

**BASIC ASSESSMENT PROCESS FOR THE PROPOSED  
PROSPECTING IN SEA CONCESSION AREA 14A BY TRANS  
ATLANTIC DIAMONDS (PTY) LTD**

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**Appendix 5:  
Socio-economic Specialist Study**

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## EXECUTIVE SUMMARY

Anchor Environmental Consultants (Pty) Ltd were appointed to undertake a socio-economic assessment for Trans Atlantic Diamonds (Pty) Ltd who are applying for a diamond prospecting right for Concession Area 14A, inshore of the Western Cape Coast. The proposed prospecting activity is anticipated to potentially impact coastal communities in the Matzikama municipality, particularly Doringbaai, Strandfontein, and to a lesser extent Lamberts Bay, which falls under the local Cederberg municipality. Demographic profiles for the regional, local and project sites are provided. A brief overview of the economic