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BOEGOEBAAI PORT DEVELOPMENT SOCIO ECONOMIC STUDIES

SOCIAL ECONOMIC BENEFIT REPORT

ADJUSTED FINAL REPORT

OCTOBER 2024

Submitted by:

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Trading as 'SRR'

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THE BOEGOEBAAI PORT DEVELOPMENT SOCIO ECONOMIC STUDIES SOCIAL ECONOMIC BENEFIT REPORT ADJUSTED FINAL REPORT: OCTOBER 2024

Submitted to:

TRANSNET NATIONAL PORTS AUTHORITY
an Operating Division of TRANSNET SOC LTD
[hereinafter referred to as Transnet]
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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
AOI	Area of Influence
BRM	Benefit Realisation Methods
CAGR	Compound Average Growth Rate
CAPEX	Capital Expenditure
CBA	Cost Benefit Analysis
CER	Cost Effective Ratio
CGE	Computable General Equilibrium
CSI / R	Corporate Social Investment / Responsibility
CSIR	Council for Science and Industrial Research
DM	District Municipality
DMRE	Department of Mineral Resources and Energy
ECBA	Economic Cost Benefit Assessment
EIA (1)	Economic Impact Assessment
EIA (2)	Environmental Impact Assessment
ENPV	Economic Net Present Value
FEL	Front-end-loading
GDP	Gross Domestic Product
GVA	Gross Value-Added
ha	Hectares
HDSA	Historically Disadvantaged South Africans
I/O	Input-Output Model
Km	Kilometres
KPA and KPI	Key Performance Area and Key Performance Indicators
LM	Local Municipality
Mtpa	Mega-tons per annum
NCEDA	Northern Cape Economic Development Agency
NCP	Northern Cape Province
NPFP	National Port Development Framework Plans
NPP	National Ports Plan
OPEX	Operational Expenditure
PDFP	Port Development Framework Plan
PEA	Potentially Economically Active
RCPA	Richtersveld Community Property Association
SA	South Africa
SAM	Social Accounting Matrix
SEB	Socio-economic Benefits
SEIA	Socio-economic Impact Assessments
SEZ	Special Economic Zone
SIA	Social Impact Assessment
TNPA	Transnet National Ports Authority

1 INTRODUCTION

The Boegoebaai Port development programme aims to deliver port and rail infrastructure in the Northern Cape to realise the socio-economic opportunities that a deep-water port will bring to the Northern Cape and the country. The development of a new Boegoebaai Port will contribute positively to the growth and development of the economy, but it can also contribute significantly to the socio-economic needs and gaps in society. South Africa and the local and regional communities are challenged by issues such as unemployment, low levels of skill development, limited opportunities for youth and limited access to emerging contractors.

1.1 PURPOSE AND SCOPE OF WORK

The purpose of this Socio-Economic Studies project is to analyse the socio-economic benefits (SEB) that may arise because of the various Boegoebaai Port Phase 1A capital projects. The objectives of the Socio-Economic Studies project are to assist TNPA to[1]:

- Analyse the socio-economic benefits (SEB) that may arise because of the proposed Boegoebaai Port and its projects.
- Recommend a strategy for a CSI programme.
- Make recommendations for benefit identification, quantification, benefactor identification, multiplier effects and key performance indicators during the programme execution phase as well as the post implementation process.

Transnet National Ports Authority (TNPA) views Corporate Social Investment (CSI) as an important contributory activity leading to sustainable integrated socio-economic development. Mega programmes such as the Boegoebaai Port development serve as levers that potentially make significant positive changes to the socio-economic development of the country and communities.

To achieve the objectives the project addresses the following key outputs:

1. Literature review of relevant data and models used by Public and Private Entities for analysing, compiling, and monitoring SEB.
2. Comprehensive stakeholder identification, needs assessment, and systems mapping.
3. A comprehensive report on the socio-economic benefits (SEB) arising from each Boegoebaai port project as well as measuring benefits during the project execution and operational phases.
4. Recommendations including a scope of work for any further studies to enhance the realisation of benefits.

Separate reports are available for the literature review and the stakeholder engagement report which can be made available on request from TNPA.

1.2 METHODOLOGY

1.2.1 Methodological procedure

The methodology followed in the study is as indicated in the diagram.

[1] Extracted from the Terms of Reference to the Social-economic Benefit project, 2024.

Phases 2, 3 and 4 form the building blocks of the study dealing with the Port characteristics, an analysis of the economic sectors that feed into the Port and the existing and future profiles of the recipient population in the Richtersveld.

The key components of the research are phases 5 and 6. In phase 5 the economic development implications of the Port's development are modelled and the implications of that on the local Richtersveld community is then determined. In Phase 7 a CSI Strategy for the Boegoebaai project is formulated based on the principles of the Transnet Foundation. The study is concluded with a findings and recommendation phase.

1.2.2 Planning parameters and constraints

This report is based on the most recent and up to date data and information available. The study is based on the current situation as expressed in the Base Case which relates to the situation of the communities and economy as it existed in 2022, the year of the national census. This provides a sound foundation on which to base the project and the findings.

The study makes extensive use of information and data provided by TNPA regarding the proposed Boegoebaai project. The information, for example, indicates that construction of the Port will start in 2026/27. Information about the nature, type and costs of the components of the Port as provided has been accepted and forms the basis on which the impacts of the Port are determined. Since this is a relatively high-level study dealing with plans and actions that will take in the future, assumptions are made about the future profiles, costs and conditions as they may exist then. Historical trends have been used to project the future conditions.

This report is future looking and, as such, there must be an awareness in interpreting the finding of this report. The economic and social conditions under which the Port will be implemented 3 to 4 years from now may be different from what exists at present. Research of this nature takes place in socio-political, demographic and economic environments that will change, as new risks and opportunities emerge. The research considers the changing socio-economic conditions but cannot be held responsible for changing circumstances in future which lead to a change in the projection of demands and needs.

1.3 REPORT OUTLINE

The outline of this report structure follows the methodology indicated in Section 1.2.1.

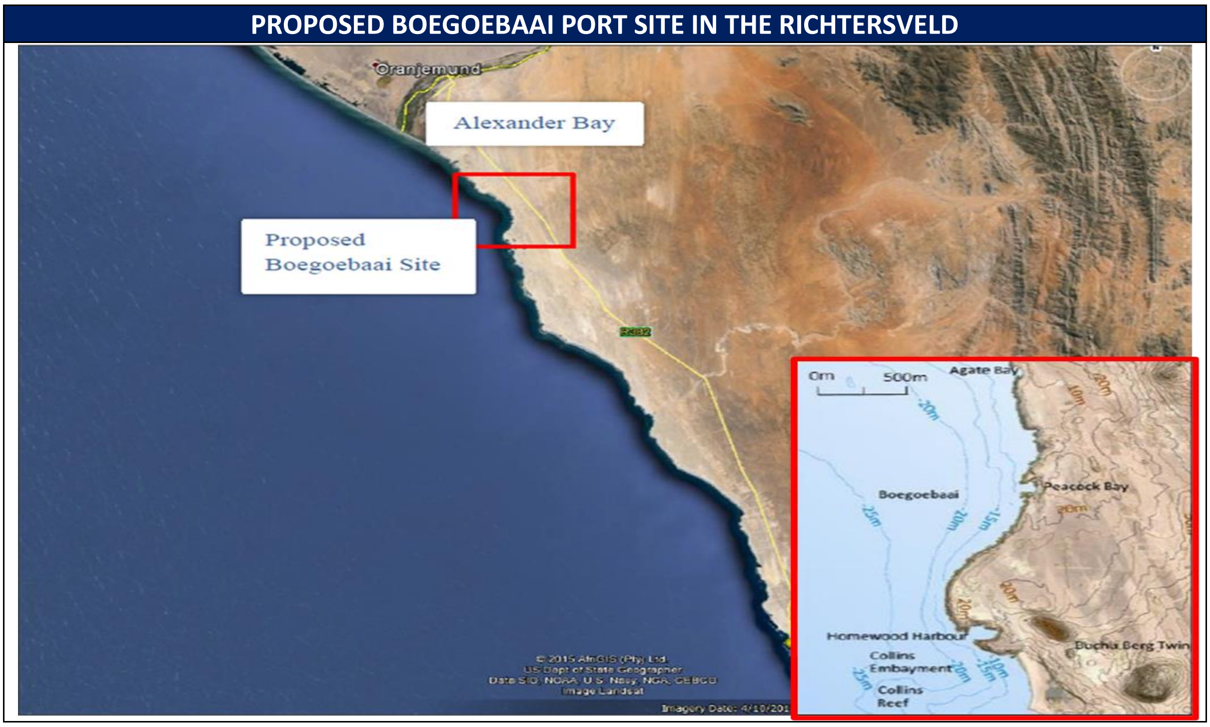
- Section 2: Introduces the Boegoebaai Port development programme as it relates to this project.

- Section 3: This section quantifies the socio-economic impact of the proposed port development in terms of the employment, business income, business production and the economic value add that the project will lead to. The direct, indirect and induced impacts are determined for the construction and operational phases of the project.
- Section 4: Provides an overview of the backward linkages of the Port to independent economic sectors. The port will open development opportunities in the provincial and national economics and those backward impacts are identified and quantified in this section of the report.
- Section 5: This section addresses the socio-economic status of the recipient community in the Richtersveld who will be benefiting from the direct impacts of the Port.
- Section 6: Based on the findings of the benefits modelling, the future development needs and demands for social infrastructure facilities and services are determined in this section.
- Section 7: The last section provides a summary of the main findings and recommendations for the further CSI programme of TNPA at Richtersveld and identifies research that should be undertaken to further augment and refine the economic cost benefit assessment of the project.

2 THE BOEGOEBAAI PORT DEVELOPMENT PROJECT

The proposed new Port of Boegoebaai is located within the Richtersveld Local Municipality in the Northen Cape Province (NCP) within the Namakwa District Municipality. Boegoebaai is located approximately 60 km north of Port Nolloth and approximately 20 km south of Alexander Bay.

Figure 1: Location of the proposed Boegoebaai Port



Source: National Ports Plan, 2022.

2.1 MOTIVATION FOR THE BOEGOEBAAI PORT

The motivation for the development and establishment of the Boegoebaai Port is not part of this research project and is presented in the Boegoebaai Port Business Plan[2]. The following is an extract from that report.

Few deep-water ports currently exist along the West Coast of the Northern Cape province. The Boegoebaai Port will add value to the provincial and national priority by[3]:

- Reducing the economic cost of moving cargo within the Northern Cape hinterland.
- Unlocking greater export logistics capacity for minerals from the Northern Cape.
- Optimising the cargo distribution within the South African port system.
- Securing a competitive advantage regionally for South African ports.
- Offering an alternative to Saldanha Bay for exporting surplus volumes of minerals as Saldanha communities are resistant to additional exports.
- Stimulating regional and provincial socio-economic development.

[2] Extract from the Boegoebaai Port Business Plan, page 29, 2020

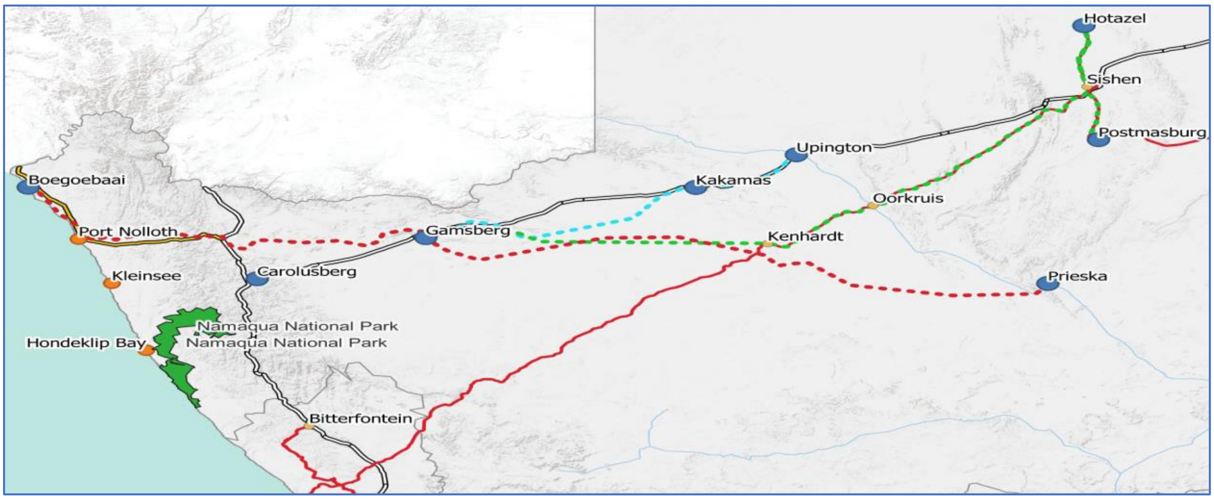
[3] Boegoebaai Port Business Case, 2022.

The Northern Cape Province finds itself burdened by long distances to ports. This results in relatively higher logistical costs for the export of its goods when compared with its major trading competitors. Apart from this, there are also capacity constraints on the export supply chains which limits existing and new exporters' ability to take full advantage of market demand. For example, instead of using a South African port, Namibia's GDP currently benefits from exports from the Northern Cape, via its ports[4]. Commodity products for which the Port may provide import and export opportunities in the long-term include[5]:

- Iron Ore
- Manganese
- Cement and Lime
- Zinc, Lead and Sulphuric Acid
- Magnetite
- Ilmenite (Titanium Ore)
- Bulk Fuels
- Salt
- Agricultural Products
- General Cargo
- Potential new commodities such as copper, gypsum, granite, fluorspar, and semi-precious stones as well as marble.

A new port at Boegoebaai will be a significant direct investment in a sub-region of the Northern Cape which is currently economically depressed. The provision of the port and supporting infrastructure could create temporary construction jobs, a demand for raw materials and, tourism accommodation and support services. A range of new temporary and permanent jobs will be created which will result in significant long term permanent economic growth in the Northern Cape. The new Port will be integrated into the national transport networks through road and rail developments. The figures below show some of the transport networks that are envisaged to be created or upgraded.

Figure 2: Proposed road and rail networks of Boegoebaai Port linkages into the Northern Cape.



Source: Boegoebaai Port Business Case, 2022.

[4] Boegoebaai Port Business Case, 2022.
[5] Ibid.

2.2 PORT DEVELOPMENT COMPONENTS AND PHASING

This socio-economic study is ring-fenced by the core projects of the Boegoebaai Port Phase 1A development as shown in the table below. The projects will be executed at different times depending on demand and approval processes.

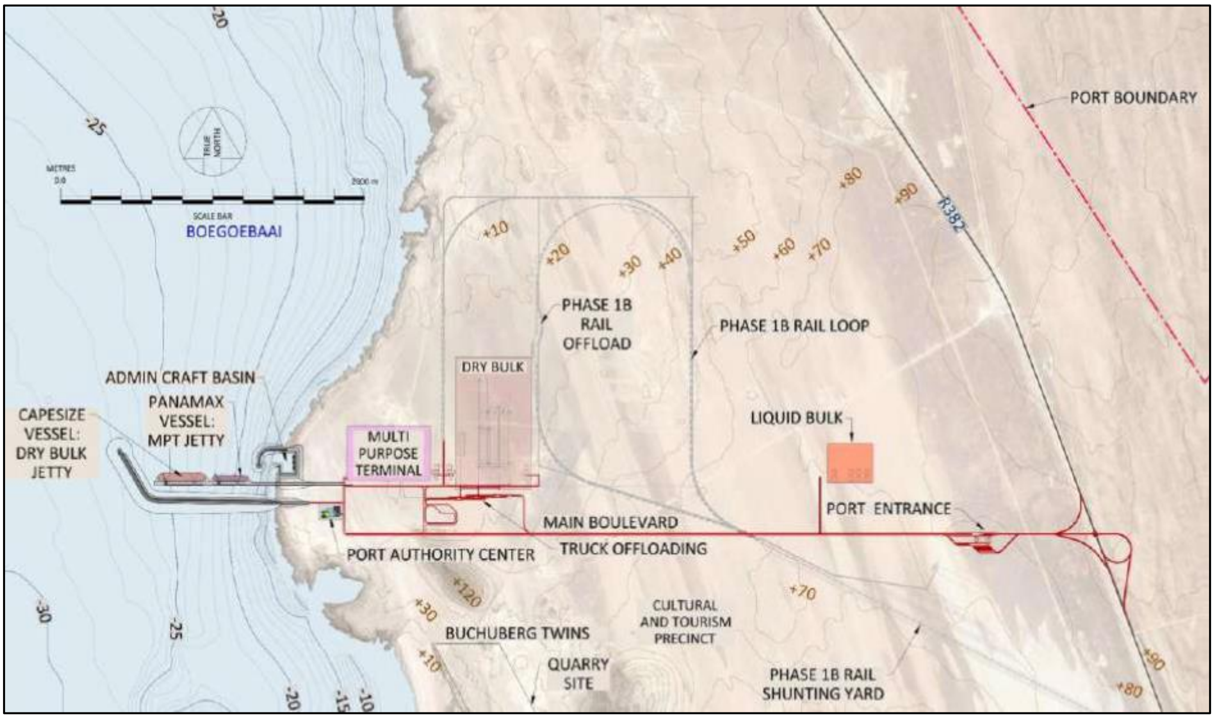
Table 1: Boegoebaai Port projects for Phase 1A.

Proposed Port Development Projects	
Breakwater project related project	Port entrance facility
Berth construction related projects	Truck staging area
Dry Bulk related projects	Port authority administration building
Liquid Bulk related projects	Port control tower
Break Bulk related projects	Emergency services (clinic & fire station)
Boegoebaai Port roads and internal rail related projects	Boegoebaai marine related projects (channel and dredging)
Administration of harbour related projects	

Source: The Terms of Reference to the Socio-economic Studies, 2023.

The development of the Port is divided into several phases. Phase 1 has been divided into Phase 1A, the maximum development phase which is the subject of this submission, and Phase 1B which shows the future potential of the port to accommodate rail facilities. All operations in Phase 1A will be serviced by road transportation only.

Figure 3: Phase 1A and 1B layout of the Port.



Source: Boegoebaai Port Business Case, 2023.

Phase 1A infrastructure includes a two-berth jetty connected to the land via an access trestle. The berths are sheltered from wave energy by a concrete armoured breakwater. The sea-side berth is dedicated to dry- and liquid bulk cargo whilst the land-side berth is a conventional multi-purpose berth. The bulk berth is fitted with a ship loader and conveyor system connected to landside stockpiles. The bulk berth is also capable of liquid bulk import and is fitted with a pipeline connected to diesel storage tanks. The multi-purpose berth will handle containerised cargo and break bulk using two mobile cranes. MPT cargo will be stored in a dedicated MPT terminal. The admin craft harbour takes the form of a dig-out basin inside the main breakwater, protected by a secondary breakwater.[6]

2.3 CORPORATE SOCIAL INVESTMENT (CSI) CONSIDERATIONS

The socio-economic value and benefits of the Port's establishment is important in motivating the viability of the Port. An important component of the Port's development is therefore to deliver socio-economic growth and development benefits to the country and to TNPA's stakeholders, including the local communities of the recipient environment. Some of the corporate social investment (CSI) benefits which may result from the Port have been identified in the Business Case report as follows:

- Healthcare: Socio-economic and infrastructure development; education and sports development.
- Education: Interventions for educational development and improved subject performance.
- Stakeholder Excursion: Youth excursion tours and career exposure for those between 18 – 35.
- Environmental, social, and governance (ESG) Programme- Partnership with key stakeholders on programmes promoting conservation and sustainability. i.e. supporting programmes that empower female learners and diversity.
- In terms of population development, the following aspects will be included:
    - Prevalence of substance abuse amongst the younger population.
    - Community Awareness programmes on Foetal Alcohol Syndrome.
    - Early Childhood Development consideration.
    - Employment creation and the requisite skills needed for employment.
- Ageing Population: Consideration of frail care facilities.

2.4 RISKS ASSOCIATED WITH THE PORT DEVELOPMENT

The main socio-economic risks related to the Boegoebaai Port's development as identified in the Business Case report include, amongst others, the following:

1. Unrealised socio-economic benefits.
2. Insufficient resources, systems, and critical skills for programme delivery.
3. Poor economics and insufficient justification of anchor investments (i.e. Sasol. Manganese exports)
4. Limited market appetite and poor response to RFP
5. TNPA's inability to raise funding capacity and to attract external investor confidence.
6. ROI in the case of a 'Scope premium'.
7. Capacity of the local market to fund and construct.
8. Inability to purchase the land due to owners' perception of the project.
9. Stakeholder social sensitivities.
10. Delayed land acquisition (port and rail) with control of the process external to Transnet.

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[6] Boegoebaai Port Business Case, 2023.

3. THE SOCIO-ECONOMIC IMPACTS OF THE PORT

3.1. SOCIO-ECONOMIC MODEL OVERVIEW

Ports contribute to the development of local economies by attracting investment and fostering innovation. Furthermore, ports serve as key hubs for connecting different modes of transportation, such as rail and road networks, and enhancing their importance in facilitating trade and commerce. The presence of a well-functioning port can attract businesses looking to take advantage of efficient transportation networks, leading to job creation and economic growth in the surrounding area.

Overall, the economic benefits of ports extend far beyond their immediate activities, impacting a wide range of industries and communities. By investing in port infrastructure and improving efficiency, countries can enhance their competitiveness in the global market and drive future sustainable economic development.

3.1.1. Model database

There are various econometric models relevant to development projects such as Input-Output (IO), Social Accounting (SAM), Computable General Equilibrium (CGE) models.

Input-Output (IO) models provide a detailed picture of the flow of products and resources within a given economy and between that economy and the outside world. Better yet, such models can be used to estimate economic multipliers for specific industries variables. The multipliers, in turn, form the basis for economic impact analysis, where the contribution of specific industries to a local economy or the effects of a given policy, event or investment can be estimated in terms of jobs and income creation. [7]

Social Accounting Models (SAMs) are an extension of input–output analysis and provide far greater detail about the relationships between sectors of the economy, social groups, and economic agents. It helps with the understanding of important interrelationships between structural features of an economy and the distribution of income and expenditure among household groups. This information is useful for making decisions about policies that affect things like income distribution and economic growth. The SAM breaks down households into different groups based on things like jobs and skills, so we can see how each group contributes to the economy. It's a helpful tool for keeping track of how well a country is doing economically and socially. [8]

Computational General Equilibrium (CGE) models are primarily designed for policy analysis. A key feature of CGE models is its ability to accommodate a high level of detail within a rigorous theoretical framework. The models fit economic data to a set of equations which aim to capture the structure of

[7] Huges, D.W. Hughes D.W. Greever Endowed. A Primer in Economic Multipliers and Impact Analysis Using Input-Output Models D Chair in Agribusiness Development Department Agricultural and Resource Economics June 2018.

[8] Statistics South Africa. Linking the Social Accounting Matrix to existing government strategies for South Africa Published by Statistics South Africa, Private Bag X44, Pretoria 0001, 2008.

the economy and behavioural response of agents. This provides a framework to simulate policy changes and trace the impact on key economic variables, including income and expenditure flows. [9] CGE models are being used by governments to model fiscal policy scenarios. For example, a tax increase on fuel might affect food prices, the CPI, and hence perhaps household income and employment. They have been used widely to analyse trade policy.

The SAM is the preferred model to determine the socio-economic impact of the Boegoebaai Port because it provides an appropriate database for the analysis of the key socio-economic variables of projects, such as employment, poverty, growth and income distribution and trade. For the purpose of this assessment the 2018 SAM for the Northen Cape[10] formed the basis to develop a modelling framework to assess the impact of the proposed Boegoebaai Port.

