
| 6 | Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/ or concerns. | Abate offsite/ at the receptor |

Residual Impact Assessment

The mitigation measures are anticipated to enhance the positive impact on household income during the construction phase. However, the extent of the impact of this phase of the proposed project will remain the same for the PetroSA component since the degree to which local spending can be increased for the construction phase cannot be determined with the information available at the time of report writing, the residual impact assessment will remain of **high significance**. For the TEEPSA component, if options for local procurement for pipeline construction to enhance local economic benefits can be secured, the residual impact assessment can be enhanced to **medium significance**.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-17 and Table 7-18. The positive impact on household income due to spending during the construction phase is considered irreversible. There will be no loss of resources.

Table 7-17 – Impact on household income during construction phase (TEEPSA Component)

| Project Phase: | Construction | |
|-------------------------|------------------------------|------------------------------|
| Type of Impact | Direct, indirect and induced | |
| Nature of Impact | Positive | |
| Sensitivity of Receptor | VERY LOW | |
| | Pre-Enhancement Impact | Residual Impact |
| Magnitude (Consequence) | LOW | HIGH |
| Intensity | LOW | HIGH |
| Extent | LOCAL, REGIONAL AND NATIONAL | LOCAL, REGIONAL AND NATIONAL |
| Duration | SHORT-TERM | SHORT-TERM |
| Significance | VERY LOW | MEDIUM |

| Project Phase: | Construction | |
|-----------------------|--------------|--------------|
| Probability | DEFINITE | DEFINITE |
| Confidence | HIGH | MEDIUM |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | N/A | N/A |
| Enhancement Potential | | MEDIUM |
| Cumulative potential | POSSIBLE | POSSIBLE |

Table 7-18 – Impact on household income during construction phase (PetroSA Component)

| Project Phase: | Construction | |
|-------------------------|------------------------------|------------------------------|
| Type of Impact | Direct, indirect and induced | |
| Nature of Impact | Positive | |
| Sensitivity of Receptor | MEDIUM | |
| | Pre-Enhancement Impact | Residual Impact |
| Magnitude (Consequence) | HIGH | HIGH |
| Intensity | HIGH | HIGH |
| Extent | LOCAL, REGIONAL AND NATIONAL | LOCAL, REGIONAL AND NATIONAL |
| Duration | SHORT-TERM | SHORT-TERM |
| Significance | HIGH | HIGH |
| Probability | DEFINITE | DEFINITE |
| Confidence | HIGH | MEDIUM |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | N/A | N/A |
| Enhancement Potential | | MEDIUM |
| Cumulative potential | POSSIBLE | POSSIBLE |

7.2.4 Construction Impact on the fishing industry

Source of Impact

The Marine Ecology and Fisheries Impact Assessment Study (2023) indicates that direct impacts because of construction activities will include:

1. The loss of productive fishing grounds due to the implementation of exclusion zones around construction activities and infrastructure;
2. Direct mortality and/or disturbance of target species at various life-history stages (adults, juveniles, eggs and larvae) due to impacts of drilling (smothering, drillings fluid discharge and noise impacts);

3. Destruction of habitat, or a reduction in the quality of habitat critical for target species and their supporting ecosystems (direct loss of benthic habitat), thereby reducing the abundance of fishery species; and,
4. Disturbance and negative alteration of fish behaviour (e.g., disruption of annual spawning events or migrations) resulting in reduced biological "fitness," i.e., a reduction in lifetime reproductive output.

Potential Impact Description

The Marine Ecology and Fisheries Impact Assessment Study (2023) indicates, " Fisheries might be affected by target species avoiding the construction area and through the damage/dislocation of fishing equipment deployed in the area by construction activities. Furthermore, it follows that the magnitude of potential impacts on particular sectors of the fishing industry would depend on the location of construction activities (i.e., activities in deeper water below 200 m depth are more likely to affect fisheries that operate at this depth rather than shallow water fisheries) (CapMarine 2010, 2018)". The only overlap with commercial fishing would be hake deep-sea trawl and a slight overlap with the Large Pelagic longline sector. There is no overlap with the other commercial fishing sectors, the small scale and recreational fishers, nor with mariculture activities.

Sensitivity of Receptors

It is anticipated that the majority of the negative impact during the construction phase on the fishing industry will be around deep-sea trawling and large pelagic fishing sectors, where the sensitivity of receptors is expected to be **medium and high**. All the other sectors, including the small-scale, recreation fishers and mariculture activities, are expected to be of a **low** sensitivity.

Impact Magnitude (or Consequence)

The negative impact on the fishing industry is local extent, and the duration is short-term. The magnitude of the impact is therefore considered **very low** for all the fishing sectors, except for the large pelagic sector, where the impact is considered **low**.

Impact Significance

Given the low sensitivity of receptors and the low magnitude of the potential negative impact on the fishing sector during the construction phase of the proposed project, it is considered to be of **negligible significance** for all fishing sectors, except for deep-sea trawling where the significance is **very low** and large pelagic sector, where the significance is **low**. For the recreational, small fishers as well as maricultural activities, the sensitivity is also considered **negligible**.

Identification of Mitigation Measures

| No | Enhancement measure | Classification |
|----|--|------------------------|
| 1 | Avoidance of siting well infrastructure in areas of higher fishing intensity if feasible. This particularly relates to the Large Pelagic Longline sector. | Avoid/ Abate at source |
| 2 | Notify the operators of pelagic long-line vessels of the timing, area and safety clearance requirements prior to the commencement of the activities through the SATLA. | Avoid/ Abate at source |
| 3 | Maintain adequate safety clearance between fishing vessels and construction phase vessels and equipment through at-sea communications with vessels in the vicinity of the survey area. | Avoid/ Abate at source |

Residual Impact Assessment

The mitigation measures will not reduce the impacts for any of the fishing activities.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-1719 for the commercial fishing industry (including the small-scale fishers) and Table 7-20 for the Impact on recreational fishing and mariculture during the construction phase.

Table 7-19 – Impact on commercial and small-scale fishing income during construction phase

| Project Phase: | Construction | |
|-------------------------|------------------------|-----------------|
| Type of Impact | Direct | |
| Nature of Impact | Negative | |
| Sensitivity of Receptor | MEDIUM | |
| | Pre-Enhancement Impact | Residual Impact |
| Magnitude (Consequence) | LOW | VERY LOW |
| Intensity | VERY LOW | VERY LOW |
| Extent | LOCAL | LOCAL |
| Duration | SHORT-TERM | SHORT-TERM |
| Significance | LOW | VERY LOW |
| Probability | DEFINITE | DEFINITE |
| Confidence | HIGH | MEDIUM |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | N/A | N/A |
| Enhancement Potential | LOW | LOW |
| Cumulative potential | UNLIKELY | UNLIKELY |

Table 7-20 – Impact on recreational fishing and mariculture during construction phase

| Project Phase: | Construction | |
|-------------------------|------------------------|------------------|
| Type of Impact | Direct | |
| Nature of Impact | Neutral | |
| Sensitivity of Receptor | VERY LOW | |
| | Pre-Enhancement Impact | Residual Impact |
| Magnitude (Consequence) | VERY LOW | VERY LOW |
| Intensity | ZERO TO VERY LOW | ZERO TO VERY LOW |
| Extent | LOCAL | LOCAL |
| Duration | SHORT-TERM | SHORT-TERM |
| Significance | NEGLIGIBLE | NEGLIGIBLE |
| Probability | DEFINITE | DEFINITE |
| Confidence | HIGH | MEDIUM |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | N/A | N/A |
| Enhancement Potential | | LOW |
| Cumulative potential | UNLIKELY | UNLIKELY |

7.3 Production Operations

The impact on operations only relates to the pipeline operations and the F-A platform. It is anticipated that the F-A platform operations will be performed by PetroSA. Quantifying the operational impact of the end-user options (as discussed in Section 0) is not within the scope of this assessment. However, it should be acknowledged that using gas and condensates by either PetroSA or Eskom will have a positive economic impact.

7.3.1 Impact on economic output and GDP

Source of Impact

The spending on the annual operation and maintenance of the pipeline and F-A platform will result in a need for goods and services, contributing to GDP growth. This impact will be for the full duration of the operational phase (25 years).

Potential Impact Description

The procurement of goods and services for the proposed project's operational and maintenance aspects will directly benefit production activities, resulting in indirect and induced benefits through backward linkages in the value chain and additional employment opportunities that will be created. The increase in economic output will have a positive impact on the GDP. The **annual impact** for the operational period (in 2022 prices) is indicated in Table 7-21.

Table 7-21 – Operational period impact on economic output and GDP (per annum)

| Impact | Direct | Indirect | Induced | Total |
|------------------------|----------------|----------------|----------------|--------------|
| Economic output | R1 4 billion | R883.0 million | R790.1 million | R3.0 billion |
| GDP | R690.7 million | R376.5 million | R318.6 million | R1.4 billion |

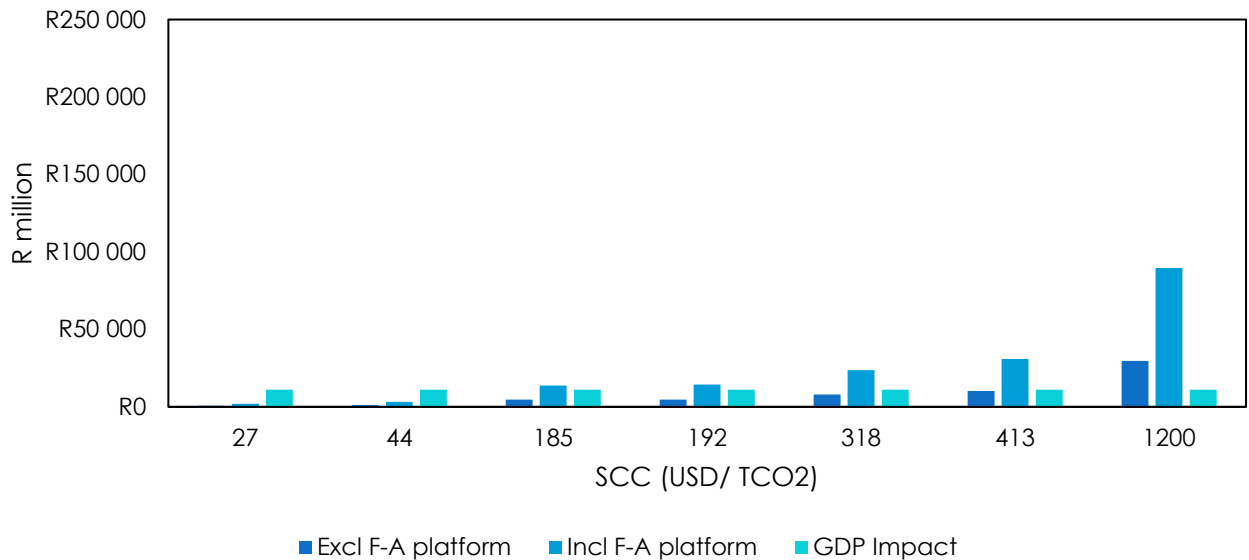
Source: Urban-Econ SAM modelling, 2023

The project's operational phase will increase economic output by R3.0 billion per year, of which R1.4 billion will be directly related to the project. The GDP impact due to the increase in economic output is an estimated R1.4 billion per annum. The main sectors estimated to benefit from production and GDP during the operation phase include mining, transport and storage, real estate and business, and manufacturing. In conjunction with the economic benefits linked to production activities, there will be investment into local economic development initiatives through the SLP. The SLP for 2025 to 2029 allocates approximately R36 million for LED initiatives (over 5 years). These initiatives will be identified through consultation with the local government to ensure that they meet the needs of communities. Projects that can be funded include economic development, green economy, health and safety, social upliftment and education. Spending on such projects will generate additional economic activity. In addition to spending linked to the SLP, CSI initiatives from TEEPSA will further enhance the economic benefits in the local communities.

Given that the benefits outlined above only consider the benefits of the activities related to the proposed projects, it should be highlighted that the utilisation of the gas by end users, as described in Section 3.4, will further enhance the positive economic impacts of the proposed project.

While this assessment is not a cost benefit analysis, given the nature of the proposed project, the social cost of carbon (SCC) is an important factor to consider when reviewing the economic benefits of the proposed project. The social cost of carbon measures the economic damages that could result from greenhouse gas (GHG) emissions associated with the project. The total cost estimated GHG emissions of the project must be offset by the economic benefits. Not considering the F-A platform, it is projected that the direct GHG emissions of the proposed project will total 1 512 751 TCO₂ and 4 049 699 TCO₂ if the GHG emissions from the F-A platform are included in the estimations (WSP, 2023). It is worth noting that in case the gas is earmarked to Gas To Power (ESKOM or IPP), the additional power generated would help to retire coal-fired or diesel peaker power plants from the grid, which GHG emissions are much higher than those of the gas power units. The extent by which the GHG emissions of this upstream gas project and its possible Gas To Power activity would offset the saved emissions from the coal or diesel plants has not been factored here.

There are numerous estimates available for the SCC. This assessment utilises the findings from Azer, Martin, Johansson and Sterner (2023) and Rennert, Erikson, Prest *et al.* (2022) to show the combined GDP impact across all phases of the project against the SCC based on the emission estimates for the proposed project. These two research studies show that the SCC ranges between \$27.0 to \$1 200.0 per tonne of CO₂.



Source: Urban-Econ calculations, 2023

Figure 7-1 - Social Cost of Carbon

At the lower estimations of the SCC, the positive GDP impact of the proposed project is greater than the total SCC of the project, indicating a net benefit despite the increase in emissions. If the SCC is greater than \$185.0/ tCO₂, the net impact will be negative.

Project Controls

In accordance with Section 41 of the MPRD regulations, an SLP is required for the proposed project. The SLP details potential local economic development (LED) projects, including infrastructure and income generation projects. Implementing these LED projects will enhance the economic and social benefits related to the proposed project.

Based on the draft SLP (2025 – 2029), 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 programs, 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 maximize 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 programs, aiming at enhancing the performance/capacity of local companies in petroleum activities to encourage local investment and participation.”

Sensitivity of Receptors

It is anticipated that a large portion of the economic benefits of the operational phase will be captured in the IZOI through services such as logistics and the operations of the off-shore base and the F-A platform. The location of the end-user options is also in the IZOI, which will enhance the economic benefits for the local communities. Additional investment into the local communities through CSI and LED spending will further boost economic activities. Therefore, the positive impact on economic output and GDP during the operational phase is classified as being of **medium** sensitivity.

Impact Magnitude (or Consequence)

The positive impact on economic output and GDP will have a local and regional impact, given that not all goods and services for the operational phase are located in the IZOI but will also be sourced from the primary area of study. Given the anticipation duration of the operational phases, these economic benefits are considered to be **long-term**. The oil and gas industry has stagnated in the IZOI due to the lack of local feedstock. The operations of the proposed project could, therefore, revitalise the industry. The anticipated intensity of the project is, therefore, considered to be **medium**. Therefore,

the magnitude of the positive impact on the economy (through economic output and GDP) of the project's operational phase is considered **medium**.

Impact Significance

Given the high sensitivity of receptors and the high magnitude of the potential positive impact on economic output and GDP during the operational phase of the proposed project, it is considered to be of **medium significance**.

Identification of Enhancement Measures

In order to enhance the positive impact on economic output during the operational phase, the following enhancement measure is proposed:

| No | Enhancement measure | Classification |
|----|---|------------------------------------|
| 1 | Prioritise the procurement of goods and services from local suppliers as feasible. | Intensify offsite/ at the receptor |
| 2 | SLP initiatives for training and skills development to be aligned with technical skills requirements over the production period | Intensify offsite/ at the receptor |

Residual Impact Assessment

The enhancement measures will positively impact economic output and GDP during the operational phase. However, the extent of the project will remain the same. The residual impact assessment, therefore, remains of **medium significance**.