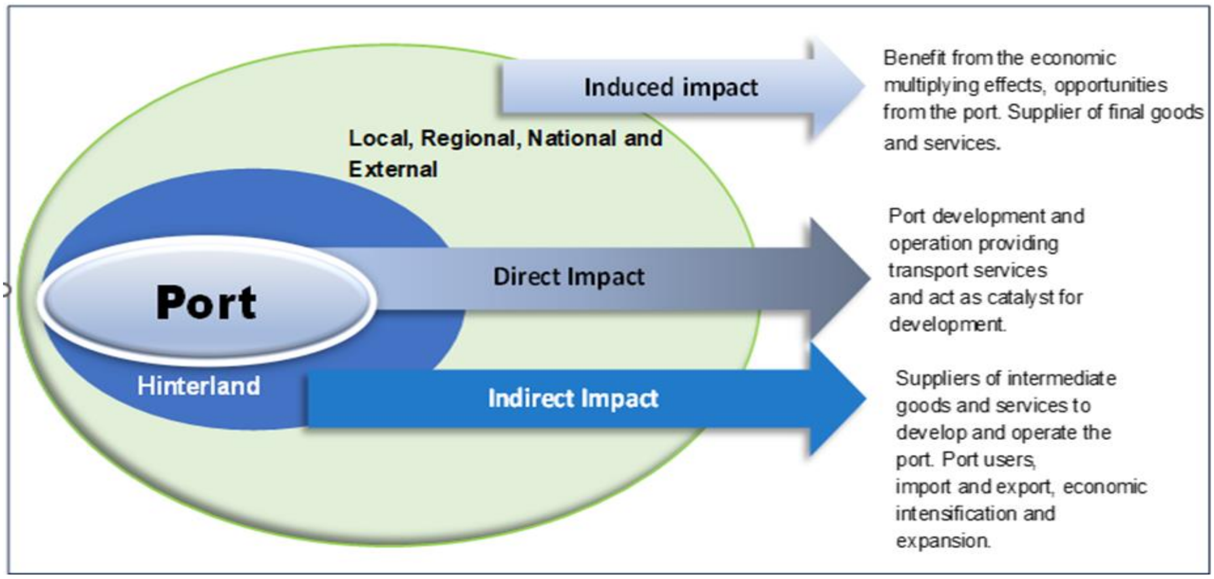
3.1.1.1. Type of impacts

The model differentiates between the direct, indirect and induced impact of an exogenous intervention into the economy. The aspects that will be included in the model are the change in potential new business development, contribution to the Gross Domestic Product, employment creation, household and government income.

Direct impacts correspond to economic impacts generated by the construction and operation of the port.

Indirect impacts correspond to the effects on the suppliers of goods and services to develop and operate the port.

Induced impacts refer to the broader economic effects that result from the spending of income generated by direct and indirect impacts. This includes increased consumer spending in the local economy, job creation in related industries, and overall economic growth in the region surrounding the port.



[9] Dr. Heinrich Bohlmann and Prof. Jan van Heerden. Computable General Equilibrium Modelling UPGEM Training Course 8-12 May 2017, Department of Economics, University of Pretoria.
[10] Quantec Easy Data, Pretoria, 2024.

Together, these three types of impact create a ripple effect that can have significant benefits for the local community and economy.

3.1.2. Project elements

The Boegoebaai Port will be developed about 60km north of Port Nolloth, in different phases over the short and medium term. The Port implementation design has been divided into two stages of development, namely Phase 1A and Phase 1B. Completion of these phases is anticipated to span over the next 10 and 20 years, respectively. Phase 1A will include all roads, buildings and platforms. Phase 1B will comprise of a railway line, platforms for the marshalling yards, and tippler infrastructure and a road over rail bridge. Phase 1A is the focus of this socio-economic impact assessment and comprises the following major developments.

Table 2: Main Port Development Elements (Phase1A)

Breakwater construction	Port entrance facility
New multi-purpose berth	Multi-purpose terminal
New liquid bulk berth	Emergency services (fire station & clinic)
Manganese terminal	Boegoebaai Port roads and internal rail
Liquid bulk terminal	Admin craft harbour
Port administration building	Truck staging facility
Port control building	Cultural offset land

Source: Transnet, 2024

3.1.2.1. Marine infrastructure

The development of Marine Infrastructure forms the main and largest introduction[11] to the economy of the Richtersveld. The most prominent elements include the following:

ELEMENTS	DESCRIPTION
Temporary Works	The establishment of a quarry (including 10 km of haulage road) for the procurement of rock material
Breakwater	The construction of rubble mount breakwater (approximately 1200m long) requires specialised engineering and construction technologies.
Piled Quay Structure	Construction of berthing structures for liquid bulk and multi-purpose commodities (approximately 570m long).
	Piled Access Trestle - Construction of access trestle to support conveyor system for manganese. - approximately 85 m long.
Tug Harbour	Construction of the tug harbour- approximately 110 m.
Marine Services	Provision of port marine services and acquisition of tugs and associated fleet for marine operations. It is assumed that the tugboats will be imported.
Temporary Works	Establishment of a quarry (including 10 km of haulage road) for procurement of rock material, the establishment of a precast yard for the fabrication of precast concrete units and the establishment of a batch plant for mixing of *in situ* concrete.

[11] *The marine infrastructure is the largest investment, with the largest development impact during the development Phase 1A of Boegoebaai Port.*

3.1.2.2. Land infrastructure

The land-side infrastructure consists of:

- Multipurpose terminal, dry bulk stacking area and materials off-loading.
- Port administration and recreational building including a wellness centre, port authority building, port administration offices, satellite ablution buildings, emergency services building and workshops.
- Port gateway and induction centre.
- Liquid bulk storage.
- Structural engineering.
- Transportation infrastructure for Phase 1A consisting of internal port roads and bridges.
- Electrical engineering services.
- Electronic and Security Systems.

3.1.2.3. Skills requirements

The skills required for the construction and operation of the port can be categorised into three main categories, namely unskilled, semi-skilled and skilled people. Semi-skilled or unskilled positions typically require less specialised training and skill sets than skilled jobs. The table provides a summary of the skill categories, and the typical skills required.

Table 3: Typical skills required during construction and operation of the Port

Skills level category	Typical occupations	Skills required
Unskilled general labour *(an employee who does not use reasoning or intellectual abilities in their line of work)*	Elementary occupations Occupations unspecified	Loading and unloading materials Preparing sites for construction Digging or excavating trenches Setting forms Mixing cement and asphalt
Semi-skilled *(an individual who has specific skills and knowledge to perform their job duties without needing advanced education. An organisation can train semi-skilled employees on the responsibilities of the position).*	Clerks, service workers, shop and market sales workers, skilled agricultural and fishery workers, craft and related trade workers, plant and machine operators and assemblers.	Administrative staff, financial officers, communications officer, occupational health staff, engineering technician, electrician, maintenance manager, human resources staff, environmental officer, petty cash officer, drivers, trade hands, general labour, motorman, marine shore-hand.
Skilled *(highly trained, educated, or experienced segments of the workforce that can complete more complex mental or physical tasks on the job).*	Legislators, senior officials and managers Professionals Technical and associated professions.	Manager human resources, engineers (electrical, mechanical, civil, marine, structural, control & instrumentation, geotechnical), procurement manager, senior facilities manager, pilot, project managers, financial managers, information management, senior manager operations, senior accountant, harbour master, port manager, port engineer, pilot, information technology officer A etc.

Source: Transnet Typical Skills Requirement, 2024 and SRR Skills Database, 2024.

3.1.2.4. Estimated Operational Activity

During the operational phase of the Port, some businesses might be affected more than others. Below is a break down how different types of economic activities could be impacted upon. There are three types of industries that are connected to ports.

- The first type is called port-required industries such as, port management, port security, stevedoring, supervising entity for the maritime sector, freight forwarder, customs, tugs, dredging, shipowners, mooring services, ship chandlers, coast guard, port authority, etc. These are companies that offer services needed for ships to trade goods. These industries are the focus of the impact assessment, including the development (construction) of the port.
- The second type is port-induced industries such as, agriculture, forestry, and fishing, mining and quarrying, manufacturing, construction and wholesale and retail trade. These businesses sell products to other places through the port.
- The last type is, port attracted industries including restaurants, hotels, offices, road and rail freight services, commerce, recreational boating, etc. These firms are part of the port economic cluster (Adriano M. P. Santos, 2018).

3.1.2.4.1. Port-required industries

The proposed infrastructure at the Port provides the best indication of its nature and function and thus the typical industries that will be required in the Port. The tables below outline the spatial requirements of activities in terms of land and building size.

Table 4: Area of the different land zones

Land use	Area (m^2)
Administration area	10 000
Ship repair	30 000
Container terminal	70 000
Liquid bulk	60 000
Dry bulk	2 800 000
Multi-purpose terminal	400 000
TNPA other	6 000
Total Phase 1A	**3 376 000**
Light industrial (Phase 1B)	4 500 000

Source: TM Consulting and Nelutha Consulting, 2019

Based on the information shown, about 4.5 ha will be allocated in Phase 1A for the Port and its activities. It is important to note that this is based on projections and assumptions, and can change depending on local market forces, international demand and preference changes.

Table 5: Estimated building space required in Phase 1A to operate the port

Building	Area (m^2)
Induction building	1 420
Gateway offices (X3)	30 120
Weighbridge offices (X3)	30 120
Fire and emergency services	1 500

Building	Area (m^2)
Port administration building	3 270
Recreational building	1 390
Laydown area ablutions	60
Stockpile offices (x3)	720
Workshop	3 000
Total gross building space (Phase 1A)	**71 600**

Source: TM Consulting and Nelutha Consulting, 2019

The proposed building space provides a proxy to derive the estimated number of employment opportunities. The typical use of the building space is also valuable in assessing the likely number of workers that can be accommodated. The table below outlines the building function together with previous as well as the revised number of direct Port employment opportunities. The revised employment opportunities have been estimated based on the average space required per worker[12].

Table 6: Estimated employment opportunities to operate the Port during the commercialisation Phase 1A

Building Function	Previously estimated direct Port employment	Revised estimated direct Port employment
Wellness (Clinic)	5	5
TNPA Buildings	190	195
Emergency Services (Fire Station)	20	25
Arrival and Induction Centre (Port Entrance Facility)	25	25
Wash bays	5	10
Truck offloading area	5	10
Three terminals (MPT, Liquid bulk, Dry bulk)	150	150
Total	**400**	**420**

Source: Transnet Date, 2024

3.1.2.4.2. Port-induced industries

The port-induced industries encompass firms that import or export goods from the port. They are usually found in its hinterland[13]. They involve lower transport and reduced processing time for cargo at the port. They may also include savings in operating costs due to economies of scale and additional volumes. The proposed first phase of the new port is designed to export and import the commodities shown below.

[12] *The building space (net square meter) per person is based on industry database. This database has been developed based on surveys of function and net building space per worker.*

[13] Indirect benefits to port users include cost savings that arise from reduced operating costs, some of which may be realised outside the immediate port area.

Table 7: Export and import of commodities

Cargo Type-Commodity	Volume (Mpta) 2028	Volume (Mpta) 2035	Volume (Mpta) 2047
Dry bulk - Manganese	9.0	9.0	9.0
Break bulk – Lead/Zink	0.4	0.4	0.3
Break bulk - Magnetite	0.3	0.3	0.3
Break bulk - Ilmenite	0.3	0.3	0.3
Break bulk - Copper	0.1	0.1	0.0
Liquid bulk – Diesel Oil	1.3	1.4	1.6
Liquid bulk – Green Ammonia	0.1	1.2	1.4
Liquid bulk – e-Kerosene	0.0	0.1	0.4
Liquid bulk - Methanol	0.0	0.1	0.3
Liquid bulk - Naphtha	0.0	0.0	0.1
Containers – Agricultural Products	0.2	0.0	0.0
Containers - Tantalum	0.1	0.1	0.0
Containers – General cargo	0.5	0.0	0.0
Total Demand	**12.3**	**13.0**	**13.7**

Source: PRDW Boegoebaai Port Project Business Case Review, 30 Sept 2022.

3.1.2.4.3. Port-attracted industries

These industries and social infrastructure will develop as part of the Port Industrial Cluster and are discussed in more detail later in the report.

3.1.3. Data limitations and assumptions

Due to nature of the project[14] and certain limitations in the data and information, it was necessary to make assumptions to enable reasonable meaningful results. Information and datasets that are not readily available include, *inter alia*, direct job creation estimates during the construction and development phase, the salary and wage profile of workers, the availability of construction materials and machinery in South Africa and the import of skilled labour from the rest of the world, ie., certain professional skills. The main assumptions include:

- The socio-economic impact assessment assumes that the project feasibility is positive and that the project will take place.
- The expenditure figures reflect the real situation accurately enough for the purpose of the impact assessment.
- Not all materials, goods, services and machinery can be sourced locally or elsewhere in the country. Allowances must be made for the import of transport equipment, machinery goods and services.
- Production activities in the economy are grouped in 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.

[14] Greenfield project and forecasted values.

- The different measures of economic impacts cannot be added together and should be interpreted as separate economic impacts.
- The model quantifies direct and indirect economic impacts for a specific period of time. Therefore, the estimates that are derived do not refer to gradual impacts over time.
- No structural changes in the economy are experienced during the period.
- One employment opportunity is the equivalent of one person employed full-time for one year.
- Certain gaps in the information, such as employment remuneration, can be filled by industry standard average statistics from Stats SA.
- The update of development cost includes elements such as design and construction risk.
- The spatial distribution of the impacts is a function of the size and the sectoral composition of the local, provincial and national economies.
- Data and research in other ports in the country is proxied to fill gaps in the information to estimate the likely outcome of socio-economic impacts of Boegoebaai port.

3.1.4. Risks And Uncertainties

Projects of this nature and magnitude have risks and uncertainties. Although they have been mitigated with assumptions in developing the macro-economic impact assessment model, certain risks and uncertainties are highlighted below.

- There may be a decline in commodity exports that South Africa relies on and in imported manufactured goods.
- A change in the capital cost structure will have a direct effect on the quantification of the impacts.
- The life cycle of the CAPEX and OPEX phase influences the annual impacts.
- Labour based technologies during the construction phase may increase or decrease the estimated number of direct impacts. This in turn will have a direct effect on the indirect and induced impacts.
- The spatial effect of the impacts is difficult to assess because there is an absolute lack of information about the specific products in demand during the construction phase and the location of firms that can deliver those products at the required price, quality, volumes and time. Information in this instance can be surveyed at great cost but uncertainties will remain due to the nature and extent of the supply chain.
- A meaningful supply and demand of skills can only be done once more detailed project planning has been done.

3.2. MODEL RESULTS

The development of the Port will create a massive ripple effect through the Richtersveld in terms of new socio-economic development opportunities, growth and development. This subsection focusses on the nature and extent of this impact on all economic activities in the Richtersveld, in the province and of course, nationally. The following sub-sections provide the impact results of the SAM-modelling on the CAPEX and OPEX lifecycle of the Boegoebaai Port Project.

3.2.1. Construction Phase (CAPEX)

The economic impact of the Port and related infrastructure are provided in the following table.

Table 8: Boegoebaai Port – Economic impact during the construction period (2026-2031), at 2024 (Rm)

Impact Variable	Boegoebaai Port - CAPEX (2024) Impact			
	Direct	Indirect	Induced	Total
New business development (Rm)	12 592.6	3 429.3	11 833.7	27 855.6
Gross geographic product (Rm)	3 220.7	1 324.7	4 628.4	9 173.8
Employment	7 190	4 400	16 200	27 790
Total worker income (Rm)	1 723.4	706.2	1 974.9	4 404.5
Taxes(Rm)	731.9	240.7	750.1	1 722.7
Multiplying effect				
New business development (R'm)	1.0000	0.2723	0.9397	2.2121
Gross geographic product (R'm)	0.2558	0.1052	0.3675	0.7285
Employment	0.5710	0.3494	1.2865	2.2068
Total worker income (R'm)	0.1369	0.0561	0.1568	0.3498
Taxes (Rm)	0.0581	0.0191	0.0596	0.1368

Source: SRR Socio-economic Impact Model, 2024.

The total investment in developing the Port will increase total production in the RSA with R27 855.6m. Of this amount about 45% or R12 592.6m will be experienced at the Port site and direct environment (i.e. quarrying sites) while about 12% (R3 429.3m) will be created indirectly by suppliers of goods and services. The rest, 43% (R11 833.7m) is the induced impact that will be experienced by local, regional and national businesses. The multiplying effect of the investment is 2.21 implying that for every R1m of investment in the Port, R2.2m new business development is expected to take place.

The investment in the Port is expected to generate a total of about R9 173.8m of new GGP. This GGP is made up of R3 220.7m direct, R1 324.7m indirect and R4 628.4m induced impact effects. Total personal and company taxes is estimated to be in the order of R1 722.7Rm.

Total worker income is estimated to be R4 404.5m of which R1 732.4m or about 39% will directly find its way to the labour employed in developing the Port. This is a massive injection into the economy of the Richtersveld. The amount that will be absorbed depends on the existing and new business activities that will be developed in the local area. The total number of workers expected to be employed during the development of the port is 7 910 and the total number of jobs sustained in the country is estimated at about 27 790. Of this, about 4 400 are estimated to be sustained through the indirect and about 16 200 through induced effects of the Port development.

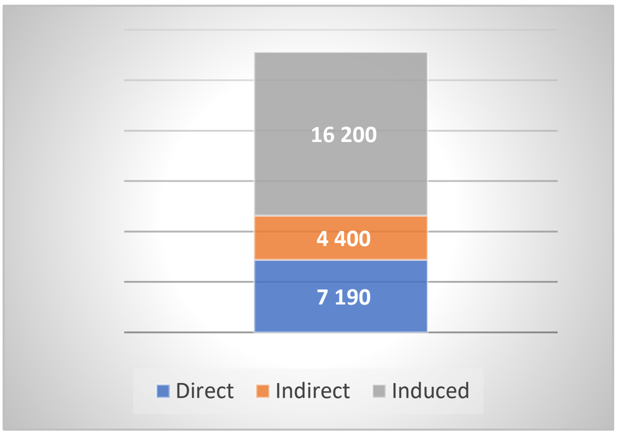


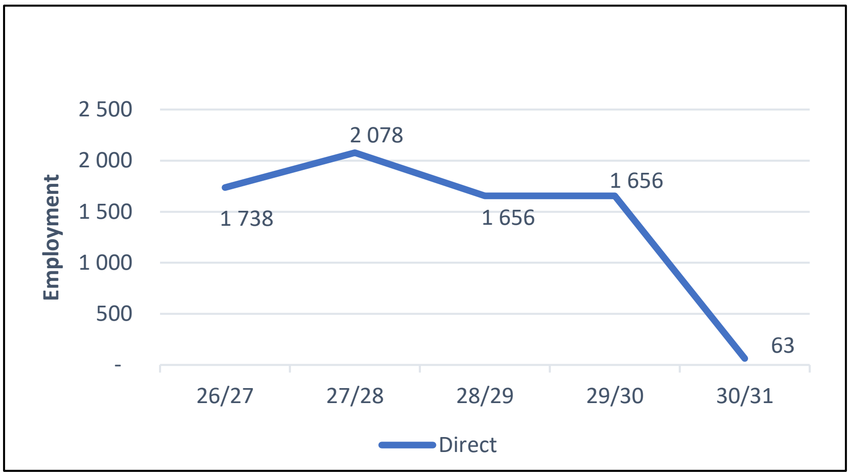
Table 9: Annual employment creation during the construction of the Port 2026 to 2031

CAPEX - Summary	26/27	27/28	28/29	29/30	30/31	Sustained jobs
Direct	1 738	2 078	1 656	1 656	63	7 190
Indirect	1 088	1 251	1 011	1 011	40	4 400
Induced	3 873	4 673	3 758	3 758	140	16 200
Total	**6 698**	**8 001**	**6 424**	**6 424**	**243**	**27 790**

Source: SRR Macro-economic Impact Model, 2024.

The period between 2027 and 2028 will experience the largest number of construction workers (2 078) on the site, whereafter it will decline to 1 656 between 2029 and 2030 and fade away to 63 in 2030 and 2031. This is also the period when the commercialisation of the port will commence.

Figure 4 Direct annual employment creation during the Construction Phase 1A



Once the construction of the port is complete, the economic impact of Phase 1A will end and, with the operation of the Port, new sustainable impacts will be created. The nature and extent of this impact depends on the function of the port, the port-induced and port-attracted industries.

3.2.2. Port Operational Phase (OPEX)

The operational impact assessment assumes that the Port will reach an annual turnover of about R2 000.0m (see Revised Business Plan, 2022) within the first 5 years of operation. The table below outlines the impact of the operation of the Port after the development of Phase 1A.

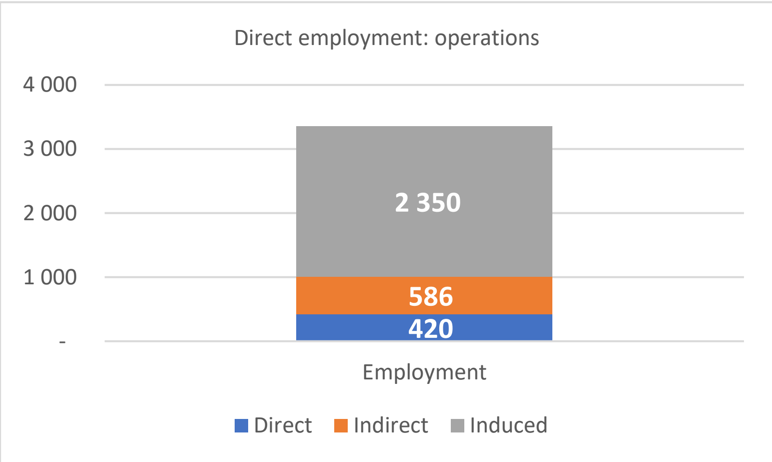
Table 10: Boegoebaai Port – Economic impact during the operational period (2036), at 2024 (Rm)

Impact Variable	Boegoebaai Port Opex Impact			
	Direct	Indirect	Induced	Total
New business development (R'm)	2 000.0	459.6	1 734.6	4 194.2
Gross geographic product (R'm)	735.7	177.0	684.4	1 597.2
Employment	420	586	2 350	3 356
Total worker income (R'm)	152.0	94.0	295.4	541.4
Taxes	97.4	33.0	113.9	244.2
Multiplying effect per R1,000,000				
New business development	1.0000	0.2298	0.8673	2.0971
GGP	0.3679	0.0885	0.3422	0.7986
Employment	0.2102	0.2928	1.1748	1.6779

Impact Variable	Boegoebaai Port Opex Impact			
	Direct	Indirect	Induced	Total
Tot. worker Income	0.0760	0.0470	0.1477	0.2707
Taxes	0.0487	0.0718	0.0657	0.0582

The operations of the Port will lead to R459.6m indirect new business development and a further R1 734.6m in induced effects. The total impact on the country's economy is estimated to be R4 194.2m per annum of which 47.7% will directly be attributed to the functioning of the Port. This will mean an injection of R735.7m additional GGP into the Richtersveld's economy.