Additional Assessment Criteria

The additional assessment criteria are summarised in Tabel 2-22. The positive impact on economic output and GDP due to spending during the operational phase is considered **irreversible**. Through the SLP and the Procurement Progression Plan, enhancement measures are **likely** to enhance the benefit of the operational phase of the proposed project. There will be no loss of resources.

Table 7-22 – Impact on economic output and GDP during operational phase

| Project Phase: | Operation | |
|-------------------------|------------------------------|-----------------|
| Type of Impact | Direct, indirect and induced | |
| Nature of Impact | Positive | |
| Sensitivity of Receptor | MEDIUM | |
| | Pre-Enhancement Impact | Residual Impact |
| Magnitude (Consequence) | MEDIUM | MEDIUM |
| Intensity | MEDIUM | MEDIUM |
| Extent | LOCAL | LOCAL |

| Project Phase: | Operation | |
|------------------------------|---------------|---------------|
| Duration | LONG-TERM | LONG-TERM |
| Significance | MEDIUM | MEDIUM |
| Probability | HIGHLY LIKELY | HIGHLY LIKELY |
| Confidence | HIGH | HIGH |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | NA | NA |
| Enhancement Potential | | HIGH |
| Cumulative potential | LIKELY | LIKELY |

7.3.2 Impact on jobs

Source of Impact

Procuring goods and services in the effort to extract gas and the operation of the F-A platform will generate economic activity that will sustain or generate additional employment opportunities. This impact will occur for the duration of the operation.

Potential Impact Description

Activities related to gas extraction and the operation of the F-A platform will have a positive impact on jobs either by sustaining existing jobs or creating new jobs (on-shore and off-shore) through direct employment (either TEEPSA or PetroSA) or through the procurement of goods and services required for operation. Those employed in direct and indirect activities related to the operational phase will earn an income, resulting in induced spending in the economy. The combined impact on employment for the operational period (in 2022 prices) is indicated in Table 7-23.

Table 7-23 – Operation period impact on employment

| Impact | Direct | Indirect | Induced | Total |
|-------------------|----------|------------|------------|------------|
| Employment | 266 jobs | 1 201 jobs | 1 011 jobs | 2 478 jobs |

Source: Urban-Econ SAM modelling, 2023

The project's operational phase will benefit 2 478 jobs, of which 266 are directly related to the project. It's anticipated that most of the direct employment will be related to the operations of the F-A platform and not direct jobs created by TEEPSA during the operational phase, as these are anticipated to be minimal. The main sectors estimated to benefit from employment during the operation phase include mining, manufacturing, trade and accommodation, and general government and community services.

Through the SLP, there will be an investment in local economic development initiatives, which will support additional employment opportunities in the IZOI (Mossel Bay and Goerge Municipalities). These

initiatives will be identified through consultation with the local government to ensure that they meet the needs of communities. Types of projects that can be funded include economic development, green economy, health and safety, social upliftment and education.

Project controls

Per Section 41 of the MPRD regulations, an SLP is required for the proposed project and the development of a Procurement Progression Plan. Based on the draft SLP (2025 – 2029), the following points that directly link to employment will be considered when procurement occurs:

- “Contractors will be required to maximize 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.”

A Skills Development Plan forms part of the SLP. The Skills Development Plan must be submitted to the relevant Sector Education and Training Authority (SETA) as a Workplace Skills Plan/ Annual Training Report. The Skills Development Plan outlines proposed internship and bursary programmes, mentorship programmes and employment equity plans.

Sensitivity of Receptors

Given that the project's operational phase will support 2 478 jobs (direct, indirect and induced impact) on an annual basis, with the implementation of the SLP further benefitting local economic development and human resource development, the sensitivity of receptors is considered to be **medium**.

Impact Magnitude (or Consequence)

It is anticipated that most of the employment opportunities will be in the IZOI. Furthermore, this impact is considered to be a **long-term** impact, as it will only occur for the duration of the operational phase of the proposed project. Considering the total impact of the operational expenditure on employment and the duration of the project, the intensity of the positive impact on economic output is considered to be **medium**. The magnitude of the proposed positive impact on employment is therefore considered to be **medium**.

Impact Significance

Given the medium and high sensitivity of receptors and the high magnitude of the potential positive impact on employment during the operational phase of the proposed project, it is considered to be of **medium significance**.

Identification of Enhancement Measures

In order to enhance the positive impact on employment during the construction phase, the following enhancement measure is proposed:

| No | Enhancement measure | Classification |
|----|--|------------------------------------|
| 1 | Preferential employment of local labour to increase benefits to the local community | Intensify offsite/ at the receptor |
| 2 | SLP initiatives for training and skills development to be aligned with Project technical skills requirements over the production period. | Intensify offsite/ at the receptor |

Residual Impact Assessment

The enhancement measures will enhance the positive impact on employment during the operational phase by ensuring more local labour can be employed during the operational phase. This will not change the significance rating of the positive impact on employment during the operational phase.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-24. The positive impact on employment due to spending during the operational phase is considered **irreversible**. Implementing the SLP and plans such as the Procurement Progression Plan can enhance the positive impact on employment. The enhancement impact is therefore considered to be **medium**. There will be no loss of resources.

Table 7-24 – Impact on employment during operational phase

| Project Phase: | Operational | |
|-------------------------|------------------------------|-----------------|
| Type of Impact | Direct, indirect and induced | |
| Nature of Impact | Positive | |
| Sensitivity of Receptor | MEDIUM | |
| | Pre-Enhancement Impact | Residual Impact |
| Magnitude (Consequence) | MEDIUM | MEDIUM |
| Intensity | MEDIUM | MEDIUM |
| Extent | LOCAL | LOCAL |
| Duration | LONG TERM | LONG TERM |
| Significance | MEDIUM | MEDIUM |
| Probability | DEFINITE | DEFINITE |
| Confidence | HIGH | HIGH |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | | |
| Enhancement Potential | | MEDIUM |
| Cumulative potential | POSSIBLE | POSSIBLE |

7.3.3 Impact on household income

Source of Impact

The positive impact on employment will generate additional household income. This impact will be for the duration of the operational phase of the proposed project.

Potential Impact Description

The proposed project's operation and maintenance aspects will positively impact jobs either by sustaining existing jobs or creating new jobs (on-shore and off-shore) through direct job creation and the procurement of goods and services. Those employed in indirect activities related to the operational phase will also earn an income, resulting in induced spending in the economy. The combined impact on household income for the operational period (in 2022 prices) is indicated in Table 7-25.

Table 7-25 – Operational period impact on household income

| Impact | Direct | Indirect | Induced | Total |
|-------------------------|----------------|----------------|----------------|----------------|
| Household income | R175.0 million | R154.8 million | R128.3 million | R458.2 million |

Source: Urban-Econ SAM modelling, 2023

The positive impact on employment will have increased income by R458.2 million per annum for the operational period, of which R175.0 million will be a direct benefit from the operational activities. The main sectors estimated to benefit from household income during the operation phase include mining, manufacturing, transport and storage, and general government and community services.

Sensitivity of Receptors

Given the current levels household income levels in the IZOI, the proposed project can substantially boost local household income levels; the impact sensitivity is considered **medium**.

Impact Magnitude (or Consequence)

The positive impact on household income will have a local and regional impact. Furthermore, this impact is considered to be a **long-term** impact. Considering the total impact on household income and the duration of the project, the intensity of the positive impact on economic output is considered to be **medium**. The magnitude of the proposed positive impact on employment is therefore considered to be **medium**.

Impact Significance

Given the medium sensitivity of receptors and the high magnitude of the potential positive impact on employment during the construction phase of the proposed project, it is considered to be of **medium significance**.

Identification of Enhancement Measures

In order to enhance the positive impact on household income during the operation phase, the following enhancement measure is proposed:

| No | Enhancement measure | Classification |
|----|--|------------------------------------|
| 1 | Project procurement policy to prioritise supply of goods and services from local suppliers where possible. | Intensify offsite/ at the receptor |
| 2 | Prioritise the use of local labour, including contractors, will be prioritised where possible in line with the Project's Social and Labour Plan. | Intensify offsite/ at the receptor |

Residual Impact Assessment

The mitigation measures are anticipated to enhance the positive impact on household income during the operation phase. However, the extent of the impact of this phase of the proposed project will remain the same. Since the degree to which local spending can be increased for the operation phase cannot be determined with the information available at the time of report writing, the residual impact assessment will remain of **medium significance**.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-26. The positive impact on household income due to spending during the operational phase is considered **irreversible**. There will be no loss of resources.

Table 7-26 – Impact of household income during operational phase

| Project Phase: | | Operational | |
|-------------------------|------------------------------|-----------------|--|
| Type of Impact | Direct, indirect and induced | | |
| Nature of Impact | Positive | | |
| Sensitivity of Receptor | MEDIUM | | |
| | Pre-Enhancement Impact | Residual Impact | |
| Magnitude (Consequence) | MEDIUM | MEDIUM | |
| Intensity | MEDIUM | MEDIUM | |
| Extent | LOCAL | LOCAL | |
| Duration | LONG-TERM | LONG-TERM | |
| Significance | MEDIUM | MEDIUM | |
| Probability | DEFINITE | DEFINITE | |
| Confidence | HIGH | MEDIUM | |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE | |

| Project Phase: | Operational | |
|-----------------------|-------------|--------|
| Loss of Resources | NA | NA |
| Enhancement Potential | | MEDIUM |
| Cumulative potential | LIKELY | LIKELY |

7.3.4 Impact on government

Source of Impact

The positive impact on household income will positively impact the government in terms of household income (personal and corporate) tax generation. Furthermore, given the nature of the proposed project, the national government will benefit from the Mineral and Petroleum Resource Royalty (MPRR) taxes as well as a carbon tax.

Potential Impact Description

Royalties and taxes generated through the project will accrue to the national government, which will be utilised to fund the national budget.

The MPRR is levied at a rate of between 0.5% and 5% or 7%, depending on whether the product is refined or unrefined. In 2022, South Africa collected R28.5 billion in royalties.

Sensitivity of Receptors

Given the scale of the project's operational phase, the positive impact on the government through the increased tax revenue is deemed of **medium sensitivity**.

Impact Magnitude (or Consequence)

Personal Income Tax, Corporate Income Tax, MPRR and Carbon Tax accrue to the National Government of South Africa. The impact of the positive impact on the government through the project's operation is, therefore, of national and very high intensity. The tax benefits of the proposed project will be over the operational period of the project, resulting in **long-term** benefits for the government.

Impact Significance

Given the high sensitivity of receptors and the high magnitude of the potential positive impact on employment during the construction phase of the proposed project, it is considered to be of **high significance**.

Identification of Enhancement Measures

No specific enhancement measures are proposed for this impact. If the local content spend can be increased to benefit more local businesses, the South African government will benefit from the additional income and business taxes.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-27. The positive impact on the government due to the taxes that can be earned during the operational phase is considered **irreversible**. There will be no loss of resources.

Table 7-27 – Impact on government during operational phase

| Project Phase: | | Operational | |
|-------------------------|------------------------------|-----------------|--|
| Type of Impact | Direct, indirect and induced | | |
| Nature of Impact | Positive | | |
| Sensitivity of Receptor | MEDIUM | | |
| | Pre-Enhancement Impact | Residual Impact | |
| Magnitude (Consequence) | VERY HIGH | NA | |
| Intensity | HIGH | NA | |
| Extent | NATIONAL | NA | |
| Duration | LONG-TERM | NA | |
| Significance | HIGH | NA | |
| Probability | DEFINITE | NA | |
| Confidence | HIGH | NA | |
| Reversibility | IRREVERSIBLE | NA | |
| Loss of Resources | NA | NA | |
| Enhancement Potential | NONE | NA | |
| Cumulative potential | LIKELY | NA | |

7.3.5 Production Impact on the fishing industry

Source of Impact

The Marine Ecology and Fisheries Impact Assessment Study (2023) indicates that direct impacts from production activities will include exclusion safety zones for well operations and all linear infrastructure. Therefore, the total exclusion zones for all production activities are estimated to be 63.46 km.

Potential Impact Description

The Marine Ecology and Fisheries Impact Assessment Study (2023) indicates "that during operations, exclusion of fishing vessels from fishing areas could have (indirect) socio-economic implications for the affected industries. Fisheries might be affected by the loss of productive fishing grounds and, therefore, may directly impact catch, or Catch Per Unit Effort (CPUE), with (indirect) socio-economic implications for the affected industries and through the damage/dislocation of fishing equipment deployed in the area by operating activities. Furthermore, it follows that the magnitude of potential impacts on particular sectors of the fishing industry would depend on the location of operation activities (i.e.,

activities in deeper water below 200 m depth are more likely to affect fisheries that operate at this depth rather than shallow water fisheries) (CapMarine 2010, 2018)." The only areas of overlap will be the hake deep-sea trawl activities and the Large Pelagic longline sectors; however these impacts are considered of low to very low significance.

Sensitivity of Receptors

The sensitivity of all fishing sectors is considered **low** for all commercial fishing (including the small fishers), except for the deep-sea trawl activities and Large Pelagic activities where the sensitivity is considered **medium** and **high**, respectively. The recreational and mariculture activities are also considered of **low sensitivity**.

Impact Magnitude (or Consequence)

The impact magnitude is also **very low** for all the fishing sectors, except for the large pelagic and deep-sea trawl activities, where it is of **low** magnitude. The recreational and mariculture activities are also considered of **very low magnitude**.

Impact Significance

It is anticipated that the majority of the negative impact during the production phase on the fishing industry will be on the large pelagic sector and deep-sea fishing. The negative impact is considered to be of **low and very low sensitivity** for these sectors and **negligible** for other fishing sectors, including for small-scale fishers, recreational fishers and mariculture activities.

Identification of Mitigation Measures

| No | Enhancement measure | Classification |
|----|---|------------------------|
| 1 | Avoidance of siting well infrastructure in areas of higher fishing intensity if feasible. This particularly relates to the Large Pelagic Longline sector. | Avoid/ abate at source |

Residual Impact Assessment

With mitigation measures, the residual impact on deep-sea trawling will remain **very low** and **low** for the large pelagic sector. All the other fishing activities remain **negligible**.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-17 for the commercial fishing sector (including the small-scale fishers) and Table 7-29 for the recreation fishing sector and mariculture activities. The negative impact on fishing income due to spending during the production phase is considered irreversible. There will be no loss of resources.

Table 7-28 – Impact on the commercial fishing industry (including the small-scale fishers) during production

| Project Phase: | | Construction | |
|-------------------------|------------------------------|-----------------|--|
| Type of Impact | Direct, indirect and induced | | |
| Nature of Impact | Negative | | |
| Sensitivity of Receptor | LOW | | |
| | Pre-Enhancement Impact | Residual Impact | |
| Magnitude (Consequence) | LOW | VERY LOW | |
| Intensity | LOW | LOW | |
| Extent | LOCAL | LOCAL | |
| Duration | LONG-TERM | LONG-TERM | |
| Significance | VERY LOW | NEGLIGIBLE | |
| Probability | DEFINITE | DEFINITE | |
| Confidence | HIGH | HIGH | |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE | |
| Loss of Resources | N/A | N/A | |
| Enhancement Potential | | LOW | |
| Cumulative potential | UNLIKELY | UNLIKELY | |

Table 7-29 – Impact on recreational fishing and mariculture during production phase

| Project Phase: | | Construction | |
|-------------------------|------------------------|-----------------|--|
| Type of Impact | Direct | | |
| Nature of Impact | Negative | | |
| Sensitivity of Receptor | LOW | | |
| | Pre-Enhancement Impact | Residual Impact | |
| Magnitude (Consequence) | VERY LOW | VERY LOW | |
| Intensity | VERY LOW | VERY LOW | |
| Extent | LOCAL | LOCAL | |
| Duration | LONG-TERM | LONG-TERM | |
| Significance | NEGLIGIBLE | NEGLIGIBLE | |
| Probability | DEFINITE | DEFINITE | |
| Confidence | HIGH | HIGH | |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE | |
| Loss of Resources | N/A | N/A | |
| Enhancement Potential | | LOW | |
| Cumulative potential | UNLIKELY | UNLIKELY | |

7.4 Decommissioning Activities

7.4.1 Impact on economic output and GDP

Source of Impact

The spending on goods and services in South Africa during this phase of the project will positively impact the economy for the duration of the decommissioning phase (1 year). Currently, the estimates for decommissioning assume that 17% of investment could be spent locally in South Africa (for decommissioning of the wells), and 100% of local spend would be spent on decommissioning the FA Platform. This translates into a total local spend of R1 billion.

Potential Impact Description

The increase in economic activity due to procuring goods and services during this phase will positively impact the GDP. The total impact of the spending during the decommissioning period (in 2022 prices) is indicated in Table 7-30.

Table 7-30 – Decommissioning on economic impact

| Impact | Direct | Indirect | Induced | Total |
|------------------------|----------------|----------------|----------------|----------------|
| Economic output | R1.0 billion | R626,7 million | R563.9 million | R2.2 billion |
| GDP | R463.8 million | R253.8 million | R227,5 million | R945,1 million |
| Employment | 396 jobs | 737 jobs | 723 jobs | 1 856 jobs |

Source: Urban-Econ SAM modelling, 2023

It is estimated that during the decommissioning phase, a total of R2.2 billion will be generated in economic output and R945.1 million in GGP. The main local economic sectors that will be impacted will include transportation and logistics and the manufacturing sector (Cement and Steel). These impacts will only be for the duration of the decommissioning period (1 year) and are thus short-term in nature.

Project Controls

Per Section 41 of the Mineral Petroleum Resources Development Plan Regulations (MPRD regulations), a social and labour plan (SLP) is required for the proposed project and the development of a Procurement Progression Plan. Based on the draft SLP (2025 – 2029), 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 programs, 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 maximize 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 programs, aiming at enhancing the performance/capacity of local companies in petroleum activities to encourage local investment and participation.”

Sensitivity of Receptors

It is anticipated that the majority of the positive impact during the decommissioning phase on economic output and GDP will be in the primary study area since not all goods and services are available in the IZOI. Logistics, catering and accommodation services are expected to be available. Still, specialised skills and vessels may need to be sourced from Cape Town or internationally. Taking into consideration the GDP impact of the operational activities, the positive impact is considered to be of **medium sensitivity**.

Impact Magnitude (or Consequence)

The positive impact on economic output and GDP is anticipated to be mainly regional. This impact is considered to be a **short-term** impact. The intensity of the positive impact on economic output and GDP is considered to be **medium**, with the magnitude of the proposed positive impact on economic output being therefore considered **low**.

Impact Significance

Given the medium sensitivity of receptors and the low magnitude of the positive impact on economic output and GDP due to the decommissioning of the proposed project, the impacts are considered **low significance**.

Identification of Enhancement Measures

In order to enhance the positive impact on economic output during the decommissioning phase, the following measures are proposed:

| No | Enhancement Measure | Classification |
|----|---|--------------------------------|
| 1 | Maximise salvageable plant and equipment. | Abate offsite/ at the receptor |
| 2 | Ensure that waste material brought onshore is managed by a licenced contractor and disposed of at an authorised landfill. | Abate offsite/ at the receptor |

Residual Impact Assessment

The enhancement measures may increase the positive impact on economic output and GDP as a result of the decommissioning phase if increased spending in South Africa can be achieved. However, the degree to which this will be feasible is uncertain. Any positive impact will remain short-term after enhancement, and the significance, therefore, remains low.

Additional Assessment Criteria

The additional assessment criteria are summarised in the table below. Both the positive impact on economic output and GDP due to decommissioning the proposed project are considered **irreversible**.

Table 7-31 – Impact on economic output and GDP during decommissioning (procurement of goods and services)

| Project Phase: | Decommissioning | |
|-------------------------|------------------------------|-----------------|
| Type of Impact | Direct, indirect and induced | |
| Nature of Impact | POSITIVE | |
| Sensitivity of Receptor | MEDIUM | |
| | Pre-Mitigation Impact | Residual Impact |
| Magnitude (Consequence) | LOW | LOW |
| Intensity | MEDIUM | MEDIUM |
| Extent | REGIONAL | REGIONAL |
| Duration | SHORT TERM | SHORT TERM |
| Significance | LOW | LOW |

| Project Phase: | Decommissioning | |
|-----------------------------|-----------------|--------------|
| Probability | DEFINITE | DEFINITE |
| Confidence | MEDIUM | MEDIUM |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | NA | NA |
| Mitigation Potential | | LOW |
| Cumulative potential | UNLIKELY | UNLIKELY |

7.4.2 Impact on jobs

Source of Impact

The local spending on goods and services during this phase of the project will positively impact employment for those directly and indirectly involved in decommissioning activities. However, these benefits will only be for the duration of the decommissioning phase (1 year).

Potential Impact Description

Local spending on goods and services required for decommissioning the proposed project will result in employment benefits for those directly and indirectly involved in the activities of this phase. The total impact on employment during the decommissioning period is indicated in Table 7-32. These impacts will only be for the duration of the decommissioning period (1 year) and are thus short-term in nature.

Table 7-32 – Decommissioning period impact on employment

| Impact | Direct | Indirect | Induced | Total |
|-------------------|----------|----------|----------|------------|
| Employment | 396 jobs | 737 jobs | 723 jobs | 1 856 jobs |

Source: Urban-Econ SAM modelling, 2023

The project's decommissioning phase will positively impact employment by supporting up to 1 656 jobs for the duration of the phase, of which up to 397 jobs will be directly related to the project. The main sectors estimated to benefit from employment during the decommissioning phase include mining, trade and accommodation, transport and storage, and general government and community services.

Sensitivity of Receptors

It is anticipated that most of the positive impact during the decommissioning phase on economic output and GDP will be in the primary study area, given that some goods and services, such as highly skilled labour and specialised equipment and vessels, may not be available in the IZOI. Employment estimates vary substantially, and the sensitivity of the proposed positive impact on employment is therefore considered to be **medium**.

Impact Magnitude (or Consequence)

Employment opportunities that may arise from procuring goods and services during the decommissioning phase are only **short-term** benefits. Given the current variability in the possible employment opportunities, the intensity is considered **medium**. Goods and services may be procured from outside the IZOI (logistic support), except for the decommissioning of the FA Platform, which can be secured locally. The impact magnitude is considered to be **low**.

Impact Significance

Given the low sensitivity of receptors and the medium magnitude of the positive impact on employment due to the procurement activities during the decommissioning phase of the proposed project, the impacts are considered **low significance**.

Identification of Enhancement Measures

In order to enhance the positive impact on employment, the following measures are proposed:

| No | Enhancement Measure | Classification |
|----|---|--------------------------------|
| 1 | Maximise salvageable plant and equipment. | Abate offsite/ at the receptor |
| 2 | Ensure that waste material brought onshore is managed by a licenced contractor and disposed of at an authorised landfill. | Abate offsite/ at the receptor |

Residual Impact Assessment

The enhancement measures will increase the positive impact on employment due to the procurement related to the proposed decommissioning. The extent of the residual impact will remain the same, and the effect of the decommissioning activities is considered to be short-term. The magnitude of the residual impact is, therefore, considered to be **low**. The residual impact assessment, therefore, remains of **low significance**.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 7-33. The positive impact on employment as a result of decommissioning the proposed project is considered to be **irreversible**.

Table 7-33 – Impact on employment during decommissioning (Procurement of goods and services for decommissioning activities)

| Project Phase: | Decommissioning |
|-------------------------|------------------------------|
| Type of Impact | Direct, indirect and induced |
| Nature of Impact | Positive |
| Sensitivity of Receptor | MEDIUM |

| Project Phase: | Decommissioning | |
|--------------------------------|------------------------|--------------------|
| | Pre-Enhancement Impact | Residual Impact |
| Magnitude (Consequence) | LOW | LOW |
| Intensity | MEDIUM | MEDIUM |
| Extent | LOCAL AND REGIONAL | LOCAL AND REGIONAL |
| Duration | SHORT TERM | SHORT TERM |
| Significance | LOW | LOW |
| Probability | POSSIBLE | POSSIBLE |
| Confidence | MEDIUM | MEDIUM |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE |
| Loss of Resources | | |
| Enhancement Potential | | MEDIUM |
| Cumulative potential | UNLIKELY | UNLIKELY |

7.4.3 Impact on household income

Source of Impact

The local spending on goods and services during this phase of the project will positively impact employment and, therefore, income for those directly and indirectly involved in decommissioning activities. However, these benefits will only be for the duration of the decommissioning phase (1 year).

Potential Impact Description

Local spending on goods and services required for decommissioning the proposed project will result in household income benefits for those directly and indirectly involved in the activities of this phase. The total impact on household income during the decommissioning period is indicated in Table 7-34. These impacts will only be for the duration of the decommissioning period (1 year) and are thus short-term in nature.

Table 7-34– Decommissioning period impact on household income

| Impact | Direct | Indirect | Induced | Total |
|-------------------------|----------------|--------------|-------------|--------------|
| Household income | R173.0 million | R104 million | R92 million | R369 million |

Source: Urban-Econ SAM modelling, 2023

Given the variability in the costs related to the decommissioning phase, the estimated impact on household income is estimated to be R369 million. The main sectors estimated to benefit from household income during the decommissioning phase include mining, manufacturing, transport and storage.

Sensitivity of Receptors

It is anticipated that the majority of the positive impact on household income during the decommissioning phase will be in the primary study area, as goods and services will be sourced from the IZOI as well as the larger commercial hubs like Cape Town. The sensitivity of the proposed positive impact on household income is therefore considered to be **medium**.

Impact Magnitude (or Consequence)

The positive impact on household income is anticipated to be mainly regional. Considering the current household income levels, the intensity of the positive impact on household income is deemed **medium**. This impact is considered to be a **short-term** impact, and the impact magnitude is therefore considered **low**.

Impact Significance

Given the medium sensitivity of receptors and the low magnitude of the positive impact on household income due to the proposed project's decommissioning, the impacts are considered **low significance**.

Identification of Enhancement Measures

In order to enhance the positive impact on household income, the following measures are proposed:

| No | Enhancement measure | Classification |
|----|---|------------------------------------|
| 1 | Maximise salvageable plant and equipment. | Intensify offsite/ at the receptor |
| 2 | Ensure that waste material brought onshore is managed by a licenced contractor and disposed of at an authorised landfill. | Intensify offsite/ at the receptor |

Residual Impact Assessment

The enhancement measures could positively impact household income during the decommissioning phase. However, the extent of the project will remain the same. The residual impact assessment, therefore, remains of **low significance**.

Additional Assessment Criteria

The additional assessment criteria are summarised in the table below.

Table 7-35– Impact of household income during the decommissioning phase

| Project Phase: | | Decommissioning | |
|-------------------------|------------------------------|-----------------|--|
| Type of Impact | Direct, indirect and induced | | |
| Nature of Impact | Positive | | |
| Sensitivity of Receptor | MEDIUM | | |
| | Pre-Mitigation Impact | Residual Impact | |

| Project Phase: | | Decommissioning | |
|--------------------------------|------------------|------------------|--|
| Magnitude (Consequence) | LOW | LOW | |
| Intensity | MEDIUM | MEDIUM | |
| Extent | LOCAL & REGIONAL | LOCAL & REGIONAL | |
| Duration | SHORT TERM | SHORT TERM | |
| Significance | LOW | LOW | |
| Probability | POSSIBLE | POSSIBLE | |
| Confidence | MEDIUM | MEDIUM | |
| Reversibility | IRREVERSIBLE | IRREVERSIBLE | |
| Loss of Resources | NA | NA | |
| Mitigation Potential | | LOW | |
| Cumulative potential | UNLIKELY | UNLIKELY | |

7.5 Impact Assessment Summary

Table 7-36– Impact Summary Table: Normal Operations

| No. | Project Phase | Aspect | Activity Impact/Effect on Receptor | Pre-Mitigation Significance | Project Controls | Mitigation/Management Recommendations | Residual Significance |
|-----|---------------|---|---|-----------------------------|--|--|-----------------------|
| 1 | Well drilling | Spending on local goods, services and labour | Increased levels of economic output and GDP | Very Low (+) | - | <ul style="list-style-type: none"> Project procurement policy to prioritise supply of goods and services from local suppliers, as appropriate. | Very Low (+) |
| 2 | Well drilling | Spending on local goods, services and labour | Increased and/or sustained levels of employment | Very Low (+) | <ul style="list-style-type: none"> Grievance Mechanism Stakeholder Engagement Plan | <ul style="list-style-type: none"> Employ local labour (IZOI) to increase benefits to the local community as appropriate. Community/stakeholder engagement on procurement/employment/skills development opportunities. Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/ or concerns. | Very Low (+) |
| 3 | Well drilling | Spending on local goods, services and labour | Increased levels of household income | Very Low (+) | <ul style="list-style-type: none"> Grievance Mechanism Stakeholder Engagement Plan | <ul style="list-style-type: none"> Investigate opportunities to increase local procurement and localise expenditure as appropriate. Explore opportunities to employ as many people from the local communities as appropriate. Community/stakeholder engagement on procurement/employment/skills development opportunities. | Very Low (+) |
| 4 | Well drilling | Loss in Commercial Fishing Industry (including small-scale fisherman) | Decreased income | Medium (-) | <ul style="list-style-type: none"> Notify the operators of pelagic long-line vessels of the timing, area and safety clearance requirements prior to the commencement of the exploratory | <ul style="list-style-type: none"> Maintain adequate safety clearance between fishing vessels and exploratory vessels and equipment through at-sea communications with vessels in the vicinity of the survey area. | to Medium (-) |
| 5 | Well drilling | Loss in the Recreational fishing and mariculture activities | Decreased household Livelihood and income | Very Low (-) | | | Very Low (-) |

| No. | Project Phase | Aspect | Activity Impact/Effect on Receptor | Pre-Mitigation Significance | Project Controls | Mitigation/Management Recommendations | Residual Significance |
|-----|---------------|--|---|-----------------------------|--|---|-----------------------|
| | | | | | activities through the SATLA | | |
| 6 | Construction | Spending on local goods, services and labour for the construction of subsea infrastructure | Increased levels of economic output and GDP (TEEPSA Component) | Very Low (+) | <ul style="list-style-type: none"> Grievance Mechanism Procurement Progression Plan Stakeholder Engagement Plan | <ul style="list-style-type: none"> Investigate options for local procurement for pipeline construction to enhance local economic benefits. Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/ or concerns. Project procurement policy to prioritise supply of goods and services from local suppliers, as appropriate. Sub-contractor procurement policies for non-local (IZOI) suppliers Preferential contracting of local (IZOI) companies for goods and services. Community/ stakeholder engagement on procurement/ employment/ skills development opportunities. | Medium (+) |
| 7 | Construction | Spending on local goods, services and labour for F-A Platform modifications | Increased levels of economic output and GDP (PetroSA Component) | High (+) | <ul style="list-style-type: none"> Grievance Mechanism Procurement Progression Plan Stakeholder Engagement Plan | <ul style="list-style-type: none"> Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/ or concerns. Project procurement policy to prioritise supply of goods and services from local suppliers, as appropriate Sub-contractor procurement policies for non-local (IZOI) suppliers Preferential contracting of local (IZOI) companies for goods and services Community/ stakeholder engagement on procurement/ employment/ skills development opportunities | High (+) |
| 8 | Construction | Spending on local goods, services and labour for the construction of subsea infrastructure | Increased and/or sustained levels of employment (TEEPSA Component) | Very Low (+) | <ul style="list-style-type: none"> Grievance Mechanism Procurement Progression Plan | <ul style="list-style-type: none"> Investigate options for local procurement for pipeline construction to enhance local economic benefits. Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/ or concerns. | Medium (+) |
| 9 | Construction | Spending on local goods, services and labour for F-A Platform modifications | Increased and/or sustained levels of employment (PetroSA Component) | High (+) | <ul style="list-style-type: none"> Stakeholder Engagement Plan | <ul style="list-style-type: none"> Project procurement policy to prioritise supply of goods and services from local suppliers, as appropriate. | High (+) |