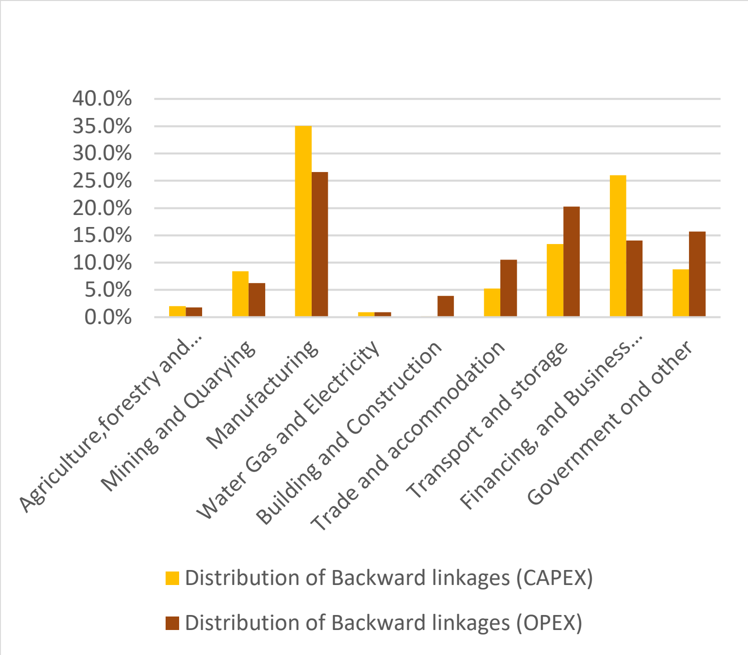
New direct employment creation at the port is estimated to be 420 new sustainable employment opportunities. The annual income is estimated at about R152m, of which most will be spent on consumer goods and services. Employment and business taxes are estimated at about R97.4m directly at the Port and a total income from this source to government of R244.2m per annum. The operations of the port will generate employment opportunities through the indirect and induced multiplying effects. The indirect employment opportunities are expected to be in the order of 586 which will be created by firms supplying the Port with goods and services. The induced employment opportunities are estimated at around 2 350 which will mainly be created by companies in the tertiary economic space such as retail trade, transport, financing real estate and business services, government and other services.



3.2.3. Economic linkages

Forward linkage refers to the fact that the product of industry is supplied as a material to another industry. Backward linkage refers to the fact that the product of industry induces demand for materials and enables the emergence of supply industries. For an industry, backward linkages are directed towards suppliers, while the forward linkages are directed towards consumers.

Figure 5: Backward linkages per main economic activity



During the development and operational phase of the Port, the backward linkages are summarised below. The chart shows that there is a demand for all the major economic sectors when developing and operating the Port. Most notable are the manufacturing, transport and business services sectors.

The total value of backward linkages during the development phase is estimated at R 2 388.0m per annum, and that of the operational phase at about R2 161.2m per annum.

The assessment shows that mining and quarrying (6.3 to 8.4%), the manufacturing (26.6% - 35.1%), trade and accommodation (5.2% to 10.5%), transport and storage (13.4% to 14.7%), finance and business services (14.1% to 26.0%) and Government services (8.7% to 15.7%) all create massive opportunities for new development and investment.

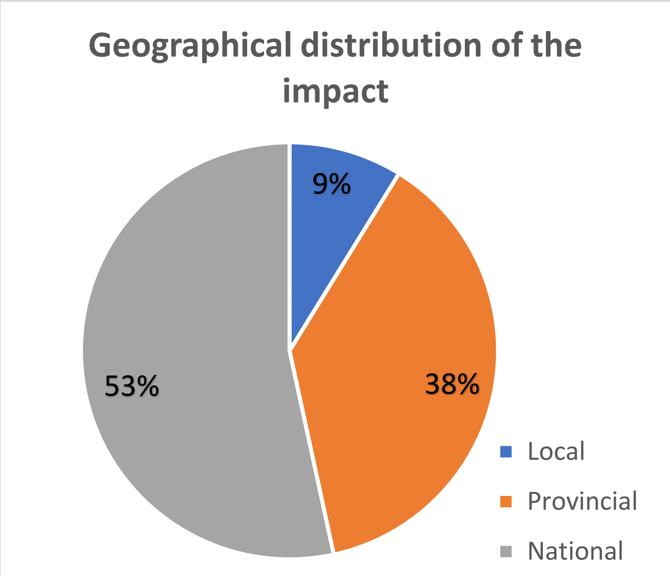
The backward linkages will create new business development opportunities locally, in the region and at a national level. The anticipated geographical distribution of these impacts is shown later in this subsection.

3.2.4. Spatial effects of impacts

The Port site is in an area with a relatively small population with limited local economic activities. The three local municipalities which are dominated by mining, namely Richtersveld, Nama Khoi and Khâi-Ma, have experienced significant fluctuations in growth rates between 1996 and 2022, essentially because of people who came from other regions to work in the mines during the period leading up to the commodity boom in 2012. After this period, the decline in growth can be attributed to the decrease in diamond mining activities and the closure of certain mines. Currently the main economic activities revolve around mining, fishing, tourism, trade and services. The main urban nodes include Alexander Bay and Port Nolloth.

Figure 6: Distribution of the employment impacts

During the development phase of the port, specialised construction equipment, machinery and materials will be required, and these will have to be brought in from elsewhere in the province, the country and even the rest of the world. The main commodity that the immediate hinterland of the Port is likely to provide, is labour, construction materials, consumer goods and services. Materials will be sourced locally for the rubble mound breakwater to the value of R5.4bn.



Based on a location quotient analysis, the Namakwa District Municipality has a higher manufacturing location quotient than the Richtersveld Municipality[15]. Following the same analysis, the Richtersveld Municipality has a comparative advantage over the district regarding mining and quarrying and the construction industry.

Sectors with high impact geographically include:

Local impact benefit of R731.1m per annum (9% of the total impact):

- Mining (quarrying)
- Manufacturing
- Transport and Storage
- Trade and Accommodation.

Provincial impact benefit R3 136.0m per annum (38% of the total):

- Transport and Storage
- Manufacturing
- Government Service
- Financing
- Real estate and Business Services
- Trade and Accommodation
- Building and Construction.

National impact benefits of R4 432.3m per annum (53% of the total).

- Manufacturing
- Transport and storage
- Trade and Accommodation
- Government Services
- Real estate and Business Services
- Building and construction

3.2.5. Skills

There is an overarching structural imbalance between the demand for and the supply of skills in the South African economy. Construction and mining are two major industries experiencing the biggest skills surpluses in the country. These industries typically attract a large contingent of skilled and

[15] *A location quotient (LQ) is an analytical statistic that measures a region's industrial specialisation relative to a larger geographic unit (usually the region or nation).*

unskilled labour, which could potentially explain why these industries are experiencing a surplus. In the case of mining, the surplus might also be because of the increasing use of machinery in the mining process (Department of Higher Education and Training, 2022).

The percentage of individuals in the age group 20 years and older who have attained at least Grade 12 has been increasing nationally since 2002, expanding from 30,5% in 2002 to 50,5% in 2022. Over this period, the percentage of individuals with some post-school education increased from 9,2% to 15,9%. The percentage of individuals without any schooling decreased from 11,4% in 2002 to 3,3% in 2022. Individuals with lower secondary qualifications or less were most common in Eastern Cape (32,9%) and Northern Cape (32,0%). Post-school qualifications were most common in Gauteng (20,8%) and Western Cape (20,4%) and least common in North West (11,3%) and Northern Cape (11,8%) (Stats SA, 2022).

The percentage distribution of educational attainment for individuals aged 20 years and older in the Northern Cape by 2022 is outlined below.[16]

- Other (0.1%)
- Post School (11.8%)
- NSC/Grade 12 (28.9%)
- Upper Secondary (23.4%)
- Lower Secondary (16.5%)
- Completed Primary (5.9%)
- Some Primary (9.6%)
- None (3.8%)

Just over 64% of the population aged 20 years and older in the Northern province have completed upper secondary and upward education. The demand for skilled, semi-skilled and unskilled labour is estimated to be about 2 078[17] during construction and 420 with the commercialisation of the Port. One can assume that the development contractor will have a core team, and that most construction workers will have to be sourced local and regionally.

Regarding the labour demand for Port operations, maritime personnel can be sourced from other port cities in the country, but due to the specialised nature of these jobs, labourers sourced locally and regionally will have to be trained by TNPA.

The main purpose is to develop the skills or human resource of the workforce, improve the quality of life of workers, prospects of work and labour mobility. Skills transfer is the process of effectively applying the knowledge and skills acquired during training to real-world job tasks and responsibilities[18].

Tenders can be targeted to empower specific groups, such as black women, youth and physically challenged persons. Stronger and more inclusive growth is required to address the poverty, unemployment, and inequality in the Richtersveld and its hinterland. The Boegoebaai Port is an ideal

[16] Stats SA, 2022
[17] Highest level of annual employees during the construction phase.
[18] Transport, Education and Training Authority, 2024

project with long term goals to rapidly change the structure of the economy and create new opportunities for more inclusive growth.

Transnet already has human resource development infrastructure such as the Maritime School of Excellence to empower employment in the workplace. Typical training offerings are outlined in the table below. The main services offerings of the school include:

- Marine operations
- Terminal operations
- Port Infrastructure
- Port Management, Terminal Management and Commerce

The school has more that more than 55 courses, ranging in duration form a few days up to one year.

Table 11: Maritime School of Excellence training modules

Marine Training	Functional Training (Port Terminal Operations)
Master Training	Cargo Coordinator: Containers, BreakBulk & Roro
Tug Master Port Operations	Rubber Tyred Gantry Crane
Motorman Grade II	Container Reach Stacker
2nd & Chief Engineer Port Ops	Rail Mounted Gantry
Berthing Master	Container Straddle Carrier
Coxwain	Ship-to-Shore Crane
Shorehands	Empty Container Handler
Steering & Lookout	Overhead Electrical Travelling Crane
Ordinary Seaman Deck	Planner Training- Containers
Bridge Resource Management	Hopper, Reclaimer, Bulk Stacker
Master Port Operations	BulkShip Loader and Wood Chip Loader
Ordinary Seaman Engine	Scrapper Reclaimer, Tripple Charger
General Purpose Rating	Tractor Trailer Combination

3.3. NEGATIVE IMPACTS/COSTS

Many of the negative impacts (costs) of the Boegoebaai Port will likely occur during the construction phase, where the main impacts will be the effects on the environment, potential displacement of households and loss of land for the agricultural sector. The identification of the negative impacts forms part of the Environmental Impact Assessment process and is not addressed in this study.

3.4. BENEFIT REALISATION MODEL

Benefit realisation assessment is crucial because it helps ensure the optimal benefits from the Boegoebaai Port. Benefits do not end with the development or commercialisation of the project. The first phase (construction period) is expected to last for about 5 years after which further phases will follow with their own impacts. The life cycle of the development of the Port together with commissioning it is a long-term venture. Having an excellent reporting and metrics framework helps to ensure the management of the benefits realisation. With such a framework, stakeholders can understand the return on investment and the value proposition.

3.4.1. Benefit Realisation Plan

Benefits are related to the realisation of the Boegoebaai Port strategy, goals and objectives. The plan consists of the following:

- Identify benefits – these normally include social, economic, physical, financial and environmental benefits. This report focuses on the socio-economic benefits only.
- Execute benefits - identified benefits form part of the portfolio to be managed and measured
- Sustain benefits - The process occurs after implementation and involves evaluating performance to maintain benefits.

3.4.2. Benefit Realisation Framework

The table below shows the benefits aligned with the project objectives and how they may be measured.

Table 12: A Framework for the Socio-Economic Benefit Realisation of the Boegoebaai Port

Outcomes	Benefit	Benefit Metric (CAPEX and OPEX Phase 1A)
OBJECTIVE ECONOMIC		
The Port must increase economic growth	Create additional GDP	Growth in total GDP Growth in Building and Construction GGP
	Opportunities for new business development	Procurement and tender policy to employ local labour and involve local business given price, volume, time and quality constraints
	Increase in worker income	Compare worker income in the Port with regional and national income (Stats SA – Household Survey)
The project must reduce unemployment in the area	Create sustainable job opportunities	Number of unemployed local people employed by the project
Develop equality, stable and sustainable labour pool	Opportunities for women	Number of women, as a percentage of total Port employment
	Opportunities for the youth	Number of youths as a percentage of Port employment
	Opportunities for the disabled	Number of disabled persons as a percentage of Port employment
Skills development and transfer	Trained, skilled labour force	Percentage of the labour force equipped with skills
New business development	Self-employed and job creation	Number of self-employed and employment facilitated
OBJECTIVE SOCIAL		
Sustainable livelihoods	Alleviate poverty	Percentage reduction in poor households
	Access to accommodation	Number of workers with decent accommodation
	Reduction in household transport cost	Change in average transport cost of workers
	Access to social infrastructure	Easy access to education, health and security infrastructure

3.4.3. Benefit Management

To ensures that the Boegoebaai Port programme remains focussed on the desired benefits and outcomes it is necessary to manage, track and control the realisation of benefits over time. Desired benefits are specific, measurable, agreed, realistic and time bounded. Effective programme and project management is an important element of the Benefit Realisation for successful delivery. Management should hold the organisation responsible for managing the Benefit Realisation and accountable for the ultimate realisation of benefits.

3.4.4. Roles and Responsibilities

The Benefit Manager will be responsible for the managing the Benefit Realisation of the Port. This is normally a permanent position separate from the programme. The Manager has the expertise and understanding of benefit realisation, an objective understanding of benefits, dependencies, measures and targets as well as the programme's approach to benefits realisation.

4. ECONOMIC SECTOR DEVELOPMENT OPPORTUNTIES

The purpose of this section is to understand the various commodities that may be exported or imported due to the establishment of the Boegoebaai Port.

4.1. REVISED COMMODITY MIX

The Boegoebaai Port Project Business Case Review[19] report researched and identified a revised mix of commodities that may be imported and exported through the port once established.

The estimated demand for commodity exports exceeds the current capacity of the existing export routes in South Africa. The Boegoebaai Port will be able to fulfil a portion of the shortfall in capacity. The current Phase 1A design makes provision for all exports and imports to be transported by road as the rail connections will only be constructed in Phase 2. The focus of the proposed commodity exports will be on Green Ammonia and Manganese. The products included in the base case are assumed to be routed to the port because it would be the closest port. The base case commodity mix includes general cargo during the initial stages, but after 2031 it would mainly be a dry-bulk and liquid bulk port due to capacity constraints.

In analysing the different commodity scenarios not only were demand patterns considered, but also the influence of logistics on the utilisation of the port. For this reason, the following priority commodities were identified as the most likely anchor commodities for the port:

- The base case commodity demand, used in the project evaluation, assumes that manganese volumes currently moving through the Port of Durban, Saldanha Bay and Lüderitz will be rerouted to Boegoebaai. This is due to similar overall export logistics costs and the ability to create capacity on the Sishen–Saldanha railway line, also known as the Ore Export Line (OREX). Additionally, it includes the Transnet Long Term Planning Framework (LTPF) capacity gaps in the port of Port Elizabeth to be rerouted to Boegoebaai in the longer term up to a maximum of 9 Mtpa due to port capacity. Thus, under the current Phase 1A scenario, none of the current Port Elizabeth volume would re-route via Boegoebaai.
- In terms of iron ore, the view is that potential volumes would rather fill the gap caused by freeing rail/port capacity on the OREX and Saldanha networks and due to the very low rate applied to railing iron ore on OREX, no iron ore would move through Boegoebaai.
- Other minerals such as zinc, lead, Ilmenite and magnetite would route through the lowest cost solution via Boegoebaai due to distance advantages as well as the ability to not have to go through inland terminals.
- The proposed development of green hydrogen production in the region focusses on the export of Green Ammonia that now becomes a major commodity for the new port.
- Diesel volume imports are linked to general economic activities in the Northern Cape and the cost savings to be realised by reducing road transport from Cape Town.
- For the remaining commodities, a less conservative view has been considered in each case although the agricultural and general cargo numbers have also been capped due to port capacity.

[19] PRDW Report No. S2148-PW-PP-001-RA30, 30 September 2022

The proposed Phase 1A of the new port is designed to export and import the commodities shown below.

Table 13: Phase 1A proposed commodity mix, Volume (Mtpa)

Volume (Mtpa)	2028	2035	2050
Manganese	9.0	9.0	9.0
Lead/zinc	0.4	0.4	0.3
Magnetite	0.3	0.3	0.3
Ilmenite	0.3	0.3	0.3
Copper	0.1	0.1	0.0
Diesel oil	1.3	1.4	1.6
Green ammonia	0.1	1.2	1.4
e-Kerosene	0.0	0.1	0.4
Methanol	0.0	0.1	0.3
Naphtha	0.0	0.0	0.1
Agricultural products	0.2	0.0	0.0
Tantalum	0.1	0.1	0.0
General cargo	0.5	0.0	0.0
Total	**12.2**	**12.8**	**13.5**

Source: PRDW Boegoebaai Port Project Business Case Review, 30 Sept 2022

The design volume Phase 1 of the port is to be 13.5 million tons per annum (Mtpa) by 2050, up from the starting volume of 12.2 Mtpa in 2028. The manganese export starts at 9Mtpa in 2028 and stays constant until 2050, which is 73% of volume in 2028 and declining to 66% by 2050 as total volumes rise.

Table 14: Percentage Distribution of Products by Volume

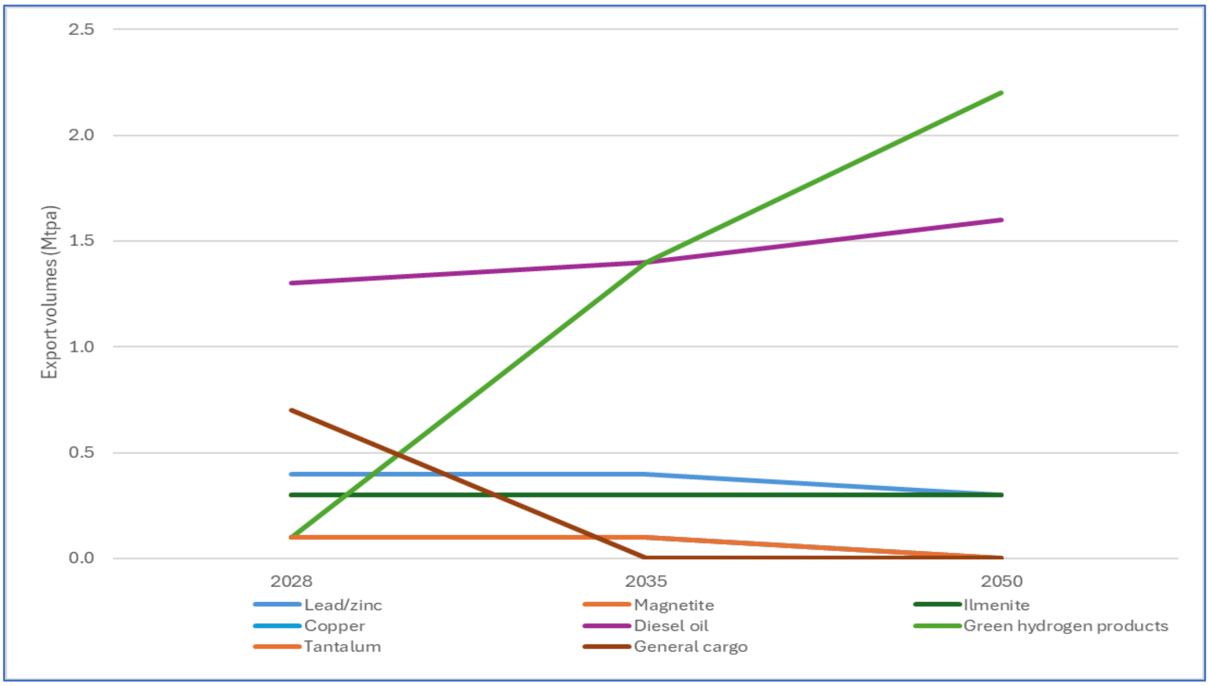
Commodity	2028	2035	2050
Manganese	73%	69%	66%
Lead/zinc	3%	3%	2%
Magnetite	2%	2%	2%
Ilmenite	2%	2%	2%
Copper	1%	1%	0%
Diesel oil	11%	11%	12%
Green ammonia	1%	9%	10%
e-Kerosene	0%	1%	3%
Methanol	0%	1%	2%
Naphtha	0%	0%	1%
Agricultural products	2%	0%	0%
Tantalum	1%	1%	0%
General cargo	4%	0%	0%
Total	**100%**	**100%**	**100%**

Source: PRDW Boegoebaai Port Project Business Case Review, 30 Sept 2022

The other main product to be exported are the products of the green hydrogen plant. These include green ammonia, e-Kerosene, methanol and naphtha with combined quantities starting at 0.1 Mtpa in 2028 and as the plant gets into full production up to 2.2 Mtpa by 2050. This means that it will contribute 1% in 2028 and increase to 16% of total volume by 2050. The other main product proposed is the import of diesel oil which will increase from 1.3 Mtpa in 2028 to 1.6 Mtpa by 2050 which means a contribution of 11% to volume increasing to 12%.

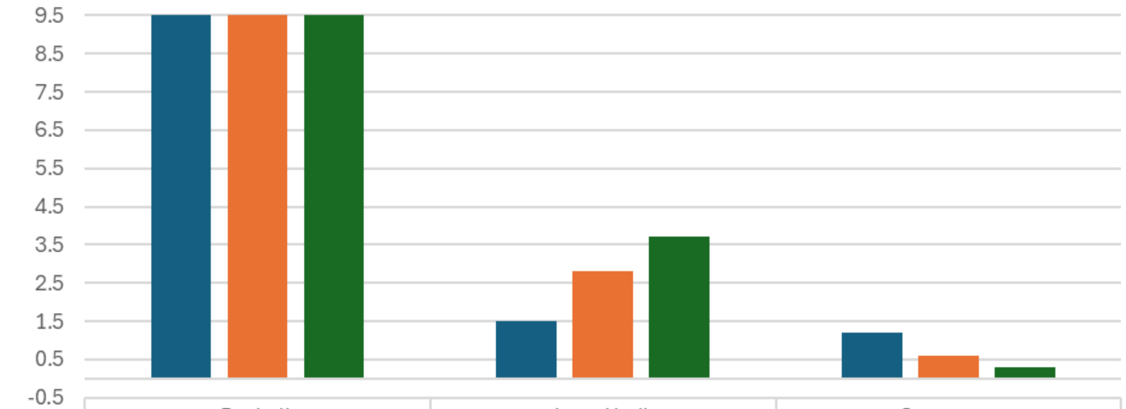
Other less significant products include the minerals lead, zinc, magnetite, ilmenite and copper which together constitute 1.1 Mtpa (9%) in 2028, decreasing to 0.9Mtpa or 6% by 2050 mainly because of capacity constraints at the port rather than insufficient demand. In 2028 because there will be unutilised capacity at the port, it was proposed to include container transportation. In 2028 1.2 Mtpa will be via containers or 7% of volume. The containers could contain 0.2 Mtpa agricultural products, 0.1 Mtpa tantalum, 0.4 Mtpa lead/zinc and 0.1 Mtpa Copper for export and 0.5 Mtpa of general cargo for import. This figure will drop to 0.6 Mtpa by 2035 and 0.3 Mtpa by 2050 mainly due to capacity constraints at the port rather than demand.

Figure 7 Proposed Commodities mix, excluding Manganese (Mtpa)



In terms of the cargo type, manganese will be transported in dry bulk, the remaining minerals in dry bulk or containers while the green hydrogen products will be liquid bulk. Containers will be utilised for agricultural products, tantalum, lead/zinc, copper and general cargo. As can be seen, the dry bulk remains constant over the period while the liquid bulk increases at the expense of the containers. Dry bulk cargo refers to dry freight that is loaded directly into the hold of a shipping vessel without being packed or wrapped. Breakbulk cargo refers to freight that cannot be and is not containerised. It is loaded in bags, drums, pallets, or as loose cargo on the deck of a shipping vessel. A shipping container is a standardised reusable steel box used for the storage and movement of materials and products. It is strong enough to withstand shipment, storage, and handling and is designed to be moved from one mode of transport to another without unloading and reloading. Most shipping containers have a standard width of just under 2.5 metres (8 feet) and by far the most common choice is between container lengths of just over 6 metres (20 feet) or just over 12 metres (40 feet).