| No. | Project Phase | Aspect | Activity Impact/Effect on Receptor | Pre-Mitigation Significance | Project Controls | Mitigation/Management Recommendations | Residual Significance |
|-----|-----------------------|--|--|-----------------------------|---|--|-----------------------|
| 10 | Construction | Spending on local goods, services and labour for construction of subsea infrastructure | Increased levels of household income | Very Low (+) | | <ul style="list-style-type: none"> Sub-contractor procurement policies for non-local (IZOI) suppliers Preferential contracting of local (IZOI) companies for goods and services Community/ stakeholder engagement on procurement/ employment/ skills development opportunities Increase procurement spend in South Africa where feasible. Sub-contract to local construction companies where possible. Community/stakeholder engagement on procurement/ employment/ skills development opportunities. Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/or concerns. | Medium (+) |
| 11 | Construction | Spending on local goods, services and labour for F-A Platform modifications | Increased levels of household income | High (+) | | | High (+) |
| 12 | Construction | Loss in Commercial fishing and small-scale fishing revenue | Decreased income | Low (-) | <ul style="list-style-type: none"> Notify the operators of pelagic long-line vessels of the timing, area and safety clearance requirements prior to the commencement of the activities through the SATLA | <ul style="list-style-type: none"> Avoidance of siting well infrastructure in areas of higher fishing intensity if feasible. This particularly relates to the Large Pelagic Longline sector. Maintain adequate safety clearance between fishing vessels and construction phase vessels and equipment through at-sea communications with vessels in the vicinity of the survey area. | Very Low (-) |
| 13 | Construction | Loss in recreational catch and mariculture activities | Decreased Livelihood | Negligible (-) | | | Negligible (-) |
| 14 | Production Operations | Spending on local goods, services and labour | Contribution to local and regional economy | Medium (+) | Social and Labour Plan | <ul style="list-style-type: none"> Prioritise the procurement of goods and services from local suppliers as feasible. SLP initiatives for training and skills development to be aligned with technical skills requirements over the production period. | Medium (+) |
| 15 | Production Operations | Spending on local goods, services and labour | Increased and/or sustained employment | Medium (+) | Social and Labour Plan | <ul style="list-style-type: none"> Preferential employment of local labour to increase benefits to the local community. | Medium (+) |

| No. | Project Phase | Aspect | Activity Impact/Effect on Receptor | Pre-Mitigation Significance | Project Controls | Mitigation/Management Recommendations | Residual Significance |
|-----|-----------------------------|--|---|-----------------------------|--|--|-----------------------|
| | | | | | | <ul style="list-style-type: none"> SLP initiatives for training and skills development to be aligned with Project technical skills requirements over the production period. | |
| 16 | Production Operations | Spending on local goods, services and labour | Increased levels of household income | Medium (+) | Social and Labour Plan | <ul style="list-style-type: none"> Project procurement policy to prioritise supply of goods and services from local suppliers where possible. Prioritise the use of local labour, including contractors, will be prioritised where possible in line with the Project's Social and Labour Plan. | Medium (+) |
| 17 | Operational Period | Royalties and Corporate Tax | Increased tax income from personal income, company tax, royalties and carbon taxes. | High (+) | None | <ul style="list-style-type: none"> N/A | N/A |
| 18 | Operation Period | Loss in Commercial fishing and small-scale fishing revenue | Decreased company income | Very Low (-) | None | <ul style="list-style-type: none"> Avoidance of siting well infrastructure in areas of higher fishing intensity if feasible. This particularly relates to the Large Pelagic Longline sector. | Negligible (-) |
| 19 | Operation Period | Loss in recreational catch and mariculture activities | Decreased Livelihood | Negligible (-) | None | <ul style="list-style-type: none"> None | Negligible (-) |
| 20 | Decommissioning and Closure | Spending on local goods, services and labour | Contribution to local and regional economy | Low (+) | <ul style="list-style-type: none"> Grievance Mechanism Procurement Progression Plan Stakeholder Engagement Plan | <ul style="list-style-type: none"> Maximise salvageable plant and equipment. Ensure that waste material brought onshore is managed by a licenced contractor and disposed of at an authorised landfill. | Low (+) |
| 21 | Decommissioning and Closure | Spending on local goods, services and labour | Increased and/or sustained employment | Low (+) | | | Low (+) |
| 22 | Decommissioning and Closure | Spending on local goods, services and labour | Increased levels of household income | Low (+) | | | Low (+) |

8 Impact assessment – unplanned events

8.1 Condensate oil spillage, including a blowout (Western sites)

8.1.1 Impact on Fisheries

Source of Impact

In the event of a condensate oil spillage, including a well blowout or a pipeline rupture in the western Project Development Area, fish populations can be significantly impacted, as discussed by Wright, Bovim, Thewlis, Rees and Clark (2023), through the displacement of species from normal feeding areas as well as the physical contamination of animals. Furthermore, oil spill surface oil can also damage gear and catch. It is mentioned in the report however that the magnitude of the impact will be influenced by the physical properties and chemical composition of the condensate/oil, local weather and sea state conditions and currents.

An oil spill in offshore areas would impact the operational activities of commercial fisheries the most (in the event of a blowout) and as such, commercial fishing would have to be temporarily suspended. Based on the oil spill modelling results, in the event of a well blowout, the area affected may overlap with the areas of operation of the large pelagic and offshore demersal trawling industries. Furthermore, the surface oil modelling overlaps with the area of operation of the large pelagic industry.

Potential Impact Description

According to Write et al. (2023), while the probability of a well blowout and pipeline rupture is very low, such an event can have a negative on the demersal trawl, hake longline, mid-water trawl, line fishery, large pelagic, small pelagic, rock lobster, and squid jig industries. The small-scale, recreational, and mariculture activities will also be negatively affected. The impact significance on these industries/groups is considered to be of high significance without mitigation. With mitigation, the impact significance is considered medium.

Given that commercial, recreational, small-scale and mariculture fisheries may be negatively affected from a marine perspective, as discussed by Wright et al. (2023), it follows that from an economic perspective, the impact on commercial, recreational, small-scale and mariculture fisheries will also be negative. It cannot be assumed that all lost catch as a result of an unplanned event will be replaceable by avoiding the areas to be impacted. It is also likely that additional costs will have to be incurred by avoiding affected areas, particularly fuel costs. Furthermore, increasing travel times between catching and offloading affects the quality of the fish. The table below outlines the estimated areas of overlap with fishing grounds and modelled uncontrolled oil spill results.

Table 8-1 – Estimated overlap with fishing grounds of a potential spill event from a blowout and pipeline rupture^{14, 15 16}

| | Percentage of fishing grounds (>50% probability) | Percentage of fishing grounds (<50% of probability) | Direct estimated economic impact given the size of the industry (2019) ¹⁷ | Direct estimated employment |
|-------------------------------|--|---|--|-----------------------------|
| Scenario 1: blow out | | | | |
| Inshore demersal trawl | 2.84 | 36.53 | R9.9 million – R127.9 million | 43 – 548 jobs |
| Deepsea trawl | 5.82 | 32.43 | R261.9 million – R1 459.4 million | 425 – 2 367 jobs |
| Hake longline | 4.95 | 70.43 | R18.0 million – R255.7 million | 87 – 1 233 jobs |
| Mid-water trawl | 17.47 | 53.00 | R69.0 million – R212.0 million | 44 – 133 jobs |
| Line fishery | 0.00 | 10.92 | R0 – R71.0 million | 0 – 826 jobs |
| Large pelagic | 19.99 | 31.37 | <i>No information available on industry size</i> | |
| Small pelagic | 0.00 | 11.61 | R0 – R371.5 million | 0 – 673 jobs |
| Rock lobster | 2.66 | 68.37 | R8.0 million – R205.1 million | 11 – 273 jobs |
| Squid jig | 0.08 | 36.33 | R0.9 million – R309.5 million | 2 – 1 069 jobs |
| Recreational Fisheries | 0.00 | 0.93 | <i>No information available on industry size</i> | |

¹⁴ The fishing area is calculated as a percentage of the national fishing grounds of each fishery based on catch and effort data from the Department of Forestry, Fisheries and Environment together with the 'footprint' layers as shown in the National Biodiversity Assessment of 2018. The area of overlap is calculated for above and below 50% probabilities of oil presence (Wright, et al., 2023).

¹⁵ The table refers to the area of interaction between the modelling and fishing grounds. There are fishing grounds unaffected by the oil spill, as highlight in the table. The percentage (%) is of all fishing grounds and does not include 0% probability.

¹⁶ As no small-scale specific area data is available, the overlap with this sector is calculated as % of TAC impacted rather than total fishing area. (Wright, et al., 2023).

¹⁷ The economic and employment impact is based on the estimated commercial value of the industries and the number of jobs. The values are estimated assuming that the proportion of fishing grounds affected will have the same impact on the economic value. The analysis doesn't consider factors such as the probability to replace catch lost in affected areas by moving to unaffected areas.

| | Percentage of fishing grounds (>50% probability) | Percentage of fishing grounds (<50% of probability) | Direct estimated economic impact given the size of the industry (2019) ¹⁷ | Direct estimated employment |
|-------------------------------------|---|--|--|-----------------------------|
| Mariculture | 0.00 | 0.00 | <i>No information available on industry size</i> | |
| Scenario 2: pipeline rupture | | | | |
| Inshore demersal trawl | 0.00 | 28.25 | R0 – R98.9 million | 0 – 424 jobs |
| Deepsea trawl | 0.00 | 16.10 | R0 – R727.5 million | 0 – 1 175 jobs |
| Hake longline | 0.06 | 42.63 | R0.2 million – R154.7 million | 1 – 746 jobs |
| Mid-water trawl | 0.16 | 28.85 | R0.6 million – R115.4 million | 0 – 72 jobs |
| Line fishery | 0.00 | 3.80 | R0 – R24.7 million | 0 – 287 jobs |
| Large pelagic | 0.00 | 5.87 | <i>No information available on industry size</i> | |
| Small pelagic | 0.00 | 16.73 | R0 – R535.4 million | 0 – 970 jobs |
| Rock lobster | 0.53 | 25.26 | R1.6 million – 75.8 million | 2 – 101 jobs |
| Squid jig | 0.00 | 22.56 | R0 – R242.5 million | 0 – 664 jobs |
| Recreational Fisheries | 0.00 | 0.00 | <i>No information available on industry size</i> | |
| Mariculture | 0.00 | 0.00 | <i>No information available on industry size</i> | |
| | Percentage of allocated TAC impacted (>50% probability) | Percentage of allocated TAC impacts (<50% probability) | Direct estimated economic impact given | Direct estimated employment |

| | Percentage of fishing grounds (>50% probability) | Percentage of fishing grounds (<50% of probability) | Direct estimated economic impact given the size of the industry (2019) ¹⁷ | Direct estimated employment |
|--|--|---|--|-----------------------------|
| | | | the size of the industry (2019) ¹⁸ | |

Scenario 1: Blowout

| | | | | |
|------------------------------|------|-------|--|--|
| Small-scale fisheries | 0.04 | 23.62 | <i>No information available on industry size</i> | |
|------------------------------|------|-------|--|--|

Scenario 2: Pipeline rupture

| | | | | |
|------------------------------|------|-------|--|--|
| Small-scale fisheries | 0.00 | 13.18 | <i>No information available on industry size</i> | |
|------------------------------|------|-------|--|--|

Source: DHI Water & Environment Inc (Preliminary Draft Technical Report – 11 April 2023) & Urban-Econ calculations

Given the size of the respective commercial industries in terms of their commercial value, the largest economic impact in Scenario 1 is estimated to be on the deep-sea trawl industry. 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. Regarding Scenario 2, the deep-sea trawl and small pelagic industries will be the most affected in terms of economic value and employment.

Sensitivity of Receptors

The commercial, recreational, small-scale and mariculture fishing industries have a **high sensitivity** to any negative impact on fish as a result of a well blow-out or pipeline rupture.

Impact Magnitude (or Consequence)

Despite the low probability of occurrence, the intensity of the impact on various fishing activities is considered **high**, given the modelling results of potential overlap with fishing grounds and the estimated value of the commercial fishing industries. Given the potential spread of oil on the water surface, the impact on fisheries is considered to be **regional**. However, the impacts are considered to be only over a **medium-term** period. As such, the impact magnitude on the fishing industry is classified as **high**.

¹⁸ The economic and employment impact is based on the estimated commercial value of the industries and the number of jobs. The values are estimated assuming that the proportion of fishing grounds affected will have the same impact on the economic value. The analysis doesn't consider factors such as the probability to replace catch lost in affected areas by moving to unaffected areas.

Impact Significance

Given the medium impact magnitude on the fishing industry and the high sensitivity of any negative impact on the fishing industry, the impact significance is considered **high**.

Identification of Mitigation Measures

In order to reduce the negative impact on commercial, recreational, small-scale fishing activities and mariculture, the following mitigation measures are proposed:

| No | Mitigation measure | Classification |
|----|--|--|
| 1 | <p>Mitigation measures as proposed in the Marine and Fisheries Specialist Impact Assessment for Block 11B/12B, summarised as follows:</p> <ul style="list-style-type: none"> Adhering to international specifications in consultation with a well design engineer. Ensuring the employment of competent, well-trained staff during operations. Certification and testing of safety-critical equipment. Use low-toxicity dispersants. Ensure a standby vessel is within 30 minutes of a drilling unit and is adequately equipped with dispersant. Where possible, attempt to control and contain the spill at sea with suitable recovery techniques. Ensure the availability of suitable monitoring equipment to optimise the available response resources. Ensure available resources to collect and transport oil birds to a cleaning station. Staff must be trained sufficiently to capture, handle and transport affected birds. Develop a well-specific response strategy and plans. Schedule joint oil spill exercises with relevant stakeholders to test oil spill response readiness. Develop an appropriate oil spill response plan to include the designated personnel to manage the situation, the spill response and the well control, capping and containment equipment on standby. | <p>Avoid</p> <p>Avoid</p> <p>Avoid</p> <p>Avoid/ abate</p> <p>Abate</p> <p>Abate</p> <p>Abate</p> <p>Abate</p> <p>Abate</p> <p>Abate</p> <p>Avoid/abate/ restore</p> <p>Avoid/abate/ restore</p> |

| No | Mitigation measure | Classification |
|----|---|--|
| | <ul style="list-style-type: none"> Ensure appropriate insurance cover to financially manage the consequences of an unplanned event. Factors to consider include the cost of controlling the well, damages and compensation to third -parties, decommissioning and abandonment. | Avoid/abate/ restore Avoid/abate/ restore |
| 2 | Engage with local forums, business chambers, tourism offices, and collective organisations (monthly) in order to disclose information and ascertain any issues and/ or concerns. | Intensify offsite/ at the receptor |
| 3 | Establish a grievance mechanism that provides a platform for affected parties to register grievances by ensuring they are informed, and resources are available to mitigate, in accordance with the Grievance Management procedure. | Intensify offsite/ at the receptor |

Residual Impact Assessment

With mitigation, the impact intensity will be medium. Therefore, the magnitude of the potential negative impact on the fishing industry will be **medium** post-mitigation. While the sensitivity will remain high, the significance rating post-mitigation is considered **medium**.

Additional Assessment Criteria

The additional assessment criteria relating to the impact on commercial, small-scale fishing, recreational fishing and mariculture are summarised in Table 8-2. The negative impact on the fishing industry in monetary terms as a result of unplanned events is considered to be partially reversible. Depending on the industry, there will be a variable loss of resources in terms of access to fishing grounds or the quality and quantity of fish available. The loss of resources are therefore considered to be medium. Table 8-2 indicates estimated overlap that could occur with fishing grounds if there was a potential spill or blowout.