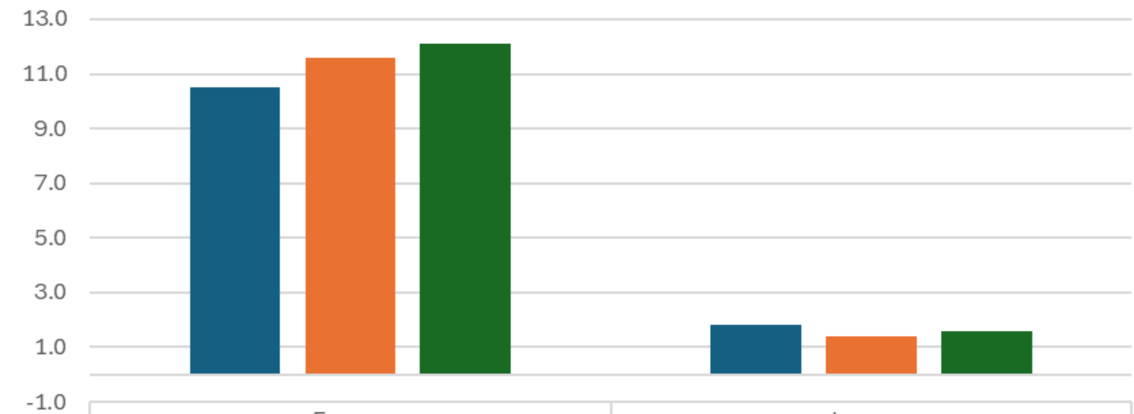
Figure 8 Proposed Cargo Type[20]



	Dry bulk	Liquid bulk	Containers
2028	9.5	1.5	1.2
2035	9.5	2.8	0.6
2050	9.5	3.7	0.3

The proposed exports will increase from 10.5 Mtpa in 2028 to 12.1 Mtpa by 2050, mainly as a result of the growth of the green hydrogen products. The imports remain relatively constant due to the increase in diesel oil imports while the general cargo imports are discontinued by 2035.

Figure 9 Proposed Imports and Exports[21]



	Exports	Imports
2028	10.5	1.8
2035	11.6	1.4
2050	12.1	1.6

4.2. PRODUCTS DESCRIPTIONS

The main products for export are described under the headings, Minerals and Green Hydrogen. These products constitute 88% of the total commodity mix in 2050. The other products relate to the import

[20] PRDW Boegoebaai Port Project Business Case Review, 30 Sept 2022
[21] PRDW Boegoebaai Port Project Business Case Review, 30 Sept 2022

of diesel as well as agricultural and general cargo which will initially form part of the commodity mix in 2028 but will cease by 2050 due to lack of port capacity.

4.2.1. Minerals[22]

The Department of Mineral Resources and Energy (DMRE) has confirmed that the Northern Cape is a commodity-rich province with a wide variety of minerals, including, among others: diamonds, manganese ore, iron-ore, lithium, rare earths, fluorspar, zinc, copper, lead and molybdenum ore, with these widespread over a vast geographical area. These mineral resources could help catapult the provincial economy to becoming a major contributor to the national gross domestic product with more junior miners becoming involved. Mining is growing at a steady rate in the province. For example, between 2011 and 2021, the Northern Cape office received more than 204 applications for mining rights, over 3 145 applications for prospecting rights and over 960 applications for mining permits.

4.2.1.1. Manganese

The manganese mining industry is the Northern Cape province's major economic driver. In 2022, the manganese mining industry employed over 14 500 people and generated more than R7-billion in tax revenue. South Africa is the world's largest producer and exporter of manganese ore and in 2019, accounted for 30% of global production and almost 50% of global exports. There are approximately 23 operating manganese mines in the Northern Cape.

The steel and construction sector continue to represent the most significant demand for manganese. Altogether, this industry is responsible for 85 to 90 % of all manganese purchases. The second largest buyer of manganese is for the disposable and rechargeable battery space. Many experts believe that manganese's demand is set for a rapid increase, driven by the future electric vehicle, hybrid vehicle and energy backup storage device manufacturing industries.

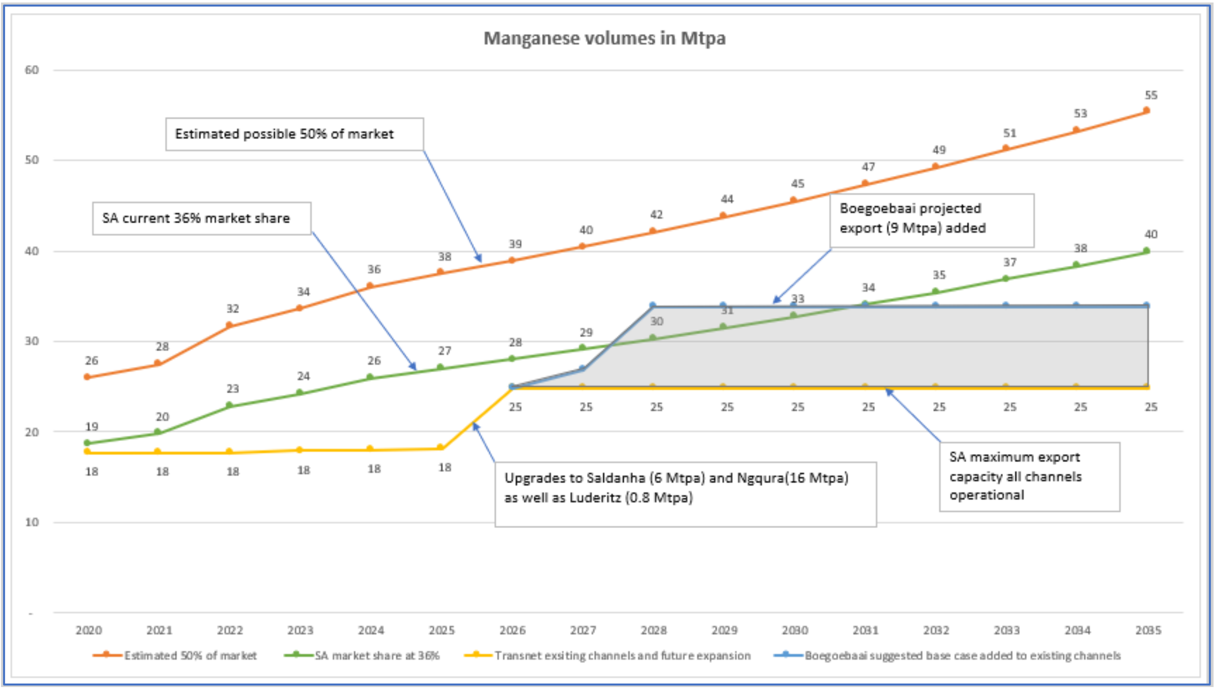
Manganese-rich cathode materials are currently being developed to boost the efficiency of electric vehicles. This, in turn, will increase the demand for the metal. In addition to its use in batteries, manganese is essential for producing several other green power technologies. Further enhancing its reputation as a green-friendly mineral is that it can also treat wastewater and extract pollutants from soil and air.

The export of manganese is currently constrained by capacities due to the different intermodal export solutions. Boegoebaai and the country could benefit from consolidating all minor flows, including all the off-route manganese such as the 3 Mtpa of manganese flows to Saldanha on the OREX rail line, the 1.5 Mtpa manganese flows by road and rail to Durban and the 1 Mtpa originating from the Northern Cape and presently destined for the Port of Lüderitz. The surface transport pricing of manganese to these ports is of such a nature as to make Boegoebaai a more competitive alternative. According to Transnet's LTPF, by the year 2050, the total demand for manganese is projected to be

[22] The inputs on Minerals have been extracted and combined from the list under Minerals in the References section of the report.

between 40 and 55 Mtpa. It is projected that Boegoebaai would have reached export capacity at 9 Mtpa due to road haul limitations

Figure 10: Projected Manganese Volumes (Mtpa)[23]



4.2.1.2. Zinc, lead and copper

The Northern Cape supplies 13% of the country's zinc and lead exports but, as with manganese and iron ore, both zinc and lead are transported out of the province and primarily exported through the Port of Saldanha Bay.

The Vedanta Group comprises three mines namely Black Mountain Mine, the Gamsberg Project and Skorpion Zinc Mine. Lead and zinc from Gamsberg and Skorpion mines should benefit immediately from a shorter logistics chain and could potentially be the first minerals to use the port facility at Boegoebaai. The distance between the mine and the Port of Boegoebaai will be significantly less than the distance between the mine and the Port of Saldanha Bay or Walvis Bay which will result in reduced cost and greater profit to the mine. Zinc, lead and copper are currently exported by road or rail via the OREX line using an intermodal solution. Diverting this traffic to Boegoebaai will release additional capacity through Saldanha Bay. The Gamsberg Phase II Investment approval was announced in March 2022 and will more than double Gamsberg's annual ore capacity from 4 million to 8.5 million tonnes.

The Prieska Copper Zinc Mine is the centrepiece of Orion's future-facing metals portfolio. Initially around 100 jobs are anticipated, scaling up to more than 1 500 employees and contractors during construction, with a steady employment estimate of 840. As of end July 2022, R623 million has been spent on the project and an additional R4.1-billion will be needed to construct the mine. The Okiep

[23] PRDW Boegoebaai Port Project Business Case Review, 30 Sept 2022

Copper Projects total resources currently stand at 12 million tonnes. This resource estimate covers an initial six deposits and is based on a detailed review of historical drilling data and subsequent geological modelling. Orion sees excellent potential to further expand this resource base. The Jacomynspan Nickel-Copper-Cobalt-PGE sulphide (JMP) project offers the potential for a Class-1 nickel-copper-cobalt-PGE-gold underground and open pit mining operation that offers an exceptional opportunity to feed South Africa's first prospective refinery producing high-purity metal powders for use in the electronics and chemical industries

4.2.1.3. Magnetite and Ilmenite

Magnetite

Magnetite is a very common iron oxide mineral that is found in igneous, metamorphic, and sedimentary rocks. It is the most mined ore of iron and the mineral with the highest iron content (72.4%). Vedanta Zinc has re-launched the BMM Magnetite Project, an innovation opportunity identified to create value from waste by extracting magnetite iron ore from processing the current Black Mountain Operations zinc plant tailings stream. As in the case of zinc, lead and copper from the Vedanta Group, the distance between the mine and the Port of Boegoebaai will be significantly less than other options being pursued and will result in reduced cost and greater profit to the mine.

Ilmenite

Ilmenite is a common accessory mineral in igneous rocks, sediments, and sedimentary rocks in many parts of the world. Ilmenite is the primary ore of titanium, a metal needed to make a variety of high-performance alloys. Most of the ilmenite mined worldwide is used to manufacture titanium dioxide, an important pigment, whiting, and polishing abrasive. The Tronox Namakwa Sands Mine is the only remaining Ilmenite mine in the Northern Cape Province. The mine has a reported production rate of 550,000 tonnes per annum, all of which is exported through the Port of Saldanha Bay where there is also a processing plant and a rail system in place. Boegoebaai could serve as an alternative to the Port of Saldanha Bay which will lead to reduced transport costs. It is estimated that 0.5 Mtpa would be available for export through Boegoebaai. This is a new demand arising from the reworking of Alexkor tailings. This would also have the effect of freeing capacity through Saldanha port allowing more junior iron ore miners to utilise the highly cost-effective OREX solution.

4.2.1.4. Tantalum

The element tantalum is a hard, dense, silvery metal. When tantalum is exposed to air, it forms a durable oxide film which is highly resistant to corrosion. Tantalum is considered a "critical mineral" in domestic metallurgical applications that serve aerospace, defence, energy, electronics, and telecommunications technologies. It is proposed that Tantalum is exported using containers once the port is operational. It is expected though that due to capacity constraints exports will not continue after 2035 from Boegoebaai Port. Marula Mining has approved a nearly R26m resource drilling exploration and mine planning programme at the Blesberg lithium and tantalum mine which has been the largest source of tantalum in the country.

4.2.2. Green hydrogen and associated products[24]

Sasol has completed a pre-feasibility study into the Boegoebaai green hydrogen/ammonia export opportunity and has confirmed that it has the potential to be technically and economically viable with successful partnering as one of the key enablers. Sasol and the Industrial Development Corporation (IDC) are funding a feasibility study to determine the feasibility of building a global export hub for green hydrogen and ammonia at the port which is expected to be completed in 2025.

The Boegoebaai Green Hydrogen Programme was gazetted in December 2022 as one of the South African Government's Strategic Integrated Projects (SIP) and has reserved a prime location within the Special Economic Zone (SEZ). This opportunity's location and classification as a SIP are key enablers to exploring Boegoebaai' s potential as a global multi-investor green hydrogen hub.

Sasol's plans include:

- At full capacity the Boegoebaai plant could drive the development of 9GW of dedicated renewable energy capacity.
- 5GW of electrolyser capacity producing 400 ktpa of H2.
- Project is envisioned to utilise a 60/40 solar/wind renewable energy supply.
- Partnering with the private sector to build a green hydrogen pipeline system to connect projects across the province to the SEZ.
- Partnering with Transnet for the deployment of dedicated rail infrastructure to link green hydrogen producers to the SEZ, as well as other ports in the country.

South Africa has the potential to become a leading producer of green hydrogen. Green hydrogen will be in high demand as countries aim to reduce carbon emissions, especially in sectors like transportation and heavy industries. The country is actively pursuing the Hydrogen Economy as a strategic development opportunity, aiming to capture a significant share of the global hydrogen market, thereby generating economic growth and jobs . The Hydrogen Economy is projected to contribute 3.6% to South Africa's GDP and create 380 000 jobs by 2050.

Green hydrogen is not only a zero-carbon energy carrier, but also an enabler and thus the basis for all other green technologies. It can be used to create a suite of products including green methanol, green ammonia, explosives, synthetic fuels, and synthetic natural gas.

4.2.2.1. Green ammonia

Ammonia is a pungent gas that is widely used for various industrial applications, such as plastics, explosives, and synthetic fibres. It is a globally manufactured and traded commodity. The current annual global production of ammonia is approximately 180 million tonnes. The projected annual growth rate of ammonia production is estimated between 1 and 1.5%.

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[24] The inputs on green hydrogen and associated products have been extracted and combined from the list under Green Hydrogen in the References section of the report.

In addition to progressive decarbonisation of ammonia for fertiliser and industrial applications, there is an emerging future for ammonia as a fuel and energy vector. It is a facilitator for the hydrogen economy, acting as a chemical medium to store hydrogen while eliminating the unique safety risks and technological challenges associated with Hydrogen storage and transportation. The concept here is that Ammonia made by electrolysis of water to hydrogen and subsequent synthesis, would be transported to Hydrogen consumers as Ammonia, using existing Ammonia infrastructure and supply chains. At the user end, Ammonia would be cracked catalytically to yield Hydrogen and Nitrogen. Ammonia is well understood by the industry in terms of safety aspects, technologies, and the industry operational practices are standardised across the world. Global market access is ensured by the huge existing Ammonia transportation and storage infrastructure. The two most promising initiatives that augur well for marketing Green Ammonia as a Carbon neutral energy vector are ship transportation and power generation.

4.2.2.2. Green methanol

Methanol is a colourless liquid mainly used for producing other chemicals such as formaldehyde, acetic acid and plastics. It can be used as a fuel source for engines. Unlike traditional methanol, which is derived from fossil fuels, green methanol is produced from low-carbon sources such as biomass, or via carbon capture. Compared to conventional fuels, green methanol can reduce carbon dioxide emissions by 60-95%, reduce nitrogen oxide emissions by 60-80% and almost eliminate sulphur oxide and particulate matter emissions. A total of 140 000 tons of methanol is consumed per annum in South Africa. Sasol is the sole producer of methanol (Grey, from natural gas) and consumes 60% of the methanol they produce.

Green methanol can be blended with traditional gasoline or diesel fuel, offering a seamless transition for vehicle owners and minimising the need for infrastructure upgrades. This makes it an attractive option for countries and industries looking to reduce their carbon footprint without disrupting their current operations. Another advantage of green methanol is its versatility. It can be used not only as a transportation fuel but also as a feedstock to produce other valuable chemicals and materials. This opens new opportunities for the chemical industry to reduce its reliance on fossil fuels and move towards a more sustainable and circular economy. Green methanol production is still low, with less than 0.2 million tonnes produced annually, versus 98 million tonnes of conventional methanol made from fossil fuels.

The market for green methanol is growing though, with several countries and industries recognising its potential. In China, methanol is being used as a fuel for buses and heavy-duty vehicles. While in the maritime sector, methanol is being considered as a potential alternative to traditional bunker fuels. With global shipping responsible for 90% of world trade and 3 to 4% of greenhouse gas emissions, the sector is under increasing pressure to decarbonise.

4.2.2.3. E-kerosene

E-Kerosene, corresponds to the wider group of E-Fuels, also called synthetic advanced fuels, or synfuels. Synfuels are produced from carbon dioxide and green hydrogen. The liquid which is produced is no different in its structure than fossil fuel. It can be later refined into different subtypes, such as normal gasoline, diesel, or kerosene. Thus, it can be used in any normal combustion engine, i.e., today's aviation engine technology, plus also for land and maritime transport. In this sense it serves as a drop in fuel, as no modifications to existing infrastructure needs to be made. To decarbonise, the aviation sector requires an alternative to fossil kerosene which can be scaled up to meet the fuel demands of the sector.

4.2.2.4. Naphtha

Renewable naphtha is an intermediary product that converts to gasoline, plastics or feedstock for hydrogen production and is a byproduct that refineries already produce when they convert renewable feedstock into diesel. In the past, renewable naphtha production decreased due to low prices and low demand. Recently, however, there has been an uptick in demand and prices.

4.2.3. Bulk fuels

The reduced travel distances from a dedicated bulk fuel terminal in Boegoebaai would result in a lower logistics cost for the import of diesel to the Northern Cape. It is therefore assumed that 1.3 Mtpa of diesel can be imported at the port, ramping up to 1.6 Mtpa in 2050.

South Africa is a major importer of fuel and petroleum products with the three biggest receiving ports being Durban, Richards Bay and Cape Town. Currently, 3.47 Mtpa fuel and petroleum products are imported through the Western Cape Province for use in both the Western Cape and Northern Cape. As a result of Boegoebaai's location in relation to the mines, a large portion of the volume for the Northern Cape could be processed through a liquid bulk terminal established at the Port of Boegoebaai. There is thus a strong case for inward transportation of bulk fuels (tanktainers and conventional road tankers) to economic clusters in Upington, Sishen, Postmasburg, Hotazel and Kuruman depending on a favourable Boegoebaai diesel price (compared to other existing ports). The Northern Cape will use an estimated 70% of the diesel due to the large mining industry within the region. It is assumed that the diesel imports will be via liquid bulk vessels (i.e. tankers) in 50,000 tonnes parcel sizes, i.e. 26 vessel calls per annum.

4.2.4. Agricultural products

The Orange River is the most important geographical feature of the Northern Cape, providing irrigation to support a thriving grape, sultana and wine industry. The agricultural complex in and around Upington requires refrigerated container transport (i.e. reefer containers) for the export of fresh produce. Produce ranges from grapes, lucerne, cotton, wheat, corn, carrots, potatoes, ground nuts and soya beans. Presently the dominant export terminal is in Cape Town, 837 km by road and approximately 1,300 km by rail.

The road and rail distance to Boegoebaai is only 600 km. Boegoebaai could be established as a fresh produce container terminal. It is expected that agricultural produce will be amongst the first commodities to be exported but this will decline due to reduced port capacity when the green hydrogen plant is fully functional

4.2.5. General cargo

Boegoebaai's location in relation to the mines in the Northern Cape and specifically the offshore diamond mining industry, makes it an obvious choice for the import of equipment and project related cargoes. In the short term, 0.3 Mtpa of general cargo in the form of containers (i.e. approximately 25 000 TEU per annum) is considered which could increase in the medium term. It is expected that general cargo containers will be amongst the first to be imported but this will decline due to reduced port capacity when the green hydrogen plant is fully functional.

4.3. POTENTIAL FINANCIAL VALUE AND EMPLOYMENT

The potential financial value and employment is determined in this section for all commodities passing through the port in 2050. Financial values and employment are provided for a minimum and maximum value due to:

- Green hydrogen – new technology and large producers are not operating yet
- Green hydrogen products values are likely to fall once it becomes more readily available
- Enormous differences in value of previous mineral sales due to quality, quantity, contracts versus spot prices, etc.

The calculations are made for the commodities at source, i.e. the mine or plant and for the transport of the products to or from the port. The values were not determined for the port itself as this will be addressed in the following section. The values will be determined for the sales value of the products mined or manufactured in Rands for 2023, and no changes are included due to changes in commodity prices or inflation.

4.3.1. Commodity Source

The expected sales value of commodities produced in the Northern Cape that are exported through the port are provided below.

Table 15: Value of products per annum

Commodity	2028			2050		
	Volume (Mtpa)	Sales value (R millions) Minimum	Sales value (R millions) Maximum	Volume (Mtpa)	Sales value (R millions) Minimum	Sales value (R millions) Maximum
Manganese	9.0	18 000	25 200	9.0	18 000	25 200
Lead/zinc	0.4	7 200	10 000	0.3	5 400	7 500
Magnetite	0.3	1 350	1 650	0.3	1 350	1 650
Ilmenite	0.3	1 350	1 900	0.3	1 350	1 900
Copper	0.1	1 800	2 500	0	0	0
Green hydrogen products	0.1	1 100	1 300	2.2	20 000	30 000
Containers mixed	0.8	4 000	6 000	0.0	0	0
Total	**12.2**	**34 800**	**48 550**	**13.5**	**46 100**	**66 250**

Note: Diesel oil is imported and therefore no additional value to the local economy

The potential employment at the mines and plant in the Northen Cape is provided in the table below.

Table 16: Direct employment during production

Commodity	2028			2050		
	Volume (Mtpa)	Employment		Volume (Mtpa)	Employment	
		Minimum	Maximum		Minimum	Maximum
Manganese	9.0	4 700	6 300	9.0	4 700	6 300
Lead/zinc	0.4	200	250	0.3	150	200
Magnetite	0.3	80	120	0.3	80	120
Ilmenite	0.3	130	180	0.3	130	180
Copper	0.1	50	70	0	0	0
Green hydrogen products	0.1	100	250	2.2	3 750	6 000
Containers mixed	0.8	350	550	0.0	0	0
Total	**12.2**	**5 610**	**7 720**	**13.5**	**8 810**	**12 800**

Note: Diesel oil is imported and therefore no additional value to the local economy

4.3.2. Transportation

As Phase 1A of the Port excludes rail transport, the transportation of commodities by truck was calculated as shown in the tables below.

Table 17: Value of Transportation of Commodities per annum

Commodity	2028			2050		
	Volume (Mtpa)	Sales value (R millions)		Volume (Mtpa)	Sales value (R millions)	
		Minimum	Maximum		Minimum	Maximum
Manganese	9.0	1 680	2 880	9.0	1 680	2 880
Lead/zinc	0.4	90	130	0.3	60	100
Magnetite	0.3	60	100	0.3	60	100
Ilmenite	0.3	60	100	0.3	60	100
Copper	0.1	30	50	0.0	0	0
Diesel	1.3	240	420	1.6	300	500
Green hydrogen products	0.1	0	0	2.2	0	0
Containers mixed	0.8	160	260	0.0	0	0
Total	**12.2**	**2 320**	**3 940**	**13.5**	**2 160**	**3 680**

Note: Green hydrogen products are pumped to port, therefore no transport costs

Table 18: Employment from Transportation of Commodities per annum

Commodity	2028			2050		
	Volume (Mtpa)	Employment		Volume (Mtpa)	Employment	
		Minimum	Maximum		Minimum	Maximum
Manganese	9.0	1 600	2 300	9.0	1 600	2 300
Lead/zinc	0.4	80	100	0.3	60	80
Magnetite	0.3	60	80	0.3	60	80
Ilmenite	0.3	60	80	0.3	60	80
Copper	0.1	30	40	0.0	0	0
Diesel	1.3	230	340	1.6	300	400
Green hydrogen products	0.1	0	0	2.2	0	0
Containers mixed	0.8	150	200	0.0	0	0
Total	**12.2**	**2 210**	**3 140**	**13.5**	**2 080**	**2 940**

Note: Green hydrogen products are pumped to port, therefore no transport costs

5. THE RECIPIENT BENEFICIARIES

5.1. A PROFILE OF THE RECIPIENT POPULATION.

The proposed Port of Boegoebaai is located within the Richtersveld Local Municipality within the Namakwa District Municipality of the Northen Cape Province (NCP). Three main areas of impact of the Port are identified as being 1) the local area (defined as the Richtersveld Local Municipal area), 2) the Namakwa District and the Northern Cape Province, and 3) national and international areas of impact.