Table 8-2 – Estimated overlap with fishing grounds of a potential spill event from a blowout and pipeline rupture

| Project Phase: | | Unplanned events | |
|-------------------------|-----------------------|------------------|--|
| Type of Impact | Indirect | | |
| Nature of Impact | Negative | | |
| Sensitivity of Receptor | HIGH | | |
| | Pre-Mitigation Impact | Residual Impact | |
| Magnitude (Consequence) | HIGH | MEDIUM | |

| Project Phase: | Unplanned events | |
|----------------------|----------------------|----------------------|
| Intensity | HIGH | MEDIUM |
| Extent | REGIONAL | REGIONAL |
| Duration | MEDIUM-TERM | MEDIUM-TERM |
| Significance | HIGH | MEDIUM |
| Probability | UNLIKELY | UNLIKELY |
| Confidence | HIGH | HIGH |
| Reversibility | PARTIALLY REVERSIBLE | PARTIALLY REVERSIBLE |
| Loss of Resources | MEDIUM | MEDIUM |
| Mitigation Potential | | HIGH |
| Cumulative potential | UNLIKELY | UNLIKELY |

8.1.2 Impact on Tourism

Source of Impact

In the event of a well blowout or a pipeline rupture, there is a possibility for the shoreline to be affected. Any impact on the shoreline can 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. The tourism industry is an important component of the local economy in the IZOI.

Potential Impact Description

Table 8-3 outlines the estimated shoreline impacts in the event of a well blowout or pipe rupture.

Table 8-3 – Estimated shoreline impacts of a well blowout or pipe rupture

| All simulations | Season 1 (Dec – Feb) | Season 2 (March – May) | Season 3 (June – August) | Season 4 (Sep – Nov) | |
|---|--|------------------------|---|--|---|
| | Scenario 1: blow out | | | | |
| Shoreline possibly impacted (by oil > 10 g/m²) | Cape St Francis, Oyster Bay, Huisklip Nature Reserve, Thyspunt, Rebelsrus Private Nature Reserve, Wasserna's Beach | - | Huisklip Nature Reserve, Wasserna's Beach | Huisklip Nature Reserve, Thyspunt, Rebelsrus Private Nature Reserve, | Huisklip Nature Reserve, Wasserna's Beach |

| | All simulations | Season 1 (Dec – Feb) | Season 2 (March – May) | Season 3 (June – August) | Season 4 (Sep – Nov) |
|---|---|----------------------|------------------------|---|---|
| | | | | Wasserna's Beach | |
| Deterministic Worst-case Shoreline Length Impacted | 20 km | 0 km | 4 km | 20 km | 0.8 km |
| MAX. % Shoreline Impact Probability | 1.3% | 0% | 1.9% | 4.8% | 1.1% |
| Scenario 2: pipeline rupture | | | | | |
| Shoreline possibly impacted (by oil > 10 g/m²) | Huisklip Nature Reserve, Valley Beach, Robberg Nature Reserve, Kranshoek, Knoetzie Beach, Knysna Lagoon | - | - | Huisklip Nature Reserve, Robberg Nature Reserve, Kranshoek, Knoetzie Beach, Knysna Lagoon | Nature Valley Beach, Robberg Nature Reserve, Kranshoek, Knoetzie Beach, Knysna Lagoon |
| Deterministic Worst-case Shoreline Length Impacted | 19 km | 0 km | 0 km | 19 km | 18 km |
| MAX. % Shoreline Impact Probability | 0.75% | 0% | 0% | 1.9% | 1% |

Source: DHI Water & Environment Inc (Preliminary Draft Technical Report – 11 April 2023)

In the event of a well blowout, there is less than 5% probability of oil (>10g/m²) reaching the shoreline. During peak tourism months (seasons 1 and 2), this probably ranges from 0% to 1.9%. The length of the shoreline possibly affected during this time is 0 km for season 1 and 4 km for season 2.

In the event of a pipeline rupture, there is a less than 2% probability of oil (>10g/m²) reaching the shoreline. The probability of this occurring during the peak tourism months is 0%. Given these modelling results, it is anticipated that the impact on tourism will be low in the event of an oil spill or pipeline rupture.

Project Controls

The TEEPSA Blow Out Contingency Plan (BOCP) (dated 20 March 2020) stipulates TEEPSA's response plan in the event of a blowout. The objectives of the BOCP include to minimize the consequences of a blow out on personnel, the environment, assets and the reputation of TotalEnergies. Furthermore, it ensures that communications and operations are done according to local regulations. The BOCP lists numerous responses to a blowout and identifies Saldanha Bay as the base for emergency response.

Sensitivity of Receptors

Given the low probability of a well blowout or pipeline rupture affecting the shoreline during peak tourist seasons, the negative impact on tourism is deemed to be of **low sensitivity**.

Impact Magnitude (or Consequence)

Only a small portion of the shoreline is likely to be affected during peak seasons. Therefore, the extent of the negative impact is considered **local** and of **very low intensity**. The impact is expected to be **short-term**. Given these considerations, the impact magnitude is therefore deemed very low.

Impact Significance

The anticipated negative impact on tourism is expected to be of **negligible significance** given the low sensitivity and the very low impact magnitude.

Identification of Mitigation Measures

In order to reduce the negative impact on tourism in the event of a well blowout or pipeline rupture, the following mitigation measures are proposed:

| No | Mitigation measure | Classification |
|----|---|------------------------------------|
| 1 | Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/ or concerns. | Intensify offsite/ at the receptor |
| 2 | Establish a grievance mechanism that provides a platform for affected parties to register grievances by ensuring they are informed, and resources are available to mitigate, in accordance with the Grievance Management procedure. | Intensify offsite/ at the receptor |

| No | Mitigation measure | Classification |
|----|---|----------------|
| 3 | Establish appropriate mechanisms for dealing with any claims of losses by affected parties in the case of an unplanned event. | Restore |

Residual Impact Assessment

Post mitigation, the sensitivity of receptors will be very low. The impact magnitude will remain very low. Therefore, the negative impact on tourism will remain of negligible significance post-implementation of the proposed mitigation measures.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 8-4. The negative impact on tourism as a result of decommissioning the proposed project is considered to be **partially reversible** through damages and compensation mechanisms to third parties. There will be no loss of resources.

Table 8-4 – Impact on tourism as a result of well blow or pipeline rupture

| Project Phase: | Unplanned events | |
|-------------------------|-----------------------|----------------------|
| Type of Impact | Indirect | |
| Nature of Impact | Negative | |
| Sensitivity of Receptor | LOW | |
| | Pre-Mitigation Impact | Residual Impact |
| Magnitude (Consequence) | VERY LOW | VERY LOW |
| Intensity | VERY LOW | VERY LOW |
| Extent | LOCAL | LOCAL |
| Duration | SHORT-TERM | SHORT-TERM |
| Significance | NEGLIGIBLE | NEGLIGIBLE |
| Probability | UNLIKELY | UNLIKELY |
| Confidence | HIGH | HIGH |
| Reversibility | PARTIALLY REVERSIBLE | PARTIALLY REVERSIBLE |
| Loss of Resources | NA | NA |
| Mitigation Potential | | HIGH |
| Cumulative potential | LIKELY | LIKELY |

8.2 Crude oil spillage – Eastern Priority Exploratory Area

8.2.1 Impact on Fisheries

Source of Impact

In the event of a well blowout in the eastern Exploratory Priority Area leading to a crude oil spill, fisheries resources can be significantly impacted, as discussed by Wright et al (2023). Impacts can include physical contamination, toxic effects on fish stocks and disruption of fishing activities. The marketability of products can also be negatively affected, leading to significant negative impacts on most of the commercial fisheries, as exports contribute substantially to the respective industries.

Potential Impact Description

Based on the oil spill modelling results, as reported by Write et al. (2023), a large proportion of the coastline will be affected in the case of a well blowout (over 500 km of coastline have a 30% of being exposed to crude oil in the event of a spillage). There will be substantial overlaps with the commercial fishing grounds. Given the high probability of shoreline contamination, small-scale, recreational fishers and mariculture can also be negatively affected. In the event of a well blowout in the eastern Exploratory Priority Area, the impact on the fishing industry is therefore deemed to be of very high significance and of long-term, pre-mitigation and high post-mitigation.

Given that commercial, recreational, small-scale fisheries and mariculture may be negatively affected from a marine perspective, as discussed by Wright et al. (2023), it follows that from an economic perspective, the impact on the fishing industry will also be negative. It cannot be assumed that all lost catch as a result of an unplanned event will be replaceable by avoiding the areas to be impacted. It is also likely that by avoiding affected areas, additional costs will have to be incurred, particularly fuel costs. Furthermore, increasing travel times between catching and offloading affects the quality of the fish. The table below outlines the estimated areas of overlap with fishing grounds and modelled uncontrolled oil spill results.

Table 8-5 – Estimated overlap with fishing grounds of a potential well blowout in the eastern Exploratory Priority Area ^{19, 2021}

| | Percentage of fishing grounds (>50% probability) | Percentage of fishing grounds (<50% of probability) | Direct estimated economic impact given the size of the industry (2019) ²² | Direct estimated employment |
|-------------------------------|--|---|--|-----------------------------|
| Discharge Point 1 | | | | |
| Inshore demersal trawl | 7.08 | 89.10 | R24.8 million – R311.9 million | 106 – 1 337 jobs |
| Deepsea trawl | 7.50 | 50.06 | R337.5 million – R2 252.7 million | 548 – 3 654 jobs |
| Hake longline | 21.96 | 79.89 | R79.7 million – R290.0 million | 384 – 1 398 jobs |
| Mid-water trawl | 28.07 | 67.45 | R112.3 million – R269.8 million | 70 – 169 jobs |
| Line fishery | 0.00 | 80.17 | R0 – R384.8 million | 0 – 5 844 jobs |
| Large pelagic | 12.22 | 21.26 | <i>No information available on industry size</i> | |
| Small pelagic | 0.00 | 99.39 | R0 – R3 180.5 million | 0 – 5 765 jobs |
| Rock lobster | 42.38 | 55.46 | R127.1 million – R166.4 million | 170 – 222 jobs |
| Squid jig | 5.26 | 78.53 | R56.5 million – R844.2 million | 155 – 2 311 jobs |
| Recreational Fisheries | 0.00 | 23.64 | <i>No information available on industry size</i> | |

¹⁹ The fishing area is calculated as a percentage of the national fishing grounds of each fishery based on catch and effort data from the Department of Forestry, Fisheries and Environment together with the 'footprint' layers as shown in the National Biodiversity Assessment of 2018. The area of overlap is calculated for above and below 50% probabilities of oil presence (Wright, et al., 2023).

²⁰ The table refers to the area of interaction between the modelling and fishing grounds. There are fishing grounds unaffected by the oil spill, as highlight in the table. The percentage (%) is of all fishing grounds and does not include 0% probability.

²¹ As no small-scale specific area data is available. The overlap with this sector is calculated as a %of TAC impacts (% of the Tac for all fisheries combined to which TAC has been allocated to the small-scale sector) rather than the total fishing area.

²² The economic and employment impact is based on the estimated commercial value of the industries and the number of jobs. The values are estimated assuming that the proportion of fishing grounds affected will have the same impact on the economic value. The analysis doesn't consider factors such as the probability to replace catch lost in affected areas by moving to unaffected areas.

| | Percentage of fishing grounds (>50% probability) | Percentage of fishing grounds (<50% of probability) | Direct estimated economic impact given the size of the industry (2019) ²² | Direct estimated employment |
|--------------------------|---|--|--|-----------------------------|
| Mariculture | 0.00 | 72.2 | <i>No information available on industry size</i> | |
| Discharge Point 2 | | | | |
| Inshore demersal trawl | 21.19 | 62.49 | R72.4 million – R218.7 million | 318 – 937 jobs |
| Deepsea trawl | 16.68 | 32.32 | R750.6 million – R1 454.4 million | 1 218 – 2 359 jobs |
| Hake longline | 50.84 | 43.02 | R184.5 million – R156.2 million | 890 – 753 jobs |
| Mid-water trawl | 43.52 | 43.07 | R172.3 million – R174.1 million | 753 – 890 jobs |
| Line fishery | 10.68 | 60.34 | R51.3 million – R289.6 million | 779 – 3 527 jobs |
| Large pelagic | 0.00 | 5.87 | <i>No information available on industry size</i> | |
| Small pelagic | 5.91 | 85.69 | R189.1 million – R2 742.1 million | 343 jobs – 4 970 jobs |
| Rock lobster | 20.98 | 19.11 | R57.3 million – R62.9 million | 76 – 84 jobs |
| Squid jig | 26.61 | 43.44 | R286.1 million – R467.0 million | 783 – 1 278 jobs |
| Recreational Fisheries | 3.19 | 15.97 | <i>No information available on industry size</i> | |
| Mariculture | 0.00 | 30.00 | <i>No information available on industry size</i> | |
| | Percentage of allocated TAC impacted (>50% probability) | Percentage of allocated TAC impacted (<50% of probability) | Direct estimated economic impact given the size of the industry (2019)²³ | |

²³ The economic and employment impact is based on the estimated commercial value of the industries and the number of jobs. The values are estimated assuming that the proportion of fishing grounds affected will have the same impact on the economic value. The analysis doesn't consider factors such as the probability to replace catch lost in affected areas by moving to unaffected areas.

| | Percentage of fishing grounds (>50% probability) | Percentage of fishing grounds (<50% of probability) | Direct estimated economic impact given the size of the industry (2019) ²² | Direct estimated employment |
|------------------------------|--|---|--|-----------------------------|
| Discharge -1 | | | | |
| Small-scale fisheries | 2.63 | 79.1 | <i>No information available on industry size</i> | |
| Discharge -2 | | | | |
| Small-scale fisheries | 35.91 | 51.89 | <i>No information available on industry size</i> | |

Source: DHI Water & Environment Inc (Preliminary Draft Technical Report – 11 April 2023) & Urban-Econ calculations

Given the size of the respective commercial industries in terms of their commercial value, the largest economic impact, as a result of a well blowout in the eastern Exploratory Priority Area, is estimated to be on the deep-sea trawl and pelagic fish industries. Taking into consideration the employment numbers of the various industries, the deep-sea trawl, line fishing and small pelagic industries may be the most affected.

Project Controls

The objectives of the TEEPSA Oil Spill Contingency Plan (OSCP) (dated August 2019) include identifying any incidents that may lead to an oil spill, categorise incidents in order to prepare sufficient responses, defining key actions and response strategies, formalise the notification systems for spills, outline the system of command, identify the roles and responsibilities of all those involved with incident management and identify the resources that are needed to adequately respond to an oil spill.

Sensitivity of Receptors

Given the large overlaps with fishing grounds and the probability of shoreline contamination, the commercial, recreational, small-scale fishing and mariculture industries have a **high sensitivity** to any negative impact on fisheries as a result of a well blowout in the eastern Exploratory Priority Area.

Impact Magnitude (or Consequence)

The intensity of the impact on various fishing activities is considered **high**, given the modelling results of potential overlap with fishing grounds and the estimated value of the fishing industries. Given the potential spread of oil on the water surface, the impact on fisheries is considered to be **international** and over a **long-term** period. As such, the impact magnitude on the fishing industry (commercial, small-scale, recreational and mariculture) is classified as **very high**.

Impact Significance

Given the very high impact magnitude on the fishing industry and the high sensitivity of any negative impact on the fishing industry, the impact significance is considered **very high**.

Identification of Mitigation Measures

In order to reduce the negative impact on commercial, recreational and small-scale fishing activities, the following mitigation measures are proposed:

| No | Mitigation measure | Classification |
|----|---|------------------------------------|
| 1 | Establish a grievance mechanism that provides a platform for affected parties to register grievances by ensuring they are informed, and resources are available to mitigate, in accordance with the Grievance Management procedure. | Intensify offsite/ at the receptor |
| 2 | Establish appropriate mechanisms for dealing with any claims of losses by affected parties in the case of an unplanned event. | Restore |
| 3 | Engage with local forums, business chambers, tourism offices, and collective organisations in order to disclose information and ascertain any issues and/ or concerns. | Intensify offsite/ at the receptor |

Residual Impact Assessment

With mitigation, the impact intensity will remain high due to the long-term nature of the potential negative impact on fisheries. The magnitude of the potential negative impact on the fishing industry will, therefore, be **high** post-mitigation.

Additional Assessment Criteria

The additional assessment criteria relating to the impact on commercial, small-scale and recreational fishing are summarised in Table 8-6. The negative impact on the fishing industry in monetary terms as a result of unplanned events is considered to be **partially reversible**.

Table 8-6 – Impact on commercial, small-scale, recreational fishing and mariculture as a result of a well blowout in the eastern Exploratory Priority Area

| Project Phase: | Unplanned events – Discharge Points 1 and 2 | |
|-------------------------|---|-----------------|
| Type of Impact | Direct and indirect | |
| Nature of Impact | Negative | |
| Sensitivity of Receptor | HIGH | |
| | Pre-Mitigation Impact | Residual Impact |
| Magnitude (Consequence) | VERY HIGH | HIGH |

| Project Phase: | Unplanned events – Discharge Points 1 and 2 | |
|----------------------|---|----------------------|
| Intensity | HIGH | HIGH |
| Extent | INTERNATIONAL | REGIONAL |
| Duration | LONG TERM | MEDIUM-TERM |
| Significance | VERY HIGH | HIGH |
| Probability | UNLIKELY | UNLIKELY |
| Confidence | HIGH | MEDIUM |
| Reversibility | PARTIALLY REVERSIBLE | PARTIALLY REVERSIBLE |
| Loss of Resources | HIGH | HIGH |
| Mitigation Potential | | MEDIUM |
| Cumulative potential | UNLIKELY | UNLIKELY |

8.2.2 Impact on Tourism

Source of Impact

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. Any impact on the shoreline can have a negative impact on tourism in the IZOI. If the shoreline of popular tourist destinations is affected, fewer tourists will visit the area, resulting in a negative impact on the industry. The tourism industry is an important component of the local economy in the IZOI.

Potential Impact Description

Table 8-7 outlines the estimated shoreline impacts in the event of a well blowout in the eastern Exploratory Priority Area.

Table 8-7 – Estimated shoreline impacts of a well blowout in the eastern Exploratory Priority Area

| | Season 1 (Dec – Feb) | Season 2 (March – May) | Season 3 (June – August) | Season 4 (Sep – Nov) |
|---|--|---|---|---|
| Discharge Point 1 | | | | |
| Flow rate | Oil: 69 000 bbl/d | | | |
| Max % shoreline impact probability | 22% observed from George to St Francis Bay | 87% observed in the Oyster Bay and St Francis Bay areas, from Plettenberg Bay to Gqeberha | 87% observed in the Oyster Bay and St Francis Bay areas, from Plettenberg Bay to Gqeberha | 42% observed from Knysna to St Francis Bay area |
| Minimum shoreline arrival time | St Francis Bay approx. 3 days | East of the St Francis Bay area, West of Gqeberha, 2 days | Gqeberha area, approx. 1 day after | West of Oyster Bay area, approx. 2 days |

| | Season 1 (Dec – Feb) | Season 2 (March – May) | Season 3 (June – August) | Season 4 (Sep – Nov) |
|---|--|--|---|--|
| | after start of release | after the start of release | the start of the release | after the start of release |
| Average shoreline arrival time | 14 days | 11 days | 10 days | 15 days |
| Well 2 | | | | |
| Flow rate | Oil: 69 000 bbl/d | | | |
| Max % shoreline impact probability | 72% observed in the Plettenberg Bay area | 98% observed between Knysna and Gqeberha | 100% observed from George to Gqeberha | 68% observed in the Tsitsikamma National Park coastline area |
| Minimum shoreline arrival time | St Francis Bay ~ after 2 days | St Francis Bay area, West to Port Elizabeth after 2 days | West of St Francis Bay area after ~ 1 day | St Francis Bay after ~ 2 days |
| Average shoreline arrival time | 14 days | 11 days | 11 days | 12 days |

Source: (Wright, et al., 2023)

The probability of shoreline contamination ranges from 22% (Discharge Point 1) to 100% (Discharge Point 2), with an extensive stretch of shoreline being contaminated.

Project Controls

The objectives of the TEEPSA Oil Spill Contingency Plan (OSCP) (dated August 2019) include identifying any incidents that may lead to an oil spill, categorise incidents in order to prepare sufficient responses, defining key actions and response strategies, formalise the notification systems for spills, outline the system of command, identify the roles and responsibilities of all those involved with incident management and identify the resources that are needed to adequately respond to an oil spill.

Sensitivity of Receptors

In the event of a well blowout, there is a high probability of shoreline contamination, and the large stretch of coastline to be affected covers key tourism areas along the Western- and Eastern Cape Coast. The negative impact on tourism is deemed to be of **very high sensitivity**.

Impact Magnitude (or Consequence)

The shoreline between Gqeberha and George is likely to be affected. The area is of importance as a tourist destination for both domestic and international tourists. The extent of the negative impact is

therefore considered to be **national** and of **high intensity**. The impact is expected to be **long-term**. Given these considerations, the impact magnitude is therefore deemed **very high**.

Impact Significance

The anticipated negative impact on tourism is expected to be **very high**, given the high sensitivity and the very high impact magnitude.

Identification of Mitigation Measures

In order to reduce the negative impact on tourism in the event of a well blowout in the eastern Exploratory Priority Area, the following mitigation measures are proposed:

| No | Mitigation measure | Classification |
|----|---|------------------------------------|
| 1 | Engage with local forums, business chambers, tourism offices, and collective organisations (monthly) in order to disclose information and ascertain any issues and/ or concerns. | Intensify offsite/ at the receptor |
| 2 | Establish a grievance mechanism that provides a platform for affected parties to register grievances by ensuring they are informed, and resources are available to mitigate, in accordance with the Grievance Management procedure. | Intensify offsite/ at the receptor |

Residual Impact Assessment

Post mitigation, the sensitivity of receptors will be high. The implementation of the mitigation measures can reduce the intensity as well as the duration to a medium if it reduces the likelihood of the spill reaching the shore or reduces the stretch of shoreline contamination. The extent remains national, as any level of oil spill can affect international perspectives of the attractiveness of South Africa, particularly the Western Cape, as a tourist destination. The post-mitigation of the impact of a blowout in the eastern Exploratory Priority Area is therefore of high significance.

Additional Assessment Criteria

The additional assessment criteria are summarised in Table 8-8. The negative impact on tourism as a result of an unplanned event related to Well 1 and/or Well 2 is considered to be **partially reversible** through damages and compensation mechanisms to third parties. Depending on the severity of the spill, there may be some loss of resources that could affect the area as a preferred tourist destination.

Table 8-8 – Impact on tourism as a result of a well blowout in the eastern Exploratory Priority Area

| Project Phase: | | Unplanned events | |
|-------------------------|-----------------------|----------------------|--|
| Type of Impact | Direct | | |
| Nature of Impact | Negative | | |
| Sensitivity of Receptor | VERY HIGH | | |
| | Pre-Mitigation Impact | Residual Impact | |
| Magnitude (Consequence) | VERY HIGH | HIGH | |
| Intensity | HIGH | HIGH | |
| Extent | NATIONAL | REGIONAL | |
| Duration | LONG TERM | MEDIUM TERM | |
| Significance | VERY HIGH | HIGH | |
| Probability | UNLIKELY | UNLIKELY | |
| Confidence | MEDIUM | MEDIUM | |
| Reversibility | PARTIALLY REVERSIBLE | PARTIALLY REVERSIBLE | |
| Loss of Resources | HIGH | MEDIUM | |
| Mitigation Potential | | MEDIUM | |
| Cumulative potential | LIKELY | LIKELY | |

8.3 Impact Assessment Summary (Unplanned events)

Table 8-9 – Impact Summary Table: Unplanned events

| No. | Activities | Aspects | Impacts on Main Receptors | Pre-Mitigation Significance | Project Controls / | Key Mitigation measure | Residual Significance |
|-----|------------------|--|---|-----------------------------|---|---|-----------------------|
| 1 | Unplanned event | Well blow out and/or pipeline rupture (Western Project Development Area) | Impact on Fishing Grounds | High (-) | <ul style="list-style-type: none"> Oil Spill Contingency Plan Blowout Contingency Plan Emergency Response Plan | <ul style="list-style-type: none"> Ensure resources to be mobilised in response to an unplanned event are effectively trained and equipped through periodic training and simulation exercises. | Medium (-) |
| 2 | Unplanned event | Well blow out/ pipeline rupture (Western Project Development Area) | Impact on shoreline – Negative Impact on Tourism | Negligible (-) | <ul style="list-style-type: none"> Oil Spill Contingency Plan Blowout Contingency Plan | <ul style="list-style-type: none"> Ensure resources to be mobilised in response to an unplanned event are effectively trained and equipped through periodic training and simulation exercises. | Negligible (-) |
| | Unplanned Events | Well blow out (Eastern Exploratory Priority Area) | Negative Impact on Commercial, small-scale and recreational fishing | Very High (-) | <ul style="list-style-type: none"> Emergency Response Plan | <ul style="list-style-type: none"> Ensure resources to be mobilised in | High (-) |

| No. | Activities | Aspects | Impacts on Main Receptors | Pre-Mitigation Significance | Project Controls / | Key Mitigation measure | Residual Significance |
|-----|------------------|---|----------------------------|-----------------------------|---|---|-----------------------|
| | Unplanned Events | Well blow out (Eastern Exploratory Priority Area) | Negative impact on tourism | Very High | <ul style="list-style-type: none"> Oil Spill Contingency Plan Blowout Contingency Plan Emergency Response Plan | response to an unplanned event are effectively trained and equipped through periodic training and simulation exercises. | High (-) |

9 Cumulative impacts

The EIA Regulations, 2014 (as amended) require the consideration of the “cumulative impact”, which includes the ‘reasonably foreseeable future impact of an activity’. Cumulative impacts refer to the gradual process whereby impacts arising from multiple sources become increasingly more severe over time. Cumulative impacts must be considered when assessing the risk and potential impacts of a particular project. Practically, the identification and management of cumulative impacts are limited to those effects that are recognised as important by the affected communities (International Finance Corporation Good Practice Handbook, 2013).

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 public participation process, the existing and planned activities outlined in Table 9-1 have been assessed from a cumulative impact assessment perspective.

Table 9-1 – Existing and Proposed Surrounding Projects

| Project Title | Description | Status | Key Cumulative Impact Considerations | Significance rating |
|--|---|----------|---|---------------------|
| Re-commissioning of PetroSA F-A platform operations to support the TEPSA Block 11B/12B Production Right Application | Should a commercial agreement be reached between TEPSA and PetroSA and the relevant authorisations are obtained, the F-A Platform and associated infrastructure will be used to process and transport the gas and condensates to the onshore gas-to-liquids facility in Mossel Bay. Some upgrades and modifications to the FA-platform may be required. | Proposed | High positive impact on the local economy in terms of economic output, GDP employment and household income. Growth of the oil and gas industry (public sector priority) | Very High |
| Exploration drilling in Block 5/6/7 off the South-West Coast | Exploration in Block 5/6/7 is 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 | Proposed | Additional exploration can strengthen the development of a local oil and gas sector servicing economy, thereby increasing the skills base and employment opportunities for those in the industry. | High |

| Project Title | Description | Status | Key Cumulative Impact Considerations | Significance rating |
|--|---|----------|---|---------------------|
| | Block. Based on the analysis of acquired seismic data, it is proposed that one exploration well is drilled and, depending on success, up to 4 additional wells in total within an Area of Interest within the Block (i.e., up to 5 wells in total). | | | |
| Karpowership – Gas to Power at the Port of Ngqura, Eastern Cape | Proposed Gas to Power via Powership Project at the Port Of Ngqura, Nelson Mandela Bay Metropolitan Municipality, Eastern Cape. | Proposed | Karpowership relies on imported gas, while the proposed project will utilise local gas and existing infrastructure. | Low |
| Gourikwa Power Station, Mossel Bay, Western Cape | 740MW oil-fired power plant project, which was commissioned in 2007. | Existing | Contribute to electricity grid stabilisation, which will have a positive impact on businesses and households on a national level. | Very High |

10 Conclusions and recommendations

10.1 Normal operations

The proposed project will positively impact general economic output levels, GDP, employment and household income during the exploration, development and operational phases. The exploration and development impacts are only short-term and will have local and regional impacts, as not all goods and services for these phases can be sourced from the IZOI. The impacts during these phases can be substantially increased if local spending on goods and services can be feasibly increased.

Impacts during the operational phases are considered long-term. During the operational phases of the project, there will be a positive impact on tax revenue for the national government. By implementing the SLP, additional benefits can accrue in the IZOI (Mossel Bay and George Municipalities) due to the investment in human resources and local economic development.

During the decommissioning phase of the project, the positive economic impacts of the operational phase will cease. However, the SLP will play an integral role in mitigating some of the immediate losses that will occur from decommissioning.

10.2 Unplanned events

In the case of a well blowout or pipeline rupture (in the western Project Development Area), commercial fishing industries will be negatively affected as there is overlap between the anticipated affected area and the commercial fishing grounds. It cannot be assumed that all the catch lost due to the affected fishing grounds will be replaceable elsewhere. Additionally, replacing catches may impact operational expenditure and the quality of the catch if further distances are travelled to replace the catch. Small-scale, recreational fishers and mariculture will also be affected negatively.

Tourism activities that operate from the shore can also be affected during unplanned events. However, the impact is considered to be negligible, as oil spill modelling indicates only small probabilities of surface oil reaching the shore during peak tourism months in the case of a well blowout or pipeline rupture in the western Project Development Area.

The large anticipated area that could be impacted in the case of well blowout in the eastern Exploratory Priority Area will have severe adverse effects on commercial, small-scale, recreational fishing activities, mariculture as well as tourism. These impacts could also be of a long-term nature, severely affecting coastal communities that are reliant on fishing and tourism between George and Gqeberha.

10.3 Cumulative impacts

Depending on the end-user options, the proposed project can have a significant positive impact on either PetroSA, Eskom or both, and in any case, on the security of the supply of energy in South Africa. This will positively impact the IZOI as PetroSA is not currently operational, and additional feedstock can ensure the continuation of operations without the need for gas imports and stable employment in the area. Given the current supply challenges at Eskom, using gas at the Gourikwa Powerplant (or an IPP) can have a positive impact nationally.

Other oil and gas sector projects, such as exploration and production in Block 9/11a and exploration drilling in Block 5/6/7, can encourage the growth and development of the local value chain, thereby reducing the need for imported goods and services for the industry. This can have a positive impact on local economic output, GDP and employment.

10.4 No-go alternative

The no-go alternative will have a significant negative impact on the local economy as well as PetroSA. In the absence of domestic gas and/or condensate, the GTL plant, in order to operate, would have to rely on costly imported gas and/or condensate, which is likely to be unaffordable. The no-go alternative means that the status quo conditions regarding the GTL facility will remain, which is affecting a substantial amount of local employment opportunities. In the case of power generation,

the no-go alternative would result in importing more costly LNG, even relying more and/or longer on coal power generation, or, in the worst case, renouncing to additional power generation capacity that could contribute to end load shedding.

10.5 Summary

Based on the information presented in this report, the following can be recommended from an economic perspective. The proposed project is envisaged to have a positive stimulus on the local economy and employment creation, leading to the economy's diversification and a reduction in the unemployment rate. There are no fatal flaws from an economic perspective; thus, the location is deemed acceptable and should be authorised. Enhancement and mitigation measures have been provided within the relevant impact tables to assist in mitigating or negating any potential negative impacts and enhancing positive impacts. Regardless of the negative impacts identified, no fatal flaws have been identified to hinder the proposed project from commencing.

In addition, even though the 'no-go' alternative will result in the avoidance of negative impacts (decommissioning, well blowout, and crude oil spill) from an economic perspective, this would also result in the positive effects/impacts not being realised. Since the positive effects and impacts would outweigh the negative effects, the exploration, construction and operation of the proposed development are preferred over the 'no-go' alternative. The proposed project should, therefore, be considered for approval, subject to the implementation of the recommended mitigation and enhancement measures. It should, however, be acknowledged that the negative impacts would largely be felt by fisheries and tourism, whilst the positive impacts will be largely concentrated in the local and national economies. Due to this imbalance, the recommended mitigation measures must be strictly adhered to. The application of these mitigation measures will ensure that the negative impacts are minimised.

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SIGNATURE PAGE

Appendix A

SPECIALIST CV

Marietha Jacobs (Kruger)

Date of Birth: 20 April 1991
 Designation: Western Cape – Assistant Manager
 Profession: Senior Development Economist
 Years within Firm: 9 Years
 Nationality: RSA
 Years of Experience: 9 Years
 HDI Status: White Female



Education:

| | | | |
|-------------------------------|--|----------------|-----------------|
| University of Pretoria - 2012 | BCom (Econometrics) | | |
| University of Pretoria - 2013 | BComHons (Econometrics) | | |
| Alison – 2020 | Diploma – Project Management in Practice | | |
| Language Proficiency: | Reading | Writing | Speaking |
| English | Excellent | Excellent | Excellent |
| Afrikaans | Excellent | Excellent | Excellent |

Work Experience:

| | |
|-------------|---|
| 2014 – Date | Urban-Econ Development Economists (Pty) Ltd |
|-------------|---|

Key Qualification:

Marietha Jacobs obtained her BCom Econometrics degree in 2012 and completed her BCom (Hons) Econometrics in 2013. Both degrees were obtained from the University of Pretoria and with distinction. On completion of her studies Marietha joined the Urban-Econ team in Mbombela as a Junior Development Economist and was promoted to Senior Development Economist in 2016. In 2017, Marietha relocated to Urban-Econ Western Cape and was promoted to Assistant Manager in 2018. She has extensive experience in managing large projects with multi-disciplinary teams and has worked on a number of high-profile projects. These include the Rural Enterprise and Industrial Development (REID) Training, Support and Mentorship of Arts and Crafts Primary Cooperatives study and the Municipal Economic Review and Outlook (MERO) for the Provincial Treasury of the Western Cape. Marietha also has extensive research experience in a variety of industries including property market, the agriculture sector and its associated value chain as well as general economic research.

Experience Record:

| | |
|--|--|
| Project: Year: Location: Client: Project Features: | Municipal Economic Review and Outlook (MERO) 2017 – 2022 Western Cape Provincial Treasury MERO is a research publication that provides an overview of the economy of the Province and each local municipality. The MERO outlines the trends, patterns and developments of the local municipal economies through an analysis of GDP and employment trends, skills levels as well as an overview of the development opportunities. |
| Position held: Activities Performed: | Project manager Project management, data analysis, report writing, stakeholder engagements, presentation of the MERO to various stakeholders. |
| Project: Year: Location: Client: Project Features: Position held: | Reunion Square Retail Development 2022 Somerset West, Western Cape Pic N Pay This project entailed an economic motivation for a convenience retail shopping centre. Lead researcher |

| Experience Record: | |
|--|---|
| Activities Performed: | Market research, property demand modelling, report writing |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | De Grendel Feasibility 2022 Cape Town, Western Cape City of Cape Town UE formed part of the multidisciplinary team that was appointed to determine the feasibility of converting the Parow Golf Club into a mixed-use precinct. UE was appointed to conduct socio-economic and property market research as well as the financial feasibility and cost-benefit analysis of the preferred development option. Researcher and modeler Property market research, financial modelling, SAM modelling and cost benefit analysis, report writing, presenting findings |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Pioneer Fishing Economic Motivation 2021 Saldanha Bay, Western Cape Pioneer Fishing Economic impact assessment Senior development economist Conduct an impact assessment to serve as an economic motivation for the expansion of Pioneer Fishing's manufacturing capabilities in Saldanha Bay. The economic motivation formed part of an application for the lease of additional land from the Department of Public Works. The impact assessment determined the economic impact in terms of production, GDP and jobs in the local economy that will occur as a result of the expansion. The economic impact was determined by means of a SAM model. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Sunningdale Development Phase 15&16 Market Feasibility 2021 Cape Town, Western Cape Garden Cities Property market feasibility Senior development economist Garden Cities appointed Urban-Econ to perform a market feasibility for the development of residential and commercial property as part of the planning for the development of Phase 15 and 16 of Sunningdale, a developing suburb in Cape Town. Activities included property market research, property demand modelling, data gathering and analysis, interviews with estate agents. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Development Impact Monitoring for HIFSA 2018 – 2021 South Africa Old Mutual Investment Group South Africa (OMIGSA) Impact Assessment Senior development economist This study was done for the Old Mutual Investment Group South Africa (OMIGSA) as Fund Manager to the Housing Impact Fund of South Africa (HIFSA). HIFSA's mandate is to invest in the development of new affordable housing stock, inner city rental units and the provision of various forms of end user finance all for a commercial investment return. The aim of this annual report was to show the actual and potential benefits of these investments in terms of the Library of Development Indicators for Private Equity Funds (PEF) as well as the social impact matrixes required in terms of the Trust Deed. The economic impact is done by means of a SAM model. |
| Project: Year: Location: Client: Project Features: | Afdakrivier Market Feasibility 2021 Hermanus, Western Cape Arch Town Planners Property Market Feasibility |

| Experience Record: | |
|--|--|
| Position held: Activities Performed: | Senior development economist Market research for the development of a proposed residential and commercial estate in Hermanus. The market potential for residential, retirement, medical, commercial, education and retail development were investigated. Activities include desktop research and interviews, demand modelling and report writing. The scope of works also included a valuation of the vacant land by using the residual land value method. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Newlands Pool Feasibility 2020 Western Cape City of Cape Town Feasibility, market research and cost benefit analysis Senior development economist Financial modelling and cost benefit analysis |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Wynberg Precinct Feasibility 2020 Western Cape City of Cape Town Feasibility and market research Senior development economist Financial modelling |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Altydgedacht Farm Economic Motivation 2019 Durbanville, Cape Town VDVM Property Group Property market research to assess the capacity of the market to sustain medical, retirement, residential and tourism activities on the proposed Altydgedacht Farm development in Durbanville Senior Development Economist The project entailed socio-economic market research to assess the capacity of the market to sustain medical, retirement, residential and tourism activities on the proposed Altydgedacht Farm development in Durbanville. The study will be used provide inputs and motivation into the broader study, namely the Development Plan which is being developed for the site and which will be utilised to motivate changes to the City of Cape Town Spatial Development Framework. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | LPG Market Research Update 2019 Saldanha Bay, Western Cape Avedia Energy (Pty) Ltd Market Research Senior Development Economist Urban-Econ (Pty) Ltd was appointed by Avedia Energy to update a market study that was previously done by Urban-Econ in 2014 around LPG and its potential market segmentation demand. The purpose of this report is to update the market trends, provide up to date statistics and compile a supply analysis and demand analysis for LPG in South Africa. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Joostenbergvlakte Conceptual Development Framework – Economic Inputs for Logistics Development 2019 Cape Town, Western Cape Urban Dynamics Market Research Senior Development Economist The project entailed conducting socio-economic, economic and industry research to assess the capacity of the Cape Town market to sustain a warehousing and distribution development at Joostenbergvlakte. The aim of the study was to provide inputs and |

| Experience Record: | |
|--|---|
| | motivation into the Conceptual Development Framework which is to be developed for the study area. This framework will be used to provide comment and input into the MSDF. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Staff Turnover and Retention in Municipalities 2019 National LGSETA Research Senior Development Economist Urban-Econ was appointed by LGSETA to undertake research on the state of staff turnover and retention in the local municipalities of South Africa. The project entails primary research by means of case studies at selected municipalities, as well as secondary research to understand the current status of staff turnover and theories underpinning staff turnover and retention, particularly on local government level. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Evaluation of Youth Development Programmes of the Western Cape Department of Agriculture 2018 Cape Town, Western Cape Western Cape Department of Education Monitoring and Evaluation Senior Development Economist/ Project Manager This project entails the evaluation of the various youth development programmes offered by the Department including the Agriculture Partnership for Youth Development (APFYD) project, the Premiers Advancement of Youth (PAY) project, the Youth Professional Programme (YPP) as well as the bursary and internship programmes. Key activities included extensive stakeholder engagement, administering of surveys, identifying key successes and constraints in the programmes under evaluation and making recommendations where constraints have been identified. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Paardevlei Development Market Feasibility Study 2018 Cape Town, Western Cape City of Cape Town Property Market Research Senior Development Economist This project entails conducting market research into the local residential, commercial and industrial property market and its implications for the development of the 680 Ha Paardevlei site located in Somerset West. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | GTP Affordable and Student Housing Demand 2018 Cape Town, Western Cape Greater Tygerberg Partnership Market Research Senior Development Economist The scope of this project entails determining the demand for student accommodation, as as identifying suitable land portions for affordable housing by making use of a prioritisation model |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Matzikama LED Strategy 2018 Vredendal, Matzikama Municipality Matzikama Municipality Local Economic Development Strategy and Implementation Plan Senior development economist/ Project manager The study consisted of researching the local economy to develop a practical economic development strategy and implementation plan. The project included the facilitation of a workshop where local stakeholders provided their input for the development of the strategy. |

| Experience Record: | |
|--|--|
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Cape Town Stations Market Research 2018 Cape Town, Western Cape DCI Holdings Property Market Research Senior Development Economist The study consisted of updating a 2012 study on the potential market demand for mixed-use developments at three train stations in Cape Town, namely Goodwood Station, Retreat Station and Heideveld Station. The residential component of the proposed developments is specifically aimed at providing affordable housing solutions. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Gordon's Bay Retirement Feasibility 2017 Gordon's Bay, Western Cape Urban Cape Invest (Pty) Ltd Feasibility Study Senior Development Economist The study consisted of market research and demand modelling to determine the feasibility of establishing a retirement village in Gordon's Bay in the Western Cape. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | L'Agulhas Eco Estate Market Research 2017 Cape Agulhas, Western Cape First Plan Town and Regional Planners Feasibility Study Senior Development Economist The study consisted of market research on property and tourism trends to determine the feasibility of the proposed L'Agulhas Eco Estate in Cape Agulhas. The proposed estate will consist of a retirement village, a residential development and a tourism node with a hotel, restaurant and retail facilities. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Business Cases for Agri-Hubs and FPSUs in Mpumalanga 2016 – 2017 Mpumalanga Department of Rural Development and Land Reform Business Plan Senior Development Economist Urban-Econ was appointment by the Department of Rural Development and Land Reform to provide advisory services for two years; this includes the development of business plans for projects identified as potential funding beneficiaries. As part of the advisory services, Urban-Econ was appointed for business cases for Agri-Hubs in each District as well as business cases two Farmer Production Support Units (FPSU). The business cases consist of a farmer needs analysis, site visit, concept analysis, ownership and operational plan as well as an implementation plan and recommendations. Farmer needs analysis was completed by conducting surveys of smallholder and emerging farmers within the catchment of each FPSU in order to determine the crops being produced and the support needed by farmers. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Training and Mentorship of Art and Craft Co-operatives 2015 – 2016 Nationwide Department of Rural Development and Land Reform Providing business training and mentorship for art and craft co-operatives in Limpopo, Mpumalanga, Eastern Cape and KwaZulu-Natal. Project Manager for Mpumalanga; Development Economist Providing business training and mentorship for 16 local art and craft co-operatives in Piet Retief as well as assisting co-operatives with bank accounts, tax clearances, BBBEE certificates and complying with CIPC requirements. Monitoring and evaluation of the success of the project was achieved through questionnaires and skills tests of participants in the start, middle and end of the project. |

| Experience Record: | |
|--|--|
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Karino Hawker Socio-economic Impact Assessment 2016 Mbombela, Mpumalanga TRAC N4 To determine the impact of relocating hawkers at the Karino interchange on the N4 to make space for an offramp and to identify potential mitigation measures. Senior development economist The project consisted of a survey of the hawkers at the Karino interchange and applying a SAM model to determine the potential impact of closing the site. Mitigation measures and relocation sites were selected through consultation with local authorities responsible for informal sector development. |
| Project: Year: Location: Client: Project Features: Position held: Activities Performed: | Mkhuhlu Tourism and Agricultural Development 2017 Mkhuhlu, Bushbuckridge LM, Mpumalanga Mr. Conrad van Eyssen Business Plan Senior Development Economists The project consisted of developing a comprehensive business for a 350-room hotel and property development along the Sabie River, bordering the Kruger National Park as well as business plan a 750-hectare fruit, nut and vegetable farm. The projects will utilised state owned land where the land owners will have a majority share in the respective enterprises, with a strategic partner who will develop and manage the facilities for a period of 25 years. |

Other projects:

- **Greater Tzaneen Local Municipality LED Strategy:** The project entailed a situational analysis consisting of a thorough review of the socio-economic factors and the economic performance of the local municipality, together with a spatial analysis in order to identify new opportunities to generate economic growth and create employment opportunities within the local municipality. The Strategy outlines projects to be implemented to reach the identified goals, as well as an implementation plan.
 - **Nkomazi Tourism Development (2016):** The project entailed writing a bankable business plan for a tourism development at Crocodile Bridge (Nkomazi LM) to support the funding application for the development. The components of the development included a hotel and property development adjacent to the Kruger National Park.
 - **Agri-Parks Master Plan (2015):** The project entailed the development of three (3) Master Plans for the implementation of the Agri-Park Model in Mpumalanga. A Master Plan was developed for the Ehlanzeni District, Nkangala District and the Gert Sibande District outlining amongst other details, the main commodities, a value chain analysis and an implementation framework for the Agri-Park model in Mpumalanga
 - **Maruleng Tourism Strategy (2014):** The Strategy included sustainable measures to ensure a marketable tourism product and to assist local economic development in accordance with the existing LED strategy. The scope of the project included a local context review and situation analysis of tourism in Maruleng Municipality which was utilized to develop the Tourism Development Plan. A tourism database of accommodation, activities and attractions was also compiled.
 - **SANCCOB Business Plan (2019):** Urban-Econ was appointed by the South African Foundation for the Conservation of Coastal Birds to package a business plan which will be used in their application for funding for the development of a new visitor centre in Cape Town.
 - **Interventions in the Municipalities of Mpumalanga (2015):** A socio-economic profile, economic analysis as well as a spatial overview was compiled for each local municipality in Mpumalanga in order to identify economic-, good governance-, skills development- and infrastructure projects that will stimulate economic growth and employment creation.
 - **Riverside Boutique Hotel Feasibility (2014):** Conducting market research and feasibility study for the establishment of a boutique hotel in Mbombela
 - **Mbombela LED Strategy Review (2014 & 2016):** Review and update the existing LED Strategy from 2012 – this included an economic overview, socio-economic analysis, spatial analysis and interviews with key Departments within the local Municipality. The aim of the LED strategy is to stimulate growth and employment, strength local linkages and address structural inefficiencies in the municipality.
-

- **ITC Municipal Evaluation Framework (2019):** Urban-Econ was appointed to identify municipalities that should be prioritised for broadband roll-out. The prioritisation will assist to identify high-density, urban areas where households are more likely to be able to afford broadband services and have the equipment to access such services. The study provided a summary of the results of for each prioritisation criterion as well as the overall prioritisation
- **Revitalisation of Distressed Mining Towns (2016):** Urban-Econ was appointed by the Department of Economic Development and Tourism (DEDT) to provide a strategic framework for the revitalisation of Standerton and Barberton in Mpumalanga
- **Ehlanzeni Economic Scoping (2014):** The scope of the project included an area delineation, creating an economic profile and identifying market opportunities in the Ehlanzeni District for Bigen Africa
- **Mnyamana Civil and Services Co-operative Business Plan (2016)** - The Business Plan included a market analysis, demand analysis as well as a financial analysis which is used to determine the feasibility of the project. The business plan also outlines the funding needs of the Co-operative

Countries of Work Experience:

- South Africa

References:

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Appendix B

IMPACT ASSESSMENT METHODOLOGY





Approach to Impact Assessment

The identification and assessment of environmental and social impacts is a multi-faceted 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. Impacts are identified throughout the ESIA process by environmental and social assessment practitioners, from specialist studies and stakeholder engagement process, and refined 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 involves the following main steps:

1.0 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 taking into consideration 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) while indirect impacts typically extend across a wider area and often relate to the social sphere of influence of the project. The direct area of influence will be reassessed in the ESIA phase on the basis of the Oil Spill Modelling results.