The Richtersveld is a local municipality in the Namakwa District of the Northern Cape Province. The Richtersveld Municipality is the most north-western municipality in the Northern Cape and is the smallest and most isolated of the six local municipalities of the district (. It is one of the poorest municipalities making up only 6% of the district's geographical area. More than 80% of the population live in small, dispersed urban settlements. The Richtersveld has a uniquely dry and barren landscape and hosts a community conservancy. Rainfall is minimal and water is scarce. The vast plains of the area are beautiful, with unique characteristics that attract tourists.[25]

The Richtersveld Municipality consists of six towns of which two are situated along the R382:

- Port Nolloth
- Alexander Bay

The four smaller communities, varying in size and are in the vast rural area of Richtersveld. They are:

- Sanddrift
- Eksteenfontein
- Kuboes
- Lekkersing.

In 2022 the total population of Richtersveld was 24 235 and the greatest concentration of people was in Port Nolloth followed by Alexander Bay and Sanddrif as summarised in the following tables and figures.

Table 19: Demographic and socio-economic indicators, Namakwa DM and Richtersveld LM.

INDICATORS	Namakwa DM	Richtersveld LM		
	2022	2011	2016	2022
Population	**148 935**	**11982**	**12487**	**24235**[26]
Age Structure				
Population under 15	23.10%	23.80%	20.40%	24.10%
Population 15 to 64	67.40%	70.20%	72.40%	68.90%
Population over 65	9.50%	6.00%	7.20%	6.90%
Dependency Ratio				
Per 100 (15-64)	48.2	42.5	38.1	45.1
Males per 100 females	96.4	110.9	113.2	103.1
Population Growth				

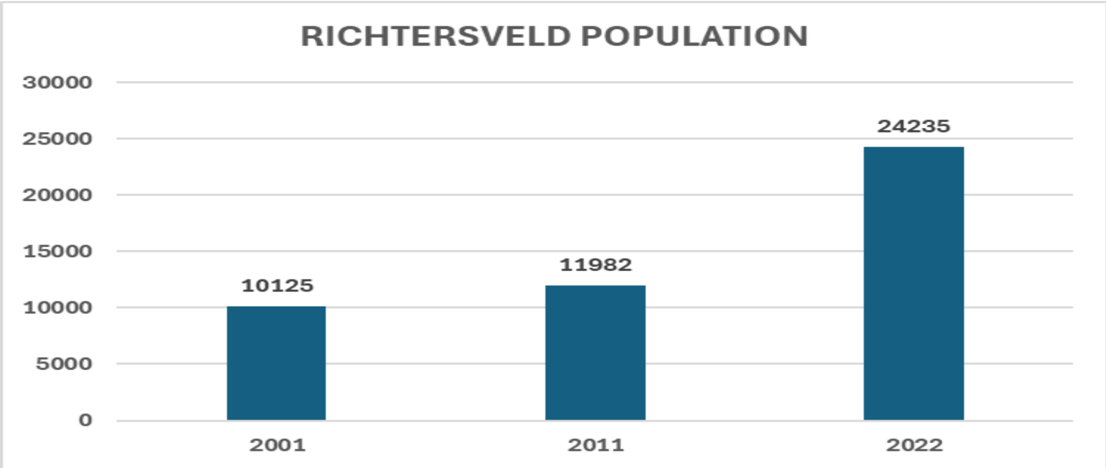
[25] 2023/24 Richtersveld IDP.

[26] Note that the 2022 Census population for the Richtersveld is more than 100% larger than the 2011 population. It has been confirmed with StatsSA through a personal communication on 18 06 2024 that the 2022 Census outcome is correct and based on actual counts corrected for undercounts.

INDICATORS	Namakwa DM 2022	Richtersveld LM 2011	2016	2022
Per annum	2.44%	n/a	0.94%	6.84%
Unemployment rate (official)	n/a	18.60%	n/a	n/a
Youth unemployment rate (official) 15-34	n/a	22.40%	n/a	n/a
Education (aged 20 +)				
No schooling	3.10%	2.50%	0.50%	1.50%
Matric	n/a	18.80%	23.70%	n/a
Higher education	6.20%	6.90%	7.20%	6.00%
Household Dynamics				
Households: number of	33 947	3 543	4 211	5 643
Average household size	4.4	3.4	3.0	4.3
Female headed households	n/a	37.30%	37.40%	n/a
Formal dwellings	95.30%	88.50%	98.70%	98.10%
Housing owned	n/a	50.00%	60.70%	n/a
Flush toilet connected to sewerage	83.80%	78.00%	80.20%	93.30%
Weekly refuse removal	83.10%	82.80%	87.20%	92.50%
Piped water inside dwelling	76.80%	68.60%	69.70%	83.30%
Electricity for lighting	96.70%	96.00%	97.30%	98.80%

Source: StatsSA in Municipalities of South Africa, 2022.

Figure 11: Richtersveld Population for 2001, 211 and 2022[27].



Source: StatsSA, Census data, verified June 2024

Table 20: Comparative profile for Richtersveld population 2011 and 2022 based on age.

Agen categories	2011	2022
0-4	937	2 025
5-14	1 919	3 823
15-34	3 965	7 162
35-59	4 037	8 427

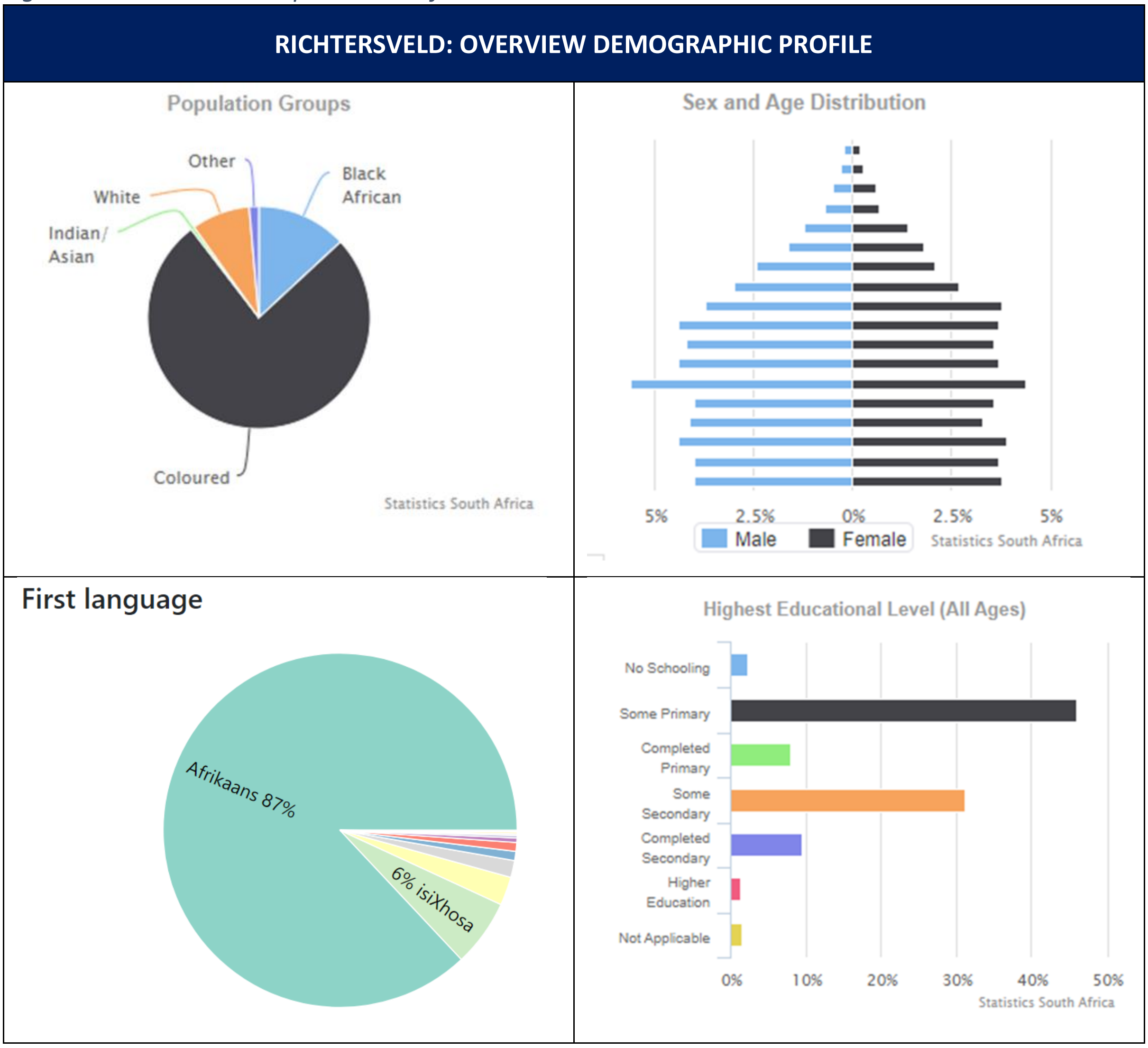
[27] Note that the 2022 Census population for the Richtersveld is 100% more than the 2011 population. It has been confirmed with StatsSA through personal communication that the 2022 Census reflects actual counts with corrected for undercounts.

Agen categories	2011	2022
60+	1 124	2 798
TOTAL	11 982	24 235

Source: StatsSA 2011 and 2022 Censuses.

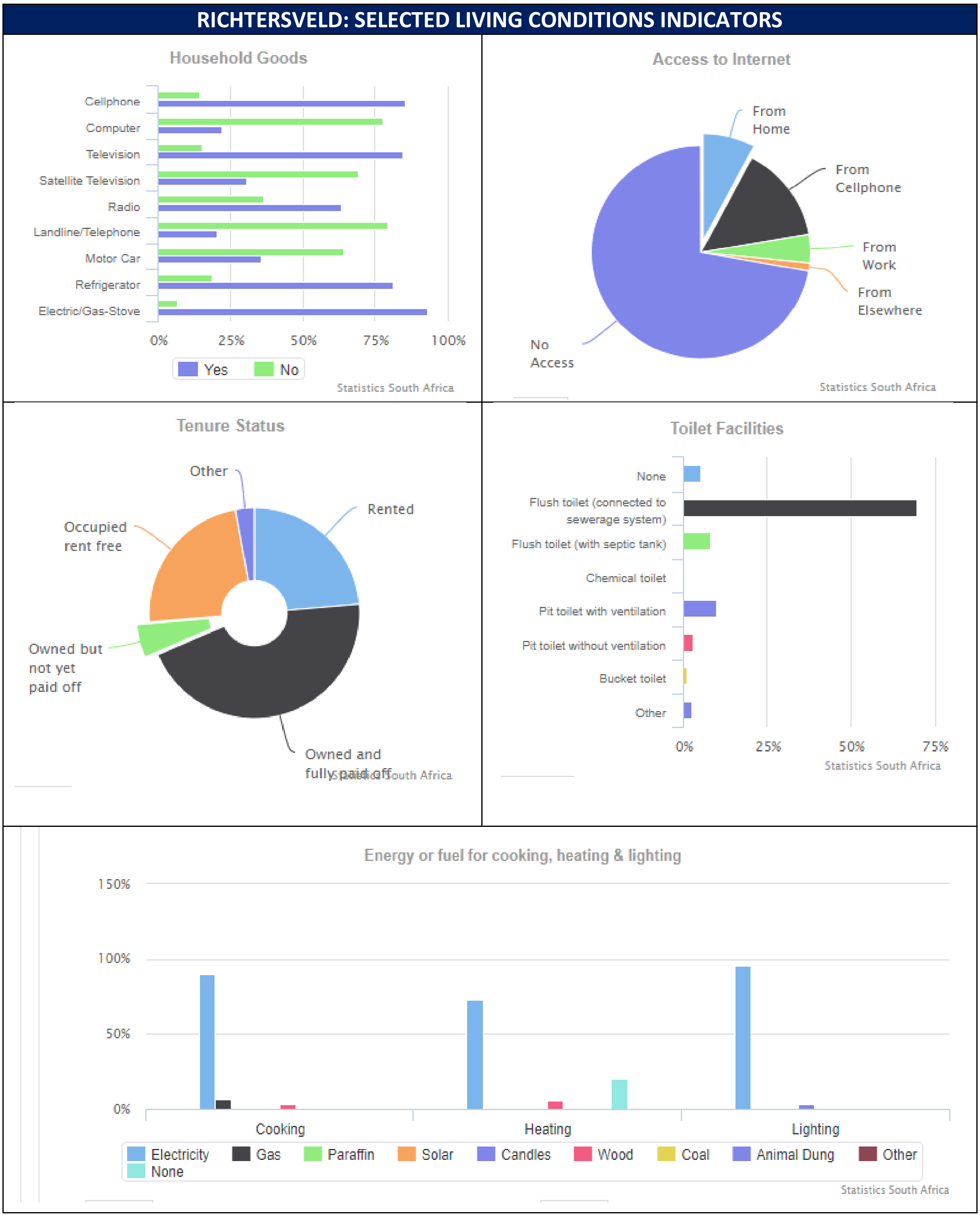
The following diagrams summarised the profile of the Richtersveld population.

Figure 12: Richtersveld Population Profile



Source: StatsSA, accessed 27 10 2023

Figure 13: Selected Richtersveld living conditions indicators.



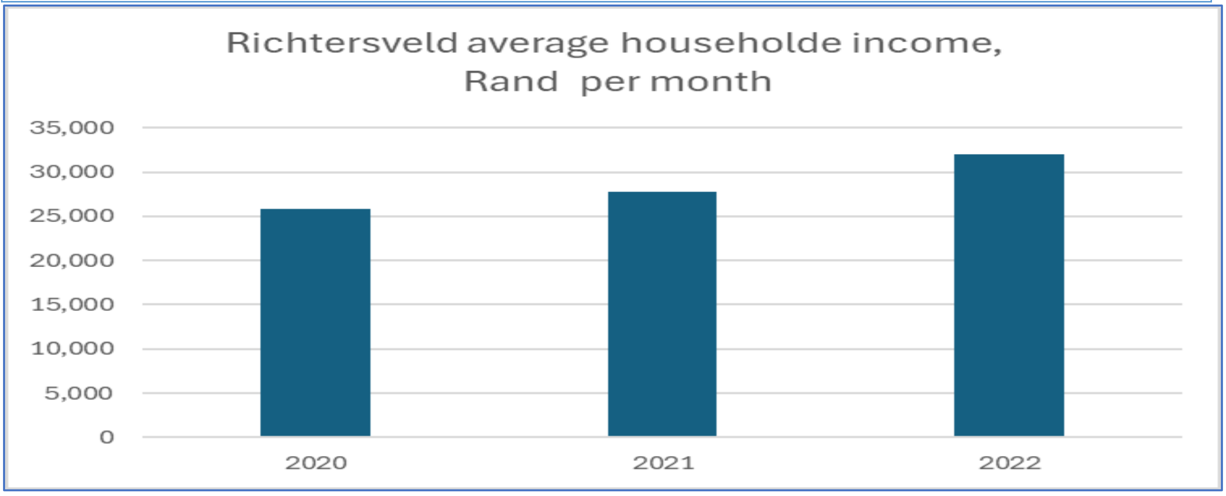
Source: StatsSA, 2011 accessed 27 10 2023

The people of the Richtersveld are relatively poor with an average household income in the order of R 32 000 pm – see Table 21 below. At a national level in 2022, South African households had an average disposable income of about R 50,500 pm[28].

[28] StatsSA 2022 reported in Statista, June 2024.

Table 21: Richtersveld household income per annum.

HOUSEHOLD INCOME		2020	2021	2022
Richtersveld Household income Rand	PA	310,459	333,684	384,337
Richtersveld Household income Rand	PM	25,872	27,807	32,028



Source: Quantec Regional Economic Data, Accessed June 2024.

5.2. THE URBAN COMMUNITIES OF THE RICHTERSVELD.

The towns, villages and settlements in the Richtersveld are isolated and spread out over the Municipal area. The Census 2022 data for levels of geography below the local municipality is not yet available[29]. The population information at sub-place level for 2011 is therefore given in the following table.

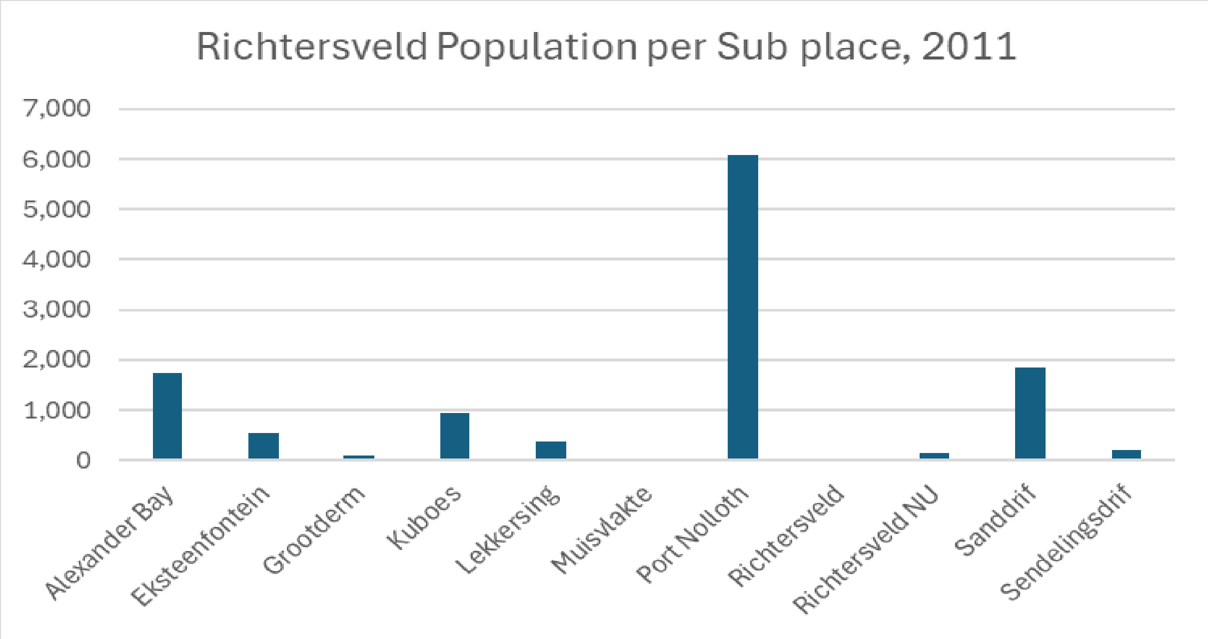
Table 22: Population of the Richtersveld Local Municipality at sub-place level, 2011[30]

Sub Place Name	Population, 2011	Area (km²)
Alexander Bay	1,736	9.25
Eksteenfontein	531	0.73
Grootderm	80	2.96
Kuboes	948	0.88
Lekkersing	363	0.63
Muisvlakte	43	4.07
Port Nolloth	6,092	30.32
Richtersveld	6	1,484.13
Richtersveld NU	139	8,071.12
Sanddrif	1,854	2.70
Sendelingsdrif	192	0.99
TOTAL	**11,984**	**9,608**

[29] Personal communication with StasSA. The Census 2022 data for level of geography below the local municipality is not yet available. Once the data is available, stakeholders will be informed via Stats SA website. 10 June 2024.
[30] Personal communication with StasSA. The Census 2022 data for level of geography below the local municipality is not yet available. 10 June 2024.

Source: StatsSA, accessed 27 10 2023

Figure 14: Richtersveld Population per sub-place, 2011[31].



Source: StatsSA Census, 2011.

The distances shown in the following table are direct line distances. Distances by road are, in most cases, more than that shown in the table and map that follows.

Table 23: Approximate distances Port Nolloth and Alexander Bay, direct line in km.

Sub Place Name	KM DISTANCES FROM PORT NOLLOTH TO:	KM DISTANCES FROM ALEXANDER BAY TO:
BOEGOEBAAI PORT SITE	60	20
Alexander Bay	80	-
Port Nolloth	-	80
Eksteenfontein	60	130
Kuboes	110	70
Lekkersing	60	120
Sanddrif	120	40

The location of the Richtersveld towns and villages are shown in the following map.

[31] Personal communication with StasSA.

Figure 15: The towns and villages of the Richtersveld.

5.3. A BASE CASE PROJECTION OF THE SOCIO-ECONOMIC FUTURE

The purpose of this section is to estimate what the future population of the Richtersveld may be without the Port development. The projection provides the Base Case scenario to which the impacts of the Port development is compared in later sections of the report. The assumptions on which the project is based are conservative and may be different from the reality which materialises.

Table 24: Base case assumption 2022 to 2050, without the Port.

PARAMETER	INDICATOR
Richtersveld population 2022 as per Census 2022	24,235
Richtersveld Population Ave Annual Compounded Growth Rate Low scenario Medium scenario High scenario	 0.8 % 1.5 % 3 %
Average household size	4.3
Dependency Ratio Per 100 (15-64)	45.1
Population under 15	24.2%
Population 15 to 64	68.9%
Population over 65	6.9%
Labour force as % of population	30.4%
Formal Employment as % of population	24.8%
POPULATION DISTRIBUTION	%
Alexander Bay population	15.2%

PARAMETER	INDICATOR
Eksteenfontein population	4.4%
Kuboes population	7.9%
Lekkersing population	4.6%
Port Nolloth population	50.8%
Sanddrif population	17.1%

5.3.1. *Base Case Projections to 2050*

The future population of the Richtersveld is shown in the following table. The assumptions shown in the preceding table were used to project the future population.

Table 25: Projection of the future population of the Richtersveld.

POPULATION	2022	2030	2040	2050
Richtersveld Population @ 0.8% pa	24 235	25 889	28 118	30 538
Richtersveld Population @ 1.5% pa	24 235	27 301	31 684	36 771
Richtersveld Population @ 3% pa	24 235	30 702	41 261	55 451
WORK FORCE	**2022**	**2030**	**2040**	**2050**
Work Force at 0.8% pa	7 369	7 872	8 550	9 285
Work Force at 1.5% pa	7 369	8 301	9 634	11 181
Work Force at 3.0% pa	7 369	9 335	12 546	16 861
Formally Employed	5,998	6,408	6,959	7,558
Unemployed persons	1,371	1,464	1,590	1,727

Table 26: Projection of the Base Case future population and formal employment levels in the Richtersveld.

The following table show the profile of the future population using the existing profile of the communities.

Table 27: Future profile of the Richtersveld community.

PROJECTED PROFILE	2022	2025	2030	2035	2040	2045	2050
Number of Households	5,636	5,777	6,021	6,275	6,539	6,815	7,102
AGE DISTRIBUTION							
Population under 15	5,865	6,012	6,265	6,529	6,804	7,091	7,390
Population 15 to 64	16,698	17,116	17,838	18,590	19,373	20,190	21,040
Population over 65	1,672	1,714	1,786	1,862	1,940	2,022	2,107
SPATIAL DISTRIBUTION OF THE POPULATION							
Alexander Bay	3,672	3,764	3,923	4,088	4,261	4,440	4,628
Eksteenfontein	1,074	1,101	1,147	1,195	1,246	1,298	1,353
Kuboes	1,917	1,965	2,048	2,134	2,224	2,318	2,416
Lekkersing	1,124	1,152	1,201	1,251	1,304	1,359	1,416
Port Nolloth	12,310	12,618	13,150	13,705	14,282	14,884	15,511
Sanddrif	4,138	4,241	4,420	4,606	4,800	5,003	5,214

5.3.2. Base Case Projections Summary

The main determinants of the future profile of the Richtersveld are the following:

- One of the major challenges of the Richtersveld Municipality is the vast and dispersed population distribution. Many of the households live in rural areas. This geographic layout poses a major challenge in terms of service delivery as they must all be connected to basic municipal service over vast distances.
- Educational levels are low, which pushes individuals into unemployment or into low paying jobs. The low educational levels limit the ability of people to learn new skills, to be trained and developed.
- Unemployment is high which results in low household income levels.
- It is reported that 12% of the population have been the victims of Gender Based Violence (GBV). Jealousy, poverty, and unemployment are the main contributors to GBV.
- Municipal infrastructure and services are constrained: water reticulation, housing, sanitation, energy and refuse removal.

5.4. COMMUNITY SERVICES AND INFRASTRUCTURE

5.4.1. Education and training

Education and training in the area is of a poor quality and availability resulting in low educational and skill levels which push individuals into unemployment and into low paying jobs. The low educational levels limit the ability of people to learn new skills and to be trained new skills. There are only primary schools in the towns of the Richtersveld. The high schools are in Port Nolloth and Alexander Bay. Due to this constraint, 30% of the population of the Richtersveld community (Lekkersing, Kuboes, Sanddrift and Eksteenfontein) have not completed Grade 12. The communities highlighted the lack of schools, qualified teachers, school infrastructure and learning materials as a real limitation to development.

5.4.2. Healthcare

The main health issues in the Richtersveld are diabetes, high blood pressure and cancer. The Richtersveld has two hospitals, and two clinics located in Port Nolloth and Alexander Bay. The hospital and clinic in Port Nolloth (approximately 120 km from the four towns) are ill-equipped. There is an ambulance service, however, it is slow due to the long distance between Port Nolloth and the four towns, as well as the poor road quality. The hospital and clinic in Alexander Bay are well equipped and functional but it services mainly the mining personnel. There are also two mobile clinics that service the four settlements and visit the area every two weeks. The mines have their own medical facilities for the exclusive treatment of mine workers.

5.4.3. Municipal services and infrastructure [32]

The availability of municipal services and infrastructure in the Richtersveld Municipality is as follows:[33]

- The Richtersveld Municipality is rendering free basic services to more than 1164 poor households who are registered as Indigents. Since there were 5 643 households in the municipality in 2022 about 20.6% of the households are Indigent households.
- Access to basic services is currently at 97 % to all household in the entire municipal area.
- Water: There is access to potable water in all towns except an informal settlement in Sanddrift. This settlement has access via communal taps erected in the settlement.
- Sanitation: All town have access to basic sanitation services. This includes reticulation system (water borne system), chemical toilets (UDF and VIP). Bucket systems have been eradicated.
- Energy: All areas the municipality services have access to electricity, the areas covered by ESKOM are the 4 satellite towns and Sizamile. The municipality did not receive any National Infrastructure i.e., INEG funding for the 2020/21 financial year.
- Refuse removal: All households in municipal area have access to refuse removal.
- Housing: In 2019, 91.0% of households in Richtersveld had access to formal housing.
- Roads: Road maintenance and construction is costly. Addressing inherited backlogs, coupled with funding constraints, remains a persistent challenge. The Richtersveld Municipality currently does not have an Infrastructure Master plan for bulk services. Maintenance is covered by operational budget. New constructions will be funded by grants as the municipality does not have the capital available.
- Storm water Drainage: The storm water drainage remains a challenge especially in Port Nolloth and low-lying residential areas in the municipality.

5.4.4. Socio-economic transformation, poverty, gender and youth development

Unemployment and especially youth unemployment is high with accompanying low household income levels. More than 20% of the households are Indigent. A social challenge is that a large part of the population are victims of Gender Based Violence (GBV).

5.4.5. Local economic development

Entrepreneurial development is needed in all sectors so that people can earn money for themselves, and not wait for a job. There needs to be development in the agricultural sector, for instance market

[32] Municipality of Richtersveld. Annual Report, 2021 and 2022.

[33] Richtersveld Municipality. Annual Report. 2021 and 2022.

gardens could be established. The coast offers the opportunity for abalone fishing. Shopping and banking services are needed for the community. And, finally, the tourism industry could be developed with cruise and maritime-based activities.

5.4.6. Infrastructure development and service delivery

One of the major challenges of the Richtersveld Municipality is the vast and dispersed population distribution. Many the households live in isolated rural villages. The spatial spread of the population poses a major challenge in terms of service delivery. The following challenges are experienced:
Municipal infrastructure and services: water reticulation, housing, sanitation, energy, and refuse removal.

- Communities are at risk of disasters from fire and climate change.
- Temporary accommodation and permanent accommodation (during construction and post construction).
- Water: Access to potable water in the informal settlement in Sanddrift. This settlement only has access to communal taps.
- Housing: 91.0% of households in Richtersveld have access to formal housing.
- Roads: Road development and maintenance remains a persistent challenge.
- Storm water Drainage: The storm water drainage remains a huge challenge especially in Port Nolloth and low-lying residential areas in the municipality.

5.5. THE ECONOMY OF THE NAMAKWA DISTRICT AND THE RICHTERSVELD

The Namakwa District as well as the Richtersveld is an arid region receiving some of the lowest average rainfall levels in the country. Water scarcity and soil salinity represent the main challenges facing agriculture in the area. However, the region has two rivers running through it, the Orange River towards the northern boundary as well as the Oliphants/Doring River system. Some of the Orange River’s water is being used for the irrigation of high-value crops. In the Richtersveld this takes place on a limited scale in the area mainly between Grootderm and Sanddrift. Groundwater is widely used for agricultural, municipal and industrial land use.[34]

The main contributors to GDP within Richtersveld Municipality are mining and quarrying (34.2%), agriculture, forestry and fishing (17.8%), wholesale, retail trade, catering and accommodation (12.3%) and finance, insurance, real estate and business services (11.6%). The smallest contributing sector is manufacturing (0.3%).[35]

The main economic activity practiced by the communities in the region is livestock farming. Livestock farming has not been a lucrative business in the area for decades, however, it supports many people, and it is an important livelihood option, specifically amongst the indigenous Nama people. The dry and ecologically sensitive ecosystem makes it difficult to support a large industry however, and there are government plans to improve borehole infrastructure and to make farms available in the area to individual farmers who will be able to farm for profit. [36]

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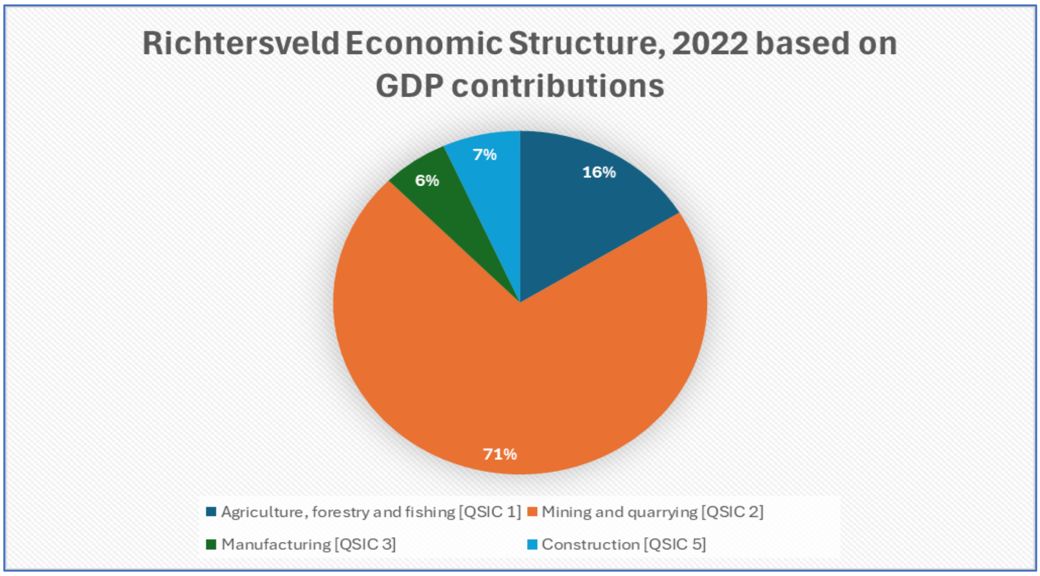
[34] Department of Cooperative Governance and Traditional Affairs. Namakwa District Profile and Analysis. District Development Model. 2022.
[35] Richtersveld Municipality. Annual Report. 2021.
[36] Department of Cooperative Governance and Traditional Affairs. Namakwa District Profile and Analysis. District Development Model. 2022.

The agricultural commodities include small stock, lucerne, vegetables, and grapes. Sheep farming is practised on a very small scale in the Richtersveld from which wool and mutton products are produced. Niche opportunities for agro-processing may be possible in the form of high-value aquaculture such as abalone along the coast.

The diamond mining by the Alexkor Group at Alexander Bay is well-known and has a long history in the area. Its core business is diamond prospecting and seabed mining along the north-west coast of the Northern Cape. The company reported the production of 41,941 carats of diamonds in 2018 generating R409 million in revenue and R34 million in profit. An assortment of other smaller-scale mining has taken place throughout the Richtersveld at Lekkersing and Sendingsdrift, historically mining crystallite and slate. Some of the mines no longer operate and the employment in the area has fallen as a result. Some mining takes place inside the borders of the Richtersveld National Park, a contractual park owned by the local communities and managed by SANParks, and mine dumps scar the park from the entrance gate to Sendelingsdrif camp. In some areas salinity levels are so high that salt mining operations have been established.

The structure and growth of the main economic sectors of the Richtersveld are shown in the following table and figures. The information confirms that, in terms of the formal economic sectors, mining makes the largest contribution to the economy of the area followed by agriculture, construction and manufacturing.

Figure 16: Composition of the Richtersveld main economic sectors, 2022



Source: Quantec Regional Economic Data, accessed June 2024.

The status and growth of the main economic sectors is shown in the following figure. The high growth rates recorded for mining is partially due to the relatively small base from which the growth is recorded.

Table 28: Richtersveld Economic composition: Gross Value Add

Rand Million	2019	2020	2021	2022	2023	% Growth pa
Agriculture, forestry and fishing	54.0	54.3	54.1	57.3	54.7	0.32
Mining and quarrying	214.9	223.2	213.5	237.6	302.8	8.95
PRIMARY SECTORS	**268.9**	**277.5**	**267.6**	**294.9**	**357.5**	7.38
Manufacturing	24.0	22.4	25.9	24.3	24.8	0.82
Utilities (Electricity, gas and water)	12.2	11.8	12.6	12.5	12.8	1.21
Construction	31.9	26.2	25.4	24.9	24.5	-6.39
SECORDARY SECTORS	**68.1**	**60.4**	**63.9**	**61.7**	**62.1**	-2.28
Wholesale, retail, catering and accommodation	126.3	107.9	110.1	116.6	115.7	-2.17
Transport, storage and communication	132.6	109.8	121.9	153.8	166.8	5.90
Finance, insurance, real estate, and business serv.	134.3	140.0	143.5	149.2	148.9	2.61
General Government	115.5	117.1	117.2	117.2	119.9	0.94
Community, social and personal services	229.8	224.0	240.2	245.1	252.8	2.41
TERTIARY SECTORS	**738.5**	**698.8**	**732.9**	**781.9**	**804.1**	2.15
TOTAL GVA	**1 075.5**	**1 036.7**	**1 064.4**	**1 138.5**	**1 223.7**	3.28

Source: Quantec Regional Economic Database, 2024

Table 29: Richtersveld Economic sector contributions

% CONTRIBUTION	2019	2020	2021	2022	2023	% over 5-years
Agriculture, forestry and fishing	5.0	5.2	5.1	5.0	4.5	5.0
Mining and quarrying	20.0	21.5	20.1	20.9	24.7	21.5
PRIMARY SECTORS	25.0	26.8	25.1	25.9	29.2	26.5
Manufacturing	2.2	2.2	2.4	2.1	2.0	2.2
Utilities (Electricity, gas and water)	1.1	1.1	1.2	1.1	1.0	1.1
Construction	3.0	2.5	2.4	2.2	2.0	2.4
SECORDARY SECTORS	6.3	5.8	6.0	5.4	5.1	5.7
Wholesale, retail, catering and accommodation	11.7	10.4	10.3	10.2	9.5	10.4
Transport, storage and communication	12.3	10.6	11.5	13.5	13.6	12.4
Finance, insurance, real estate, and business serv.	12.5	13.5	13.5	13.1	12.2	12.9
General Government	10.7	11.3	11.0	10.3	9.8	10.6
Community, social and personal services	21.4	21.6	22.6	21.5	20.7	21.5
TERTIARY SECTORS	68.7	67.4	68.9	68.7	65.7	67.8
TOTAL GVA	100.0	100.0	100.0	100.0	100.0	100.0

Source: Quantec Regional Economic Database, 2024

Economic activity in the Richtersveld generally takes place on a small scale and the people and communities are small, isolated and poor. Recent developments include the possible establishment of wind and solar renewable energy plants. Small-scale very local mini businesses exist only in the towns of the Richtersveld of which Port Nolloth and Alexander Bay are the largest and best equipped towns.

The Richtersveld Municipality had a capital budget of R228,279,000 which represented 7.8% of the Namakwa District's budget in 2022/2023. The National Department of Treasury predicts that the Richtersveld's capital budget could increase to 22.7% of the district budget in 2024/2025. [37] When considering the Richtersveld Municipal's capital budget as a percentage of the total Municipal budget in 2022/23, the capital budget was 14.2%, in 2023/24 it was 12.9%, and in 2024/2025 it will be 18.5% of the total municipal budget. While this increase is positive, there may be challenges due to the expected need for new urban and regional infrastructure because of the new Boegoebaai Port.

5.6. FUTURE ECONOMIC DEVELOPMENT PROJECTS

The economic development opportunities in the Richtersveld mentioned in its 2023/24 Integrated Development Plan include: [38]

- The existing Alexkor diamond mine which is one of the largest industrial water users in the municipality.
- The Namakwa Special Economic Zone and Boegoebaai satellite SEZ.
- Green Hydrogen as an anchor development and supported by the Presidential Investment Initiative.
- Tourism, especially in Port Nolloth, where holiday makers visit the beaches.
- The re-use or re-opening of the Alexander Bay airport as a commercial airport.
- Hotel development investments associated with the airport and increased visitor traffic to the area.
- Small harbour development driven by the Department of Public Works.
- Accelerate renewable energy development projects.
- Fishing jetty and fish processing facility.
- Northern Cape Industrial Corridor and its spin-offs for Boegoebaai Port.
- Business Centre Hub in Port Nolloth.
- Agriculture and agro-processing development in Beauvallon and Sanddrift.
- Abalone farming operations in Port Nolloth.
- Mariculture development in Port Nolloth.
- Youth café/ youth development centre in all towns.
- Upgrading of the water pipeline in Alexander Bay to improve potable water supply.
- Phase two of the Wastewater Treatment Works.

[37] The National Department of Treasury. Budget Information, 2024.

[38] The Municipality is in the process of reviewing its 2014 Local Economic Development Plan (LED).

5.6.1. Green Hydrogen cluster

A renewable energy investment opportunity exists in the form of Green Hydrogen and Ammonia production and aggregation at the newly planned Port of Boegoebaai, making it accessible to the international export market and the SADC region.

The Northern Cape and, more specifically, the Namakwa region possesses a unique combination of advantages which place it in a good position to enter the future global hydrogen market. Specifically, the Namakwa area and Boegoebaai has three anchored factors, namely ideal renewable energy conditions, availability of land and location close to sea for desalination and technology.

For South Africa and the Northern Cape Province, this energy transition into the green economy will ensure environmental sustainability, will drive development in terms of employment creation, skills development, socio-economic development, and access to a more reliable energy source. Green Hydrogen cluster will commence with pre- feasibility and feasibility studies 2022 – 2024.

5.6.2. Namakwa Special Economic Zone

The Namakwa SEZ (NSEZ) centres on the existence of the recently opened Gamsberg Zinc Mine and the proposed building of a smelter by Vedanta Zinc International. In the 2021 Northern Cape State of the Province address, the Namakwa Special Economic Zone was highlighted as a priority project for the province. The Namakwa SEZ development is “the game changer” for minerals beneficiation in South Africa and the Northern Cape province providing a “turnkey solution” to industrialisation. Post SEZ designation, the project will initiate Phase 2 of the project which will be the SEZ construction and development.

Namakwa SEZ will host industries which include but will not be limited to mineral beneficiation, construction, agriculture industry, green energy production, petro-chemical, transport, engineering supplies, localisation and SMME development**.**

5.6.3. Boegoebaai Satellite Special Economic Zone

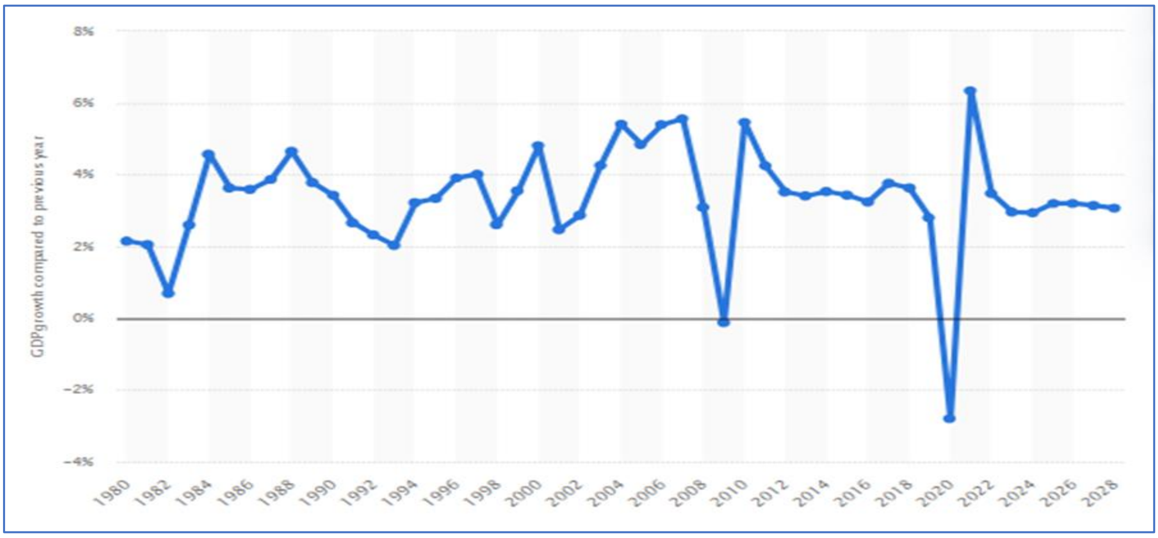
To ensure the green hydrogen production and aggregation, a Boegoebaai SEZ is proposed as satellite to the Namakwa SEZ. The proposed Namakwa SEZ is the pivot node in terms of the Northern Cape Industrial Corridor and the designation of the Boegoebaai SEZ as a satellite will enable a port integrated SEZ that is export orientated for green hydrogen, liquid and bulk commodities. The SEZ designation will ensure investors access to world class infrastructure and support measures that will enable them to be competitive in the global trade arena, more so line with the just transition and the net zero emissions.

5.6.4. Economic Futures

In most years since 1980, global economic growth has been relatively consistent, generally fluctuating between two and five percent from year to year. The most notable exceptions to this were during the Great Recession in 2009, and again in 2020 during the Covid-19 pandemic, where the global economy shrank in both years. During 2020 the world's collective gross domestic product fell by 3.4%.[39] The global economy quickly recovered from the initial shock, reaching positive growth levels again in 2021 and is expected to continue to grow slowly with some further short-term impacts.[40] [41] [42] The World Bank's Global Economic Outlook report projects that output and investment in advanced economies are to return to pre-pandemic trends but that they will remain in fluctuation owing to geo-political uncertainties and tighter fiscal and monetary policies. The fallout and continued impact from the Russia-Ukraine conflict creates uncertainties on the global markets. Current estimates suggest that annual growth will return to steady figures of around 3 percent by 2028.[43]

South Africa has experienced over a decade of weak economic growth. GDP growth has averaged only 0.8 per cent annually since 2012, entrenching high levels of unemployment and poverty. To turn the tide and raise economic growth sustainably, government is prioritising energy and logistics reforms, along with measures to arrest the decline in state capacity. Successful efforts to improve the fiscal position, complete structural reforms and bolster the capacity of the state will, in combination, reduce borrowing costs, raise confidence, increase investment and employment, and accelerate economic growth.[44]

Figure 17: Growth of the global gross domestic product (GDP) with forecasts until 2028.



Source: Statista Research Department, Accessed May 2024.

The South African economy remains under pressure in 2024, mainly due to supply-side constraints in the electricity and logistics sectors and political challenges and uncertainties. Real GDP growth for 2023 fell below the National Treasury's initial estimates of 0.8%. The economy only posted 0.3% year-

[39]. Impact of the coronavirus pandemic on the global economy - Statistics & Facts. 13 September 2022.
[40] World Bank. World Investment Report. 2022.
[41] World Bank. Global Economic Prospects. 2024.
[42] United Nations World Economic Situation and Prospects (WESP). 2024.
[43] Statista Research Department, 2024.

[44] National Treasury. 2024 Budget Review, Economic Outlook. 2024.

on-year growth. Outlooks for 2024 and beyond have also moderated and are dependent on the historically slow speed of structural reforms.[45]
South Africa's economic prospects are highly dependent on well-functioning network industries. Over the past three years, Operation Vulindlela has accelerated the implementation of structural economic reforms that will bolster growth. Noteworthy reforms include the following:

- In freight logistics, Cabinet approved the Freight Logistics Roadmap in December 2023, outlining immediate steps needed to improve equipment and locomotive availability and network security. This Roadmap also sets out structural reforms required in the logistics system, including the introduction of third-party access to the freight rail network by May 2024.
- In ports, Transnet is expected to finalise its partnership with a private company by April 2024 to upgrade Pier 2 of the Durban Container Terminal. The Port of Durban handles 46 per cent of South Africa's port traffic, and this joint venture will increase private investment for equipment, technological capability and higher operational efficiency.
- In energy sector reform, the Electricity Regulation Amendment Bill will be submitted to the National Council of Provinces in 2024. The bill will establish a competitive electricity market to promote long-term energy security. The board of the National Transmission Company was appointed in January 2024 and is a step towards the unbundling of Eskom into separate generation, transmission and distribution entities.
- In terms of generation capacity, despite record-high power cuts, the severity of load-shedding declined towards the end of 2023, should continue this trajectory and continue to fall in 2024 due to improved generation by Eskom and independent power producers. Renewable energy capacity under construction through the Renewable Energy Independent Power Producer Procurement Programme Bid Window 5 stands at 1,160 MW. Changes to schedule 2 of the Electricity Regulation Act (2006) have spurred private investment, with 6 000 MW of large-scale projects worth over R100 billion registered with the National Energy Regulator of South Africa expected to become operational in the medium term.

The long-term economic growth of the South African economy is uncertain and remains closely tied to socio-political developments. Although the fundamental of economic growth is still in place with sound economic growth prospects, the global geo-political framework is currently as uncertain as ever before and the domestic socio-political uncertainties are likely to continue for several years.

Over the next three years, between 2024 to 2027, the South Africa's economy is forecast to grow at an average of 1.6 per cent, a moderate improvement on the 1.4 per cent average expected at the time of the 2023 Medium Term Budget Plan. The outlook is supported by an expected recovery in household spending as inflation declines, and an increase in energy-related fixed investments. Power cuts and operational problems in freight rail and ports continue to disrupt economic activity and limit the country's export potential. Comprehensive reforms are under way in these sectors, although it will take time to see a recovery in growth. Household consumption is under pressure from high living costs, and investment remains low due to weak confidence and challenging business conditions linked to structural constraints.

[45] Deloitte. South African economic outlook. 1 February 2024.