2.0 STEP 2: IDENTIFICATION OF POTENTIAL IMPACTS

Potential impacts of a project are identified through a process of 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 through colour coding the level and type of interaction in the matrix. This matrix approach to impact identification is designed to highlight where interactions may occur as a way of focussing the impact assessment.

3.0 STEP 3: COMPILE IMPACTS – ASPECTS REGISTER

An impacts-aspects register is typically prepared during the Scoping Phase as a basis for further elaborating 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 identification of the linkages between different specialist scopes and overlapping impacts, and where there are interdependencies on data and reporting to enable an integrated impact assessment. For instance, social specialists are typically reliant on other specialists for inputs such as water quality, air quality or underwater noise effects and this needs to be factored into work scopes and scheduling. 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.

4.0 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 description of impact.

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 taking into account 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 in accordance with the mitigation hierarchy.

D Applying the Mitigation Hierarchy

Identification of mitigation measures in accordance with the mitigation hierarchy is done throughout the ESIA process with emphasis placed on avoiding significant impacts where feasible. The mitigation hierarchy, as specified in IFC Performance Standard 1, which is widely regarded as a best practice approach to managing risks, is based on a hierarchy of decisions and measures, as presented in Figure and Table. Certain 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. These may include measures such as helicopters to avoid fly-over of islands at certain heights.

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, 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 5-1 below defines the criteria used to categorise and describe impacts.

Table 5-1: 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 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, often produced away from or as a result 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 5-2 below.

Table 5-2: Definitions of Impact Assessment Criteria and Categories Applied

| Criterion | Definition | Categories |
|-----------------------------------|--|---|
| Sensitivity | Sensitivity is a rating given to the importance and/ or vulnerability of a receptor (e.g., conservation value of a biodiversity feature or cultural heritage resource or social receptor) | Very Low Low Medium High Very High |
| Magnitude (or consequence) | A term describing the actual change predicted to occur to a resource or receptor caused by an action or activity or linked effect. It is derived from a combination of Intensity, Extent and Duration and considers scale, frequency and degree of reversibility | Very Low Low Medium High Very High |
| Intensity | A descriptor for the degree of change an impact is likely to have on the receptor which considers 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 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 to arise. | Unlikely Possible Likely |

DETERMINATION OF SENSITIVITY

Sensitivity is a term that covers the 'importance' (e.g., value of an ecological receptor or heritage resource) or 'vulnerability' (e.g., ability of a social receptor to cope with change) of a receptor to a project-induced change. It considers 'Irreplaceability' - measure of the value of, and level of dependence on, impacted resources to society and/ or local communities, as well as of 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 5-3 below. These are not exhaustive and may be modified on a case-by-case basis, as appropriate. Additional ratings can be developed for other receptors such as cultural heritage.

Table 5-3: 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 have the ability to avoid negative Project impacts, or to cope with, resist or recover from the consequences of a such |



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| | 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 are able to easily adapt to changes brought about by the project with marginal impacts on their living conditions, livelihoods, health and safety, and community well-being, or will derive marginal benefits or opportunities from the project. |
| Medium | <p>Receptors have some vulnerabilities and are more susceptible to project-related changes given they only have moderate access to resources, support, or 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.</p> <p>For positive impacts, these receptors are likely to derive a moderate level of benefit or opportunities from the project.</p> |
| High | <p>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 will not be able to adapt to such changes without substantive adverse consequences on their quality of life.</p> <p>For positive impacts, these receptors are likely to derive a substantial level of benefits or opportunities from the project.</p> |
| Very High | Receptors are highly vulnerable and have very low resilience to project-related changes. By fact of their unique social setting or context, such receptors have a diminished or lack of 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. |
| Ecological Receptor | Species, habitats or ecosystems including processes necessary to maintain ecosystem functions |
| Very Low | Species or habitats with negligible importance for biodiversity including habitats that are largely transformed or highly modified. |
| 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/or 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 |

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| | 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 which are important for meeting national conservation targets based on expert-driven national or regional systematic conservation planning processes, but which 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 which are of high importance 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 1b ¹⁶ , 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, 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, exceed the |
| 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)

Definitions of Criteria Used to Derive 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.

Taking the above into account, 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 5-3 below.

Table 5-3: Categorisation and Description for Intensity, Extent and Duration

| Criteria | rating | description |
|---|----------|--|
| Criteria for ranking of 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/or 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 which is reversible over the medium term, and/or which 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 easily |
| Criteria for ranking the EXTENT / SPATIAL SCALE of impacts | Site | Impact is limited to the immediate footprint of the activity and immediate surrounds within a confined area. |
| | Local | Impact is confined to within the project concession / licence area and its nearby surroundings. |
| | Regional | Impact is confined to the region, e.g., coast, basin, catchment, municipal region, district, etc. |
| | National | Impact may extend beyond district or regional boundaries with national implications. |

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|---|---------------|---|
| | International | Impact extends beyond the national scale or may be transboundary. |
| Criteria for ranking the DURATION of impacts | Short Term | The duration of the impact 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 by 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 5-4 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 but could, in this instance, warrant a Very High rating. The justification for amending the rating should be indicated in the impact table.

Table 5-4: Magnitude Determination

| Magnitude (or consequence) rating | description |
|-----------------------------------|---|
| Very High | Impacts could be EITHER: 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 EITHER: 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 | <p>Impacts could be EITHER:</p> <p>of high intensity at a local level and endure in the medium term;</p> <p>OR of medium intensity at a regional level in the medium term;</p> <p>OR of high intensity at a regional level in the short term;</p> <p>OR of medium intensity at a national level in the short term;</p> <p>OR of medium intensity at a local level in the long term;</p> <p>OR of low intensity at a national level in the medium term;</p> <p>OR of low intensity at a regional level in the long term.</p> |
| Low | <p>Impacts could be EITHER:</p> <p>of low intensity at a regional level and endure in the medium term;</p> <p>OR of low intensity at a national level in the short term;</p> <p>OR of high intensity at a local level and endure in the short term;</p> <p>OR of medium intensity at a regional level in the short term</p> <p>OR of low intensity at a local level in the long term;</p> <p>OR of medium intensity at a local level and endure in the medium term.</p> |
| Very Low | <p>Impacts could be EITHER:</p> <p>of low intensity at a local level and endure in the medium term;</p> <p>OR of low intensity at a regional level and endure in the short term;</p> <p>OR of low to medium intensity at a local level and endure in the short term.</p> <p>OR Zero or very low intensity with any combination of extent and duration.</p> |

* Note: For any impact that is considered to be "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

Matrix to Derive 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 will be caused by a project-induced change.



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

$$\text{Significance} = \text{Magnitude (or Consequence)} \times \text{Sensitivity}$$

$$\text{Where Magnitude (or Consequence)} = \text{Intensity} + \text{Extent} + \text{Duration}$$

Once ratings are applied to each of these parameters the matrix presented in Table 5-5 is used to derive Significance.

Table 5-5: Matrix for Determining Significance

| OR SENSITIVITY | | | | | | |
|--------------------------|-----------|------------|------------|----------|-----------|-----------|
| | | VERY LOW | LOW | MEDIUM | HIGH | VERY HIGH |
| MAGNITUDE CONSEQUENCE | 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 |
| | 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 socioeconomic 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 prior to decision-making.

Table 5-6: Definition of Significance Ratings

| Significance Rating | Interpretation |
|---------------------|--|
| VERY HIGH | <p>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.</p> <p>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 will need to evaluate the trade- offs with potential social or economic benefits.</p> <p>Positive social impacts of very high significance would be those where substantial economic or social benefits are obtained from the project for significant duration (many years).</p> |

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| <p>HIGH</p> | <p>Impacts where an accepted limit or standard is exceeded; impacts are outside the range of normal variation</p> <p>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 to be required to reduce the impact to an acceptable level.</p> <p>High significance residual impacts warrant close scrutiny in decision-making and strict conditions and monitoring to ensure compliance with mitigation or other compensation requirements.</p> <p>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.</p> |
| <p>MEDIUM</p> | <p>Moderate adverse changes to a receptor where changes may exceed the range of natural variation or where</p> <p>accepted limits or standards are exceeded at times. Potential for natural recovery in the medium-term is good, although a low level of residual impact may remain. Medium impacts will require mitigation to be undertaken and demonstration that the impact has been reduced to as low as reasonably practicable (even if the residual impact is not reduced to Low significance).</p> <p>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.</p> |
| <p>LOW</p> | <p>Minor effects will be experienced, but the impact magnitude (or consequence) is sufficiently small (with and without mitigation) and well 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 normal 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.</p> |
| <p>VERY LOW</p> | <p>Very minor effects on resources or receptors are possible but the predicted effect represents a minimal change to the distribution, presence, function or health of the affected receptor, and no mitigation is required.</p> |
| <p>NEGLECTIBLE</p> | <p>Predicted impacts on resources or receptors of very low or low sensitivity are imperceptible or</p> <p>indistinguishable from natural background variations, and no mitigation is required.</p> |

ADDITIONAL ASSESSMENT CRITERIA

Additional criteria that are taken into consideration in the impact assessment process and specified separately to further describe the impact 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;
- 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); and
- 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 11-1 below.

Table 11-1: Categorisation and Description of Additional Assessment Criteria

| Criteria | Rating | Description |
|--|-------------|---|
| Criteria for determining the PROBABILITY of impacts | UNLIKELY | Where the possibility of the impact to materialise is very low either because of design or historic 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. |
| | LIKELY | here there is a reasonable probability that the impact would occur, i.e., >35 to ≤75% chance of occurring. |
| | HIGH LIKELY | Where there is 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 | NONE | No mitigation is possible or mitigation even if applied would not change the residual impact. |

| | | |
|---|----------------------|--|
| MITIGATED | VERY LOW | Some mitigation is possible but will have marginal effect in reducing 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 DEGREE OF 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 | IRREVERSABLE | 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 completely reversed. |
| Criteria for POTENTIAL FOR CUMULATIVE IMPACTS – the extent to which cumulative impacts may arise from interaction or combination from other planned activities or projects | UNLIKELY | Low likelihood of cumulative impacts arising. |
| | POSSIBLE | Cumulative impacts with other activities or projects may arise. |
| | LIKELY | Cumulative impacts with other activities or projects either through interaction or in combination can be expected. |

Application of mitigation Hierarchy

A key component of this ESIA process is to explore practical ways of avoiding or reducing potentially significant impacts of the proposed project. These are commonly referred to as mitigation measures

and are incorporated into the proposed project as part of the ESMP. Mitigation is aimed at preventing, minimising or managing significant negative impacts to as low as reasonably practicable (ALARP) and optimising and maximising any potential benefits of the proposed project. The mitigation measures are established through the consideration of legal requirements, best practice industry standards and specialist input from the ESIA team.

The mitigation hierarchy which is widely regarded as a best practice approach to managing risks, is based on a hierarchy of decisions and measures, as presented in Figure 5-1 and described in Table 5-7. This is aimed at ensuring that wherever possible potential impacts are mitigated at source rather than mitigated through restoration after the impact has occurred. Any remaining significant residual impacts are then highlighted, and additional actions are proposed.

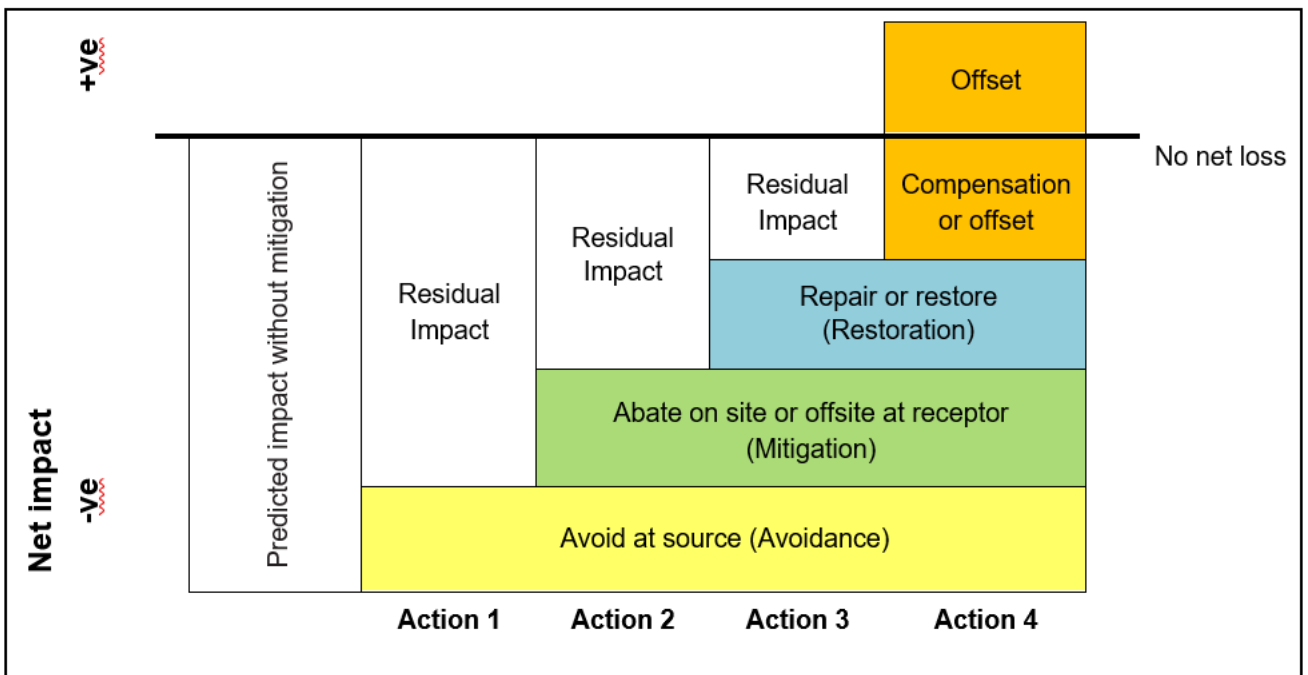


Figure 5-1: Mitigation Hierarchy

(Adapted from: www.thebiodiversityconsultancy.com)



Table 5-7: Sequential application of the mitigation hierarchy

AVOID AT SOURCE

Avoiding or reducing at source is essentially ‘designing’ the project so that a feature causing an impact is designed out (e.g., a waste stream is eliminated).

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| ABATE ON SITE | This involves adding something to the basic design or procedures to abate the impact (often called ‘end-of- pipe’) or altered (e.g., reduced waste volume) and is referred to as minimisation Pollution controls fall within this category. |
| ABATE OFFSITE/AT RECEPTOR | If an impact cannot be abated on-site, then measures can be implemented off-site – an example disposing of waste generated on-board at a proper waste facility onshore. Measures may also be taken to protect the receptor. |
| REPAIR OR RESTORE | Some impacts involve unavoidable damage to a resource, e.g., shoreline pollution arising from an oil spill. Repair essentially involves restoration and reinstatement type measures, such as clean-up of the shoreline |
| COMPENSATE OR OFFSET | Where other mitigation approaches are not possible or fully effective, then compensation, in some measure, for loss, damage and general intrusion might be appropriate. An example could be compensation for loss of earnings if fisheries were to be permanently impacted by a Project activity. |