5.7. SUMMARY IMPLICATIONS OF THE PORT DEVELOPMENT

The development of the Port is likely to have significant socio-economic impacts and benefits at local and regional levels. The following table indicates the breakdown of the areas of impact with examples of some of the socio-economic benefits that may be spin-offs from the Port development and operations.

Table 30: Areas of impact and examples of socio-economic benefits from the Port development.

<table>
<tr><th>THE SOCIO-ECONOMIC IMPACTS</th></tr>
<tr><th>AREA OF IMPACT - EXAMPLES OF THE SOCIO-ECONOMIC IMPACTS</th></tr>
<tr><td>The development of the Boegoebaai Port does not take place in a vacuum. Its socio-economic impact is far reaching from the local site of construction activities, the region, on a national level and even beyond. A brief outline of the spatial manifestation of potential socio-economic impacts are outlined below:</td></tr>
<tr><td>LOCAL AREA OF IMPACT (THE SITE AND THE RICHTERSVELD)</td></tr>
<tr><td>The most obvious impact of the proposed construction and commercialisation phases of the Port will be experienced on the site. Anticipated socio-economic impacts may mainly be in the form of (as examples and not comprehensively indicated):

Direct local economic activities, employment creation, new business development and household income during construction and the operations of the Port.
Construction workers will earn an income, and their household expenditure will be an economic injection creating new markets for consumer goods and services. This will lead to new opportunities for local enterprises, SMMEs and supplier development.
The demand for urban and social infrastructure development will rise and a new economic node will in all probability develop in the form of a new town in the Northern Cape. Housing, urban infrastructure (bulk and distribution for roads, water, electricity, sanitation, waste removal), social facilities such as clinics, schools, libraries, and other community facilities is expected to become in demand due to the site’s remoteness and lack of services for the growing population.
Local investment by private sector into property, logistics and warehousing development will lead to further economic activities serving the town population through commercial (retail and office), light industrial and tourism (hospitality), and agricultural development.
Increased demand for social infrastructure and development will attract government and private sector investment in these services. This will facilitate people development through education, health, safety and security, skills development, and improved living conditions.
Expansion of Municipal administration systems and structures and Municipal rates income is a natural outcome of the multiplier effect of the Port development.
Socio-economic transition of benefits to disadvantaged community groups, youth, women and physically challenged persons will be a focus of policy and investment measures, inter alia, by Municipal administration.
</td></tr>
<tr><td>DISTRICT (REGIONAL) AND PROVINCIAL IMPACT.</td></tr>
<tr><td>The District and Provincial socio-economic benefits include:

The District and Province is the hinterland that will supply labour, goods and services to develop and commercialise the Port. The nature and extent of its contribution is, however, dependent on its ability to supply construction and materials, machinery, and equipment to the Port.
Upgrading of bulk and feeder infrastructure (i.e. road, rail, electricity) will be in demand to facilitate growth and development opportunities in and around the Port.
All the above (Local area) local benefits accrue to the District and Provincial level. Improved feeder infrastructure will benefit mining, agriculture and business activities, growth, and development.
</td></tr>
</table>

THE SOCIO-ECONOMIC IMPACTS
AREA OF IMPACT - EXAMPLES OF THE SOCIO-ECONOMIC IMPACTS
• This growth impetus is key to expanded commodity and economic sector development in the rest of the District and Province.
NATIONAL IMPACT
The national impact of the Port will be its contribution to economic growth new investment, job creation and a better quality of life. The new Port is an opportunity for further growth and development of new raw materials and products. Quantifiable economic impacts include: • New business development • Gross value add • Investor attractions • Job creation • Foreign exchange earnings (customs and excise earnings) • Company and VAT tax
INTERNATIONAL IMPACTS
Direct international impacts refer to the import of knowledge, services, machinery and equipment during the construction phase of the Port. This impact should be viewed as an outflow of capital with a negative impact on the balance of payments. Positive impacts include potential new direct foreign investment at the Port and in the Richtersveld region, the province and the national economy.
SECTOR IMPACTS
Sectoral impacts are quantified as part of the modelling process during next phases of this study. However, experience has shown that all the sectors in the economy will benefit from the proposed Port development and its commercialisation, including: • The proportion of impact will differ between the different economic activities because of the non-linear relationship between the sectors. • The impacts on provincial and national levels will also differ in magnitude because of the nature, extent and composition of their economy.

6. DEVELOPMENT IMPLICATIONS OF THE PORT ESTABLISHMENT

The purpose of this section is to determine what the development implications of the port's establishment will be for the Richtersveld community. The focus is on the demand for new community facilities and infrastructure to accommodate the additional people and households that will come to live in the area. This section deals only with the development needs of the Richtersveld communities and not for the rest of the District, Province or nationally. This is so because the aim of the project is to determine TNPA's CSI Strategy which will by and large be focused on the Richtersveld community.

6.1. CHANGED POPULATION PROFILE OF THE RICHTERSVELD DUE TO THE PORT

The changing profile of the Richtersveld population is determined in this section based on the new employment that will take place because of the Port. Only the direct employment was considered as determined in the preceding section. Section 5.2.4 has shown that most of the indirect and induced employment will take place outside of the Richtersveld in the rest of the district, province and nationally.

The impact of the Port's employment on that of the existing employment in the Richtersveld is shown for selected years in the following table. The information in the table shows the impacts before construction starts, during construction and for the period after construction has been completed and the operation of the Port takes place. Without the Port, formal employment in the Richtersveld is in the order of 6 200 jobs, growing over 25 years to about 7 500. The Port starts construction in 2026 with employment demand levels of about 1 700 pa up to 2029 after which it scales down quickly to zero after 2030. Operational employment of about 420 persons pa starts from 2031 and continues in the long term. The change in employment levels is shown in the last row of the table to peak in the years 2027 to 2029 at about 8 000 employed persons.

Table 31: Employment by the Port during construction and operations, selected years.

		5- Year construction period of the Port						
RICHTERSVELD	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2040**	**2050**
BASE CASE: Richtersveld formally employed without the Port	6,149	6,200	6,251	6,303	6,355	6,408	6,959	7,558
Port Direct employment during construction[46]	0	1,738	2,078	1,656	1,656	63	0	0
Port Direct employment for operations	0	0	0	0	0	420	420	420
Total Port employment construction and operations	0	1,738	2,078	1,656	1,656	484	420	420
Richtersveld formally employed after the Port	6,149	7,937	8,329	7,959	8,011	6,892	7,380	7,979

[46] Only the directly employed persons by the Port construction and operations are accounted for the Richtersveld. The indirect and induced portions of the Port's impact will mostly take place outside of the Richtersveld.

The figure below illustrated the levels of direct employment in the Richtersveld from 2022 to 2050. The figure below shows the impact of the Port's construction and operational employment when it is overlaid onto the Base Case employment of the area.

Figure 18: Employment by the Port during construction and operations.

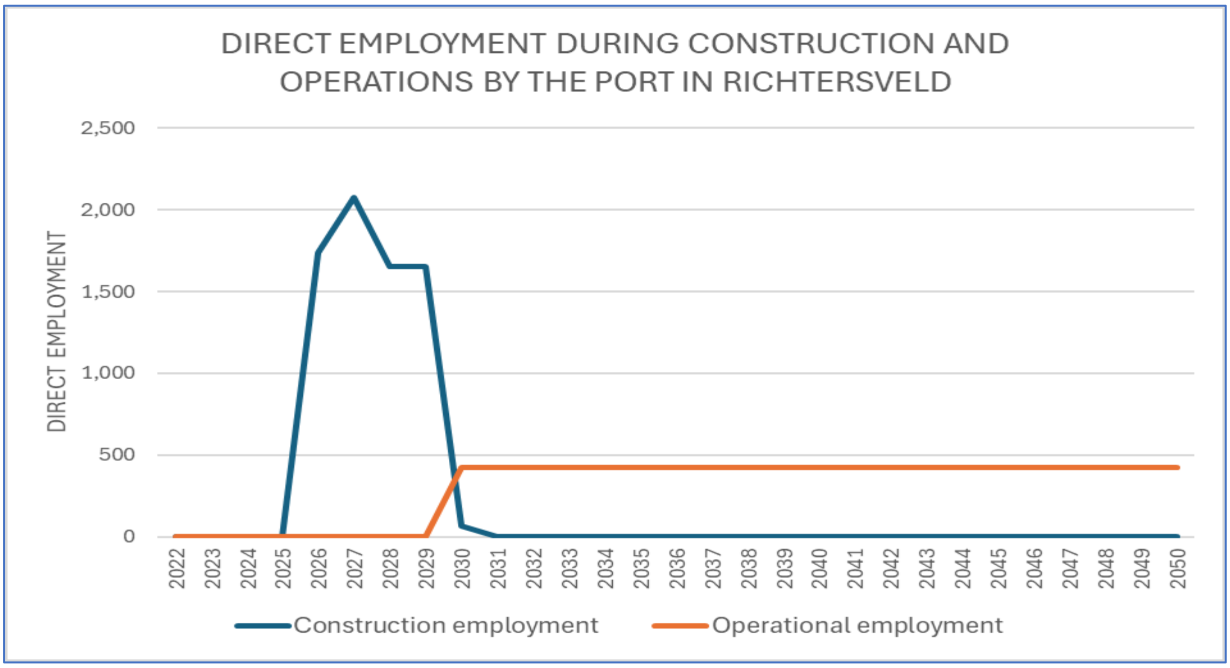
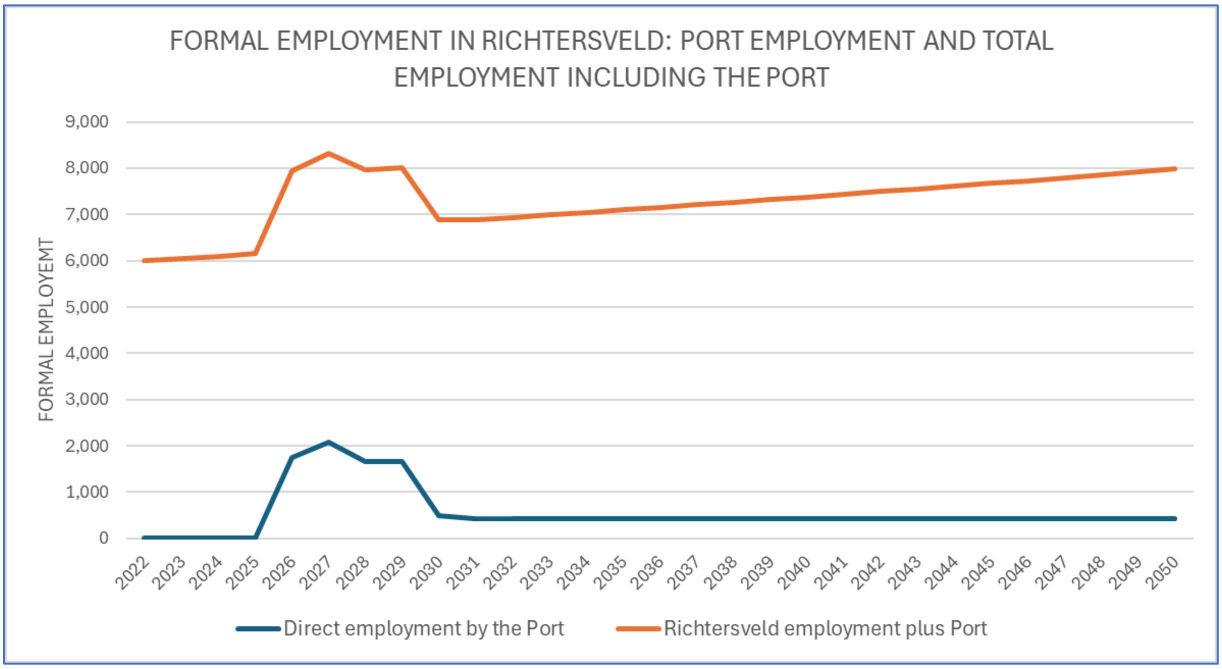


Figure 19: Direct employment by the Port and Total Richtersveld employment.

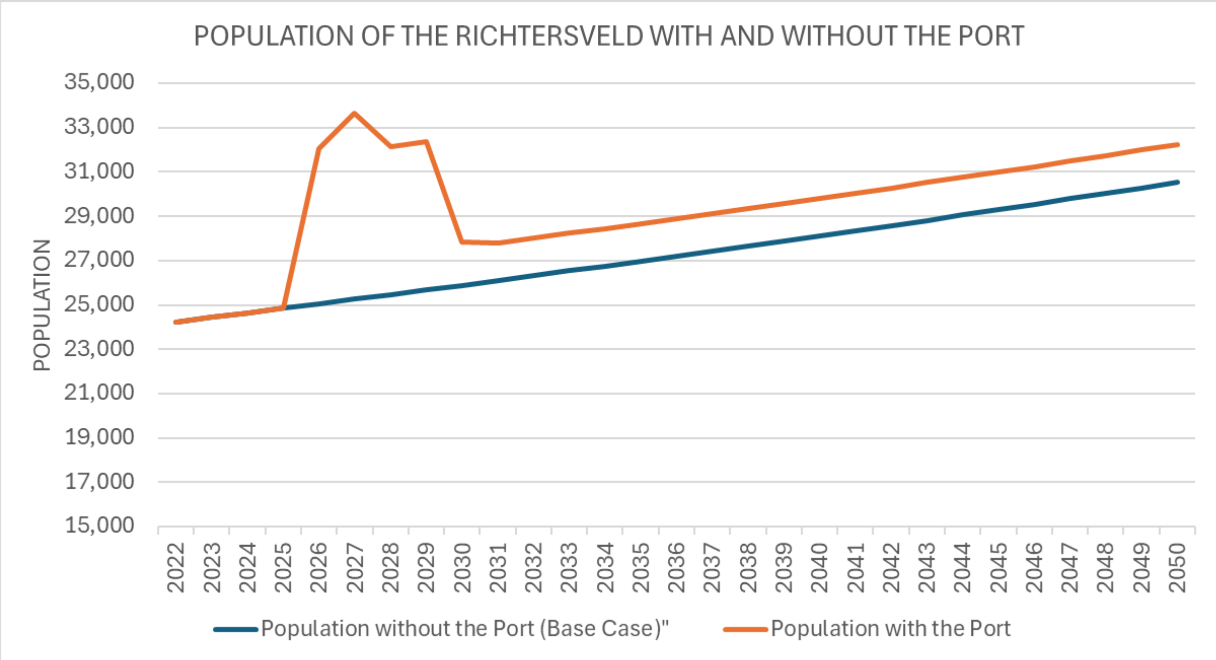


The table below shows the population, households and employment in Richtersveld without and with the Port. The model assumes that all the currently unemployed persons in Richtersveld will become employed during the construction phase of the Port. However, after construction has been completed, the employment levels fall and unemployment in Richtersveld emerges again, albeit at a slightly lower level. There is a short period between 2026 to 2029 when there is projected to be no unemployed persons in the Richtersveld. This does not consider unemployed people that will flow into the area seeking work.

Table 32: Population of the Richtersveld before and after the Port (negatives indicate the unemployed), selected years.

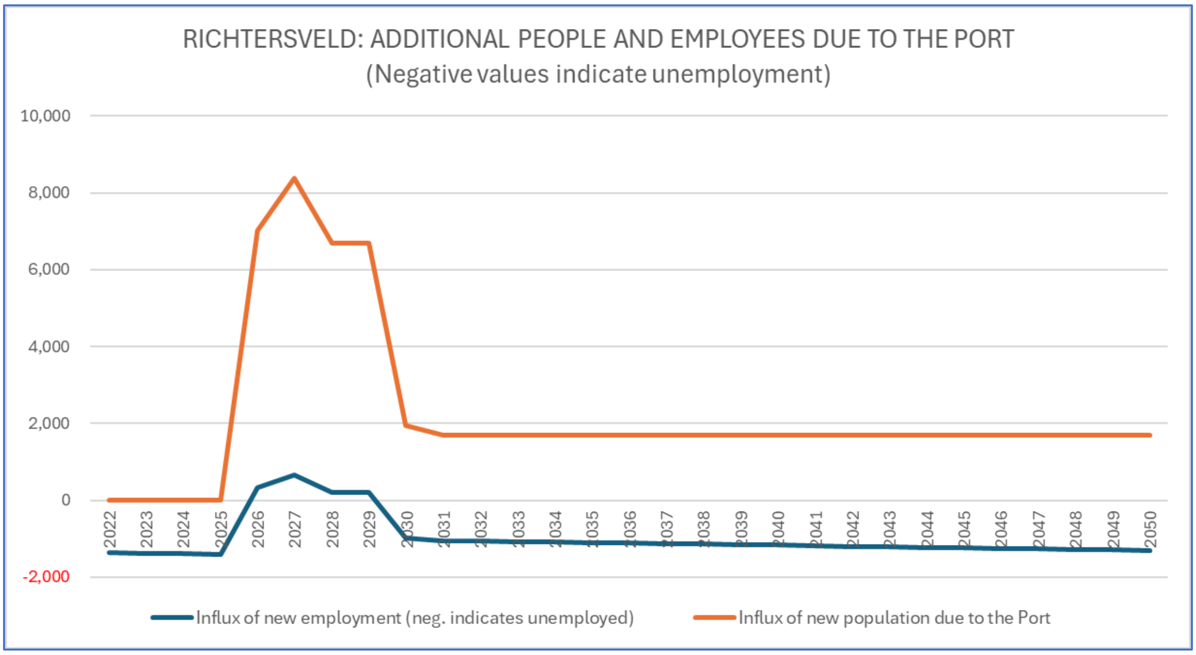
		5- Year construction period of the Port						
RICHTERSVELD	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2040**	**2050**
RICHTERSVELD	2025	2026	2027	2028	2029	2030	2040	2050
BASE CASE: Population without the Port	24,842	25,048	25,256	25,465	25,676	25,889	28,118	30,538
Richtersveld Population with the Port[47]	24,842	32,068	33,649	32,155	32,366	27,844	29,816	32,236
Richtersveld households with the Port	5,777	7,458	7,825	7,478	7,527	6,475	6,934	7,497
Number of unemployed persons without the Port (from Base Case).	-1,405	-1,417	-1,428	-1,440	-1,452	-1,464	-1,590	-1,727
Unemployment with the Port[48]t	-1,405	321	649	216	204	-980	-1,170	-1,307
Additional new population[49]	0	7,020	8,394	6,690	6,690	1,955	1,699	1,699

Figure 20: Projected population of Richtersveld with and without the Port development



[47] Average household size of 4.3 persons per employed person.
[48] The model assumes that preference will be given to local people to take up employment at the Port and that unemployed persons in the Richtersveld take up the opportunities offered to them.
[49] The difference between the existing population without the Port and with the Port.

Figure 21: Additional people into the Richtersveld due to the Port (negative values indicate unemployment).

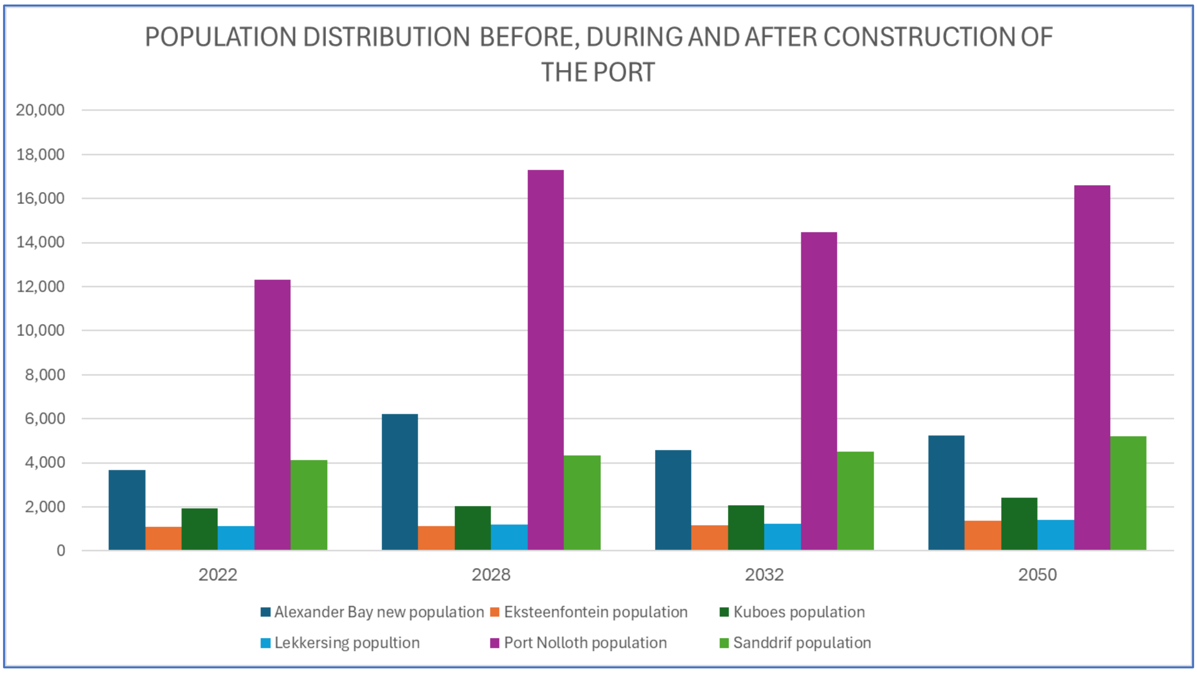


The table below and following figure show the likely distribution of the population in the Richtersveld when the Port is constructed and during operations. The distribution assumes that most of the people will locate in Port Nolloth and Alexander Bay and that a new "constructors' town" will not be established at the Port. Port Nolloth is the larger town with more facilities such as schools and clinics and will therefore be the preferred town to settle in. However, it is about 60 km from Boegoebaai while Alexander Bay is only 20 km from the Port site. It is therefore assumed, for the purpose, of this allocation model, that the proportional split between Alexander Bay and Port Nolloth will be 35% to 65%. The current split is 23% Alexender Bay and 77% Port Nolloth.

Table 33: Population distribution in the Richtersveld after the Port development. (proportional split between Alexander Bay (35%) and Port Nolloth (65%) Current split is 23% Alex and 77% Port Nolloth

		5- Year construction period of the Port						
RICHTERSVELD	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2040**	**2050**
Alexander Bay	3,764	6,253	6,765	6,200	6,232	4,607	4,855	5,222
Eksteenfontein	1,101	1,110	1,119	1,128	1,138	1,147	1,246	1,353
Kuboes	1,965	1,981	1,998	2,014	2,031	2,048	2,224	2,416
Lekkersing	1,152	1,162	1,171	1,181	1,191	1,201	1,304	1,416
Port Nolloth	12,618	17,286	18,284	17,283	17,391	14,421	15,386	16,616
Sanddrif	4,241	4,276	4,312	4,348	4,384	4,420	4,800	5,214
TOTAL	**24,842**	**32,068**	**33,649**	**32,155**	**32,366**	**27,844**	**29,816**	**32,236**

Figure 22: Distribution of the population before, during and after the Port development.[50]



6.2. DEMAND FOR SOCIAL FACILITIES

The purpose of this section is to determine the need, or demand, for municipal and community facilities due to the establishment of the Port. The demand for the facilities is calculated from the preceding sub-section's population and household estimates. The facilities demand model uses standard planning parameters based on and simplified from the CSIR's Guidelines for the provision of social facilities as shown in the following table.[51]

Table 34: Planning parameters for the provision of social facilities.

SOCIAL FACILITIES	INDICATOR	PLANNING STANDARD 1 FACILITY PER
EDUCATION FACILITIES DEMAND		
Creches	Persons	2500
Primary School	Persons	3500
Secondary School	Persons	8000
Tertiary Facility FET	Persons	30000
HEALTH FACILITIES CAPEX		
Mobile clinic	Household	900
Satellite clinic	Persons	15000
Primary health clinic	Persons	40000
Community health Centre	Persons	85000
Hospital district	Persons	450000
GOVERNMENT FACILITIES		

[50] Assumes the Port employees will live mainly in Alexander Bay (35%) and Port Nolloth (65%). The current distribution is Alexander Bay 23% and Port Nolloth 73%).

[51] Adjusted from CSIR Guidelines for The Provis Ion Of Social Facilities In South African Settlements: Our future through science. 2015.

SOCIAL FACILITIES	INDICATOR	PLANNING STANDARD 1 FACILITY PER
Local and District Government offices	Persons	10000
Provincial government offices	Persons	20000
Government workshops	Persons	30000
Fire station	Persons	100000
Police station	Persons	19350
Post office	Persons	10000
SOCIAL FACILITIES		
Housing	Household	1
Community hall and site	Persons	3225
Multi-purpose centres	Persons	10000
Library	Persons	10000
Community sport fields	Persons	10000
Play areas	Persons	2500
Old age home	Household	5000
Places of worship	Persons	2000
Cemetery	Persons	100000
LOCAL ECONOMIC DEVELOPMENT		
Market gardens	Persons	5000
Community Farmers' Market	Persons	5000
Community retail centre	Persons	10000
Mini factories	Persons	25000

The social facilities demand tables in this section have been derived from the population size or number of households that live in the Richtersveld with the introduction of the Port. The tables that follow include the Base Case plus Port populations in each town, and the total for the Municipal area. The population of the Richtersveld over the 25-year time horizon measured, will be at its highest in 2027, that is, the mid-point of the construction phase. The demand tables therefore show the demand up to 2030. Thereafter, the populations in Alexander Bay and Port Nolloth will decline as the construction period comes to an end. The demand for facilities will equally decline compared to the high demand years of 2027/28.

The responsibilities of providing the social facilities indicated in the following tables are spread between national, provincial and local government. TNPA and Transnet do not have a direct mandate or responsibility in providing these facilities. The contribution that TNPA may make through its CSI programmes are dealt with in the next section of the report.

Table 35: Education facilities demand including the Port, selected years.

		5- Year construction period					
RICHTERSVELD DEMAND	2025	2026	2027	2028	2030	2040	2050
Creche	10	13	13	13	11	12	13
Alexander Bay	2	3	3	2	2	2	2
Eksteenfontein	0	0	0	0	0	0	1
Kuboes	1	1	1	1	1	1	1

		5- Year construction period					
RICHTERSVELD DEMAND	2025	2026	2027	2028	2030	2040	2050
Lekkersing	0	0	0	0	0	1	1
Port Nolloth	5	7	7	7	6	6	7
Sanddrif	2	2	2	2	2	2	2
Primary School	7	9	10	9	8	9	9
Alexander Bay	1	2	2	2	1	1	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	1	1	1	1	1	1	1
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	4	5	5	5	4	4	5
Sanddrif	1	1	1	1	1	1	1
Secondary School	3	4	4	4	3	4	4
Alexander Bay	0	1	1	1	1	1	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	2	2	2	2	2	2	2
Sanddrif	1	1	1	1	1	1	1
Tertiary Facility FET	1	1	1	1	1	1	1
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	0	1	1	1	0	1	1
Sanddrif	0	0	0	0	0	0	0

Table 36: Health facilities demand including the Port, selected years.

		5- Year construction period					
RICHTERSVELD DEMAND HEALTH FACILITIES	2025	2026	2027	2028	2030	2040	2050
Mobile clinic	6	8	9	8	7	8	8
Alexander Bay	1	2	2	2	1	1	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	1	1	1	1	1	1	1
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	3	4	5	4	4	4	4
Sanddrif	1	1	1	1	1	1	1
Satellite clinic	2	2	2	2	2	2	2
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	1	1	1	1	1	1	1
Sanddrif	0	0	0	0	0	0	0
Primary health clinic	1	1	1	1	1	1	1

	5- Year construction period						
RICHTERSVELD DEMAND HEALTH FACILITIES	2025	2026	2027	2028	2030	2040	2050
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	0	0	0	0	0	0	0
Sanddrif	0	0	0	0	0	0	0
Community health Centre	0	0	0	0	0	0	0
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	0	0	0	0	0	0	0
Sanddrif	0	0	0	0	0	0	0
Hospital district	0	0	0	0	0	0	0
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	0	0	0	0	0	0	0
Sanddrif	0	0	0	0	0	0	0

Table 37: Government facilities demand including the Port, selected years.

	5- Year construction period						
RICHTERSVELD DEMAND GOVERNMENT FACILITIES	2025	2026	2027	2028	2030	2040	2050
Local and District Government offices	2	3	5	6	5	4	4
Alexander Bay	0	1	1	1	0	0	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	1	2	2	2	1	2	2
Sanddrif	0	0	0	0	0	0	1
Provincial government offices	1	1	3	3	3	2	2
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	1	1	1	1	1	1	1
Sanddrif	0	0	0	0	0	0	0
Government workshops	1	1	2	2	2	1	1
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0

		5- Year construction period					
RICHTERSVELD DEMAND GOVERNMENT FACILITIES	2025	2026	2027	2028	2030	2040	2050
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	0	1	1	1	0	1	1
Sanddrif	0	0	0	0	0	0	0
Fire station	0	0	1	1	1	0	0
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	0	0	0	0	0	0	0
Sanddrif	0	0	0	0	0	0	0
Police station	1	1	3	3	3	2	2
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	1	1	1	1	1	1	1
Sanddrif	0	0	0	0	0	0	0
Post office	2	3	5	6	5	4	4
Alexander Bay	0	1	1	1	0	0	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	1	2	2	2	1	2	2
Sanddrif	0	0	0	0	0	0	1

Table 38: Social facilities demand including the Port, selected years.

		5- Year construction period					
RICHTERSVELD DEMAND SOCIAL FACILITIES	2025	2026	2027	2028	2030	2040	2050
New housing demand	48	1,680	368	-347	-1,052	54	58
Alexander Bay	7	579	119	-131	-378	8	9
Eksteenfontein	2	2	2	2	2	2	3
Kuboes	4	4	4	4	4	4	5
Lekkersing	2	2	2	2	2	2	3
Port Nolloth	24	1,085	232	-233	-691	27	30
Sanddrif	8	8	8	8	8	9	10
Community hall and site	8	8	16	18	16	13	14
Alexander Bay	1	2	2	2	1	2	2
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	1	1	1	1	1	1	1
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	4	5	6	5	4	5	5

		5- Year construction period					
RICHTERSVELD DEMAND SOCIAL FACILITIES	2025	2026	2027	2028	2030	2040	2050
Sanddrif	1	1	1	1	1	1	2
Multi-purpose centre	2	3	5	6	5	4	4
Alexander Bay	0	1	1	1	0	0	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	1	2	2	2	1	2	2
Sanddrif	0	0	0	0	0	0	1
Library	2	3	5	6	5	4	4
Alexander Bay	0	1	1	1	0	0	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	1	2	2	2	1	2	2
Sanddrif	0	0	0	0	0	0	1
Community sport field	2	3	5	6	5	4	4
Alexander Bay	0	1	1	1	0	0	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	1	2	2	2	1	2	2
Sanddrif	0	0	0	0	0	0	1
Play area	10	10	21	23	21	17	18
Alexander Bay	2	3	3	2	2	2	2
Eksteenfontein	0	0	0	0	0	0	1
Kuboes	1	1	1	1	1	1	1
Lekkersing	0	0	0	0	0	1	1
Port Nolloth	5	7	7	7	6	6	7
Sanddrif	2	2	2	2	2	2	2
Old age home	5	5	10	12	10	8	9
Alexander Bay	1	1	1	1	1	1	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	3	3	4	3	3	3	3
Sanddrif	1	1	1	1	1	1	1
Places of worship	12	13	26	29	26	21	22
Alexander Bay	2	3	3	3	2	2	3
Eksteenfontein	1	1	1	1	1	1	1
Kuboes	1	1	1	1	1	1	1
Lekkersing	1	1	1	1	1	1	1
Port Nolloth	6	9	9	9	7	8	8
Sanddrif	2	2	2	2	2	2	3

	5- Year construction period						
RICHTERSVELD DEMAND SOCIAL FACILITIES	2025	2026	2027	2028	2030	2040	2050
Cemetery	0	0	1	1	1	0	0
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	0	0	0	0	0	0	0
Sanddrif	0	0	0	0	0	0	0

Table 39: Local economic development facilities demand including the Port, selected years.

	5- Year construction period						
RICHTERSVELD DEMAND LOCAL ECONOMIC DEVELOPMENT	2025	2026	2027	2028	2030	2040	2050
Market garden	5	5	10	12	10	8	9
Alexander Bay	1	1	1	1	1	1	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	3	3	4	3	3	3	3
Sanddrif	1	1	1	1	1	1	1
Community Farmers' Market	5	5	10	12	10	8	9
Alexander Bay	1	1	1	1	1	1	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	3	3	4	3	3	3	3
Sanddrif	1	1	1	1	1	1	1
Community retail centre	2	3	5	6	5	4	4
Alexander Bay	0	1	1	1	0	0	1
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	1	2	2	2	1	2	2
Sanddrif	0	0	0	0	0	0	1
Mini factory	1	1	2	2	2	2	2
Alexander Bay	0	0	0	0	0	0	0
Eksteenfontein	0	0	0	0	0	0	0
Kuboes	0	0	0	0	0	0	0
Lekkersing	0	0	0	0	0	0	0
Port Nolloth	1	1	1	1	1	1	1
Sanddrif	0	0	0	0	0	0	0

6.3. SUMMARY CONCLUSION: DEMAND FOR FACILITIES

The following table provides a summary list of the demand for social facilities in the Richtersveld as derived from the application of the planning criteria. Before any facilities can be provided each sector must be alighted to national, provincial, district and local plans and facilitated with local communities before implementation by the respective authorities.

Table 40: Summary demand of facilities in the Richtersveld due to the change in demographics

	Peak construction period – highest demand		
DEMAND MODEL SOCIAL AND ECONOMIC FACILITIES	2026	2027	2028
EDUCATION FACILITIES DEMAND	2026	2027	2028
Creches	13	13	13
Primary School	9	10	9
Secondary School	4	4	4
Tertiary Facility FET	1	1	1
HEALTH FACILITIES	2026	2027	2028
Mobile clinic	8	9	8
Satellite clinic	2	2	2
Primary health clinic	1	1	1
Community health Centre	0	0	0
Hospital district	0	0	0
GOVERNMENT FACILITIES	2026	2027	2028
Local and District Government offices	3	5	6
Provincial government offices	1	3	3
Government workshops	1	2	2
Fire station	0	1	1
Police station	1	3	3
Post office	3	5	6
SOCIAL FACILITIES	2026	2027	2028
New housing demand	1,680	368	-347
Community hall and site	8	16	18
Multi-purpose centres	3	5	6
Library	3	5	6
Community sport fields	3	5	6
Play areas	10	21	23
Old age home	5	10	12
Places of worship	13	26	29
Cemetery	0	1	1
LOCAL ECONOMIC DEVELOPMENT	2026	2027	2028
Market gardens	5	10	12
Community Farmers' Market	5	10	12
Community retail centre	3	5	6
Mini factories	1	2	2

7. RECOMMENDATIONS

7.1. RECOMMENDATIONS FOR THE IMPLEMENTATION OF THE BOEGOEBAAI CSI STRATEGY

The primary objective of the Socio-Economic Studies project is to assist TNPA to:

- Analyse the socio-economic benefits that may arise because of the proposed Boegoebaai Port and its projects.
- Recommend a strategy for a CSI programme.
- Make recommendations for benefit identification, quantification, multiplier effects and key performance indicators during the programme execution phase as well as the post implementation process.

IMPACT OF THE TNPA BOEGOEBAAI PORT CSI STRATEGY

The intended impact of the TNPA Boegoebaai Port CSI Strategy is to make a meaningful contribution to the socio-economic development needs of the Richtersveld people, communities and stakeholders who are influenced by the Boegoebaai Port development project and its impacts.

OUTCOMES OF THE TNPA BOEGOEBAAI PORT CSI STRATEGY

Based on the Transnet CSI and Transnet Foundation policies, integrated outcome areas of the Boegoebaai Port's CSI Strategy are:

- Education And Training Outcomes
- Healthcare And Welfare Outcomes
- Transformation, Poverty and Vulnerable Groups Outcomes
- Social Development Outcomes
- Local Economic Development Outcomes
- Infrastructure And Services Outcomes
- Environmental Impacts Outcomes.

The recipient or beneficiary communities and stakeholders of the TNPA Boegoebaai CSI Strategy benefits are identified at two levels:

- The families of the TNPA employees
- The community of the Richtersveld

To address the intended impact and outcomes of the TNPA Boegoebaai CSI Strategy, the following outputs and activities are identified. The outputs and the activities are designed to address the identified development needs of the Richtersveld community. The table serves as a guide and does not commit TNPA or its social responsibility program to the provision of any services that are first approved and committed to by the Board.

Table 41: Opportunities for socio-economic investment

OUTCOME: EDUCATION AND TRAINING		
OUTPUT AREAS	**ACTIVITIES**	**LOCALITY**
Early childhood development (ECD)	Support existing local community crèches and 5 newly established crèches with the formulation of ECD programmes which could be rolled out into the broader communities.	Port Nolloth, Alexander Bay, Sanddrift and Eksteenfontein.
Primary education level	Support and partake in intervention programmes for educational development and improved subject performance	Eksteenfontein, Lekkersing, Kuboes and Sanddrift
Secondary education level	Assist the learners from the villages to gain access to secondary level education	Eksteenfontein, Lekkersing, Kuboes and Sanddrift
	Intervention for educational development and improved subject performance focusing on Pure Mathematics, Science and Technology.	Port Nolloth and Alexander Bay
	Assist and facilitate in the establishment of at least one more high school	Port Nolloth and Alexander Bay
	Excursion tours and career exposure	Port Nolloth and Alexander Bay
	School sport facilities and equipment	Port Nolloth and Alexander Bay
Tertiary education level	Facilitate gaining access to tertiary training facilities and systems	Throughout the Richtersveld communities
Adult Basic Education and Training (ABET)	Support and facilitate the introduction of ABET programmes	Eksteenfontein, Lekkersing, Kuboes and Sanddrift
OUTCOME: HEALTHCARE AND WELFARE		
OUTPUT AREAS	**ACTIVITIES**	**LOCALITY**
Mobile clinic	Support the existing mobile clinic programme in the villages to provide the services more frequently and of an improved quality of service.	Eksteenfontein, Lekkersing, Kuboes and Sanddrift
Satellite clinic	Support the Satellite clinic programme to provide the services more frequently and of an improved quality of service.	Sanddrift
Primary health clinic	Contribute to the upgrading of the Primary health clinics	Port Nolloth and Alexander Bay
Substance abuse programme	Support the existing younger population prevalence of substance abuse programme	Port Nolloth and Alexander Bay
	Facilitate the Community Awareness programmes on Foetal Alcohol Syndrome through the existing clinic structures	Port Nolloth, Alexander Bay, Eksteenfontein, Lekkersing, Kuboes and Sanddrift.

Global health threats	Inform and advise communities about global health threats such as Covid-19, HIV and AIDS and Mpox by means of care-giver support and training programmes	Eksteenfontein, Lekkersing, Kuboes and Sanddrift
OUTCOME: TRANSFORMATION, POVERTY AND VULNERABLE GROUPS		
OUTPUT AREAS	**ACTIVITIES**	**LOCALITY**
Vulnerable groups including Youth, Women, and Disabled communities	Capacity building to sustain wholistic community development and improvement livelihoods programmes. This output area is linked to the implementation of the Social and Local Economic Development Outcomes and are to be implemented with existing support programmes such as: • YES (Youth Employment Service) • Women's Voice and Leadership SA. • National Programme of Action on Women's Empowerment and Gender Equality • And others to be identified.	Port Nolloth, Alexander Bay, Eksteenfontein, Lekkersing, Kuboes and Sanddrift. Focused on youth, women, disabled and indigent communities.
Support of the aged.	Facilitate care-giver training and support programmes	Eksteenfontein, Lekkersing, Kuboes and Sanddrift
Indigent households, Children headed households and Orphans and other Vulnerable Children (OVC)	This is a cross-cutting interventions aligned to the implementation of the Social and Local Economic Development Outcomes with a focus on indigent communities, children headed households and orphans and other vulnerable children (OVC).	Eksteenfontein, Lekkersing, Kuboes and Sanddrift
OUTCOME: SOCIAL DEVELOPMENT		
OUTPUT AREAS	**ACTIVITIES**	**LOCALITY**
Community hall and site and multi-purpose centres	Accelerate and support the provision of 10 community halls and multi-purpose centres. Facilitate the provision of basic equipment and facilities for the community halls and multi-purposed centres	Port Nolloth, Alexander Bay, Eksteenfontein, Lekkersing, Kuboes and Sanddrift.
Libraries.	Accelerate and support the provision of 3 libraries. Facilitate the provision of books, digital reading tools, magazines and articles to the existing and future libraries.	Port Nolloth, Alexander Bay, Eksteenfontein, Lekkersing, Kuboes and Sanddrift.
Play areas	Provide and maintain 10 children's play areas within the impoverished communities	Port Nolloth, Alexander Bay, Eksteenfontein,

		Lekkersing, Kuboes and Sanddrift.
Sports development	In alignment with the school sport programme (see the Education Outcome) provide 3 community sport fields to the impoverished communities. Provide sport equipment in support of the community sport fields. Facilitate sport training and the arrangement of community sport events and competitions.	Port Nolloth, Alexander Bay, Eksteenfontein, Lekkersing, Kuboes and Sanddrift.
OUTCOME: LOCAL ECONOMIC DEVELOPMENT		
OUTPUT AREAS	**ACTIVITIES**	**LOCALITY**
Entrepreneurship development and Youth unemployed skills development	Entrepreneurial skills training. Liaise with existing management, business and technical programme such as those provided by SEDA and the SETAs. Align with the TNPA artisan employee training programme but extend it to involve external unemployed persons.	Port Nolloth, Alexander Bay
Agricultural projects	Establish, facilitate and provide management support to an Agricultural Training Facility Project (an Agri-preneur Project).	Best / preferred location to be determined
Market gardens	Establish, facilitate and provide management support to 5 community garden initiatives.	Port Nolloth, Alexander Bay, Eksteenfontein, Lekkersing, Kuboes and Sanddrift.
Community Farmers' Market	Establish, facilitate and provide management support to 5 off-set areas through farmers' markets for the community market gardens.	Port Nolloth, Alexander Bay, Eksteenfontein, Lekkersing, Kuboes and Sanddrift.
Mini factories	Establish, facilitate and provide management support for 3 mini-factories. Align with the Entrepreneurship and Youth unemployed skills development programmes	Port Nolloth, Alexander Bay and Sanddrift.
Maritime tourism sector development	Provide management and admin support to the tourism association. Provide support to tourism development and marketing initiatives through the tourism association. Training of responsible marine (fishing and angling) tour operators and guides in the Richtersveld.	Boegoebaai, Port Nolloth and Alexander Bay
OUTCOME: INFRASTRUCTURE AND SERVICES		
OUTPUT AREAS	**ACTIVITIES**	**LOCALITY**

Housing	Facilitate and assist with the development of 1,680 new housing opportunities for construction workers. Provide 220 new housing opportunities for the permanent TNPA families to live in the area.	Boegoebaai, Port Nolloth and Alexander Bay
Informal settlement community development.	Support to informal settlement community in Sanddrift.	Sanddrift
OUTCOME: ENVIRONMENTAL IMPACTS		
OUTPUT AREAS	**ACTIVITIES**	**LOCALITY**
Climate changes preparedness programmes	Partnership with key stakeholders on programmes promoting conservation and sustainability.	Port Nolloth, Alexander Bay, Eksteenfontein, Lekkersing, Kuboes and Sanddrift.
Climate change lead disasters	Support initiatives to provide training to communities about fire risks in the area.	Eksteenfontein, Lekkersing, Kuboes and Sanddrift.
Coastal zone management	Supporting Coastal Zone Management programmes which include marine environment education, research and awareness as well as marine culture resource management programmes geared towards conservation of cultural resources.	Boegoebaai, Port Nolloth and Alexander Bay
Pollution Control and Waste Reduction	Supporting Pollution Control and Waste Reduction Management Programmes through education, public awareness campaigns and disaster reaction campaigns	Boegoebaai, Port Nolloth and Alexander Bay
Marine conservation	Supporting Marine conservation through programmes which focus on the awareness of port environments, minimising of pollution, and awareness on energy utilisation and conservation	Boegoebaai, Port Nolloth and Alexander Bay

7.2. RECOMMENDATIONS ON FURTHER STUDIES

It is a requirement of the terms reference to this study that areas for further research be identified.

7.2.1.1. Economic Cost Benefit Analysis

The current study is aimed at determining, amongst others, the direct, indirect and induced socio-economic impact of the proposed Phase 1A of the Boegoebaai Port. This study, therefore, determines the impacts but does not balance the economic costs and benefits of the proposed port with each other. An ECBA is designed to determine the nett effect of the socio-economic costs and benefits to inform the economic viability assessment of the project.

Economic cost benefit analysis is a process which identifies, measures, and compares the social benefits and costs of an investment project or programme. ECBAs are be used to determine the net economic and social benefit of investments in public projects such as hospitals, dams, tunnels, schools, and prisons. It can also be used to analyse the impact of public policies such as changes to the tax rate or changes to laws. The ECBA can also be used to analyse the impact of private investments such as building a mine, developing land, building a shopping centre, or developing new methods of production.

The ECBA should be undertaken in terms of the specifications of National Treasury as contained in the following documents:

- Infrastructure Planning and Appraisal Guideline.
- Guideline for Budget Submissions for Large Strategic Infrastructure Projects.
- BFI Financial Model User Guide.
- Commodity-Specific Conversion Factors Database for the Republic of South Africa.

National Treasury developed the Infrastructure Planning and Appraisal Guidelines for megaprojects. Herein, the preferred project alternatives are further subjected to a ECBA to assess their economic viability to inform the decision-making process. The approach adopted in this Guideline is a microeconomic methodology to conduct the ECBA/CEA using an Integrated Investment Appraisal (IIA) approach. This enables the assessment of welfare changes due to the project and an estimation of the project's impact on all segments of the society via the calculation of economic performance indicators such as the economic net present value (ENPV), the economic rate of return (ERR) and Cost-Effective Ratios (CER). Only projects that are economically feasible and cost-effective should proceed to the concept design stage. If a project's economic feasibility cannot be demonstrated, the project sponsor would need to provide a strong justification for the project approval.

7.2.1.2. Socio-economic impact assessment as part of the EIA.

The current study identifies the socio-economic benefits of the proposed Port to formulate the TNPA CSI Strategy. The study does not address the positive or negative socio-economic impacts of the project as required by Appendix 6 of the NEMA Regulations and published in Government Notice No. 320 Government Gazette 43110 20 March 2020 which is required as part of the Environmental Impact Assessment process of the project. This study addresses part of the requirements of the NEMA regulations but does not address the impacts and concerns of the Richtersveld community. The study therefore needs to be extended and reconfigured to address the NEMA requirements of a socio-economic impact assessment.

7.2.1.3. Future phases of the Port Development.

The current study exclusively addresses the benefits of Phase 1A of the Boegoebaai Port. It will be necessary to also consider further future phases of the Port. Although few details exist about the further phases of the Port, the combined impact of the total Port development may be significant and should also be considered. The need for the further expansion of the project scope became most apparent when considering the location of the families of the Port workers during construction and operations. Due to the short 5-year construction period of Phase 1A, the establishment of a "new town" in proximity of the Port will not be feasible. However, when considered as part of a longer-term development, it may prove to be feasible to establish a new town close to the Boegoebaai Port. In undertaking this study, it may also be necessary to consider the combined impact of other large scale development projects such as the green hydrogen plant that may have significant operations close to the Port.

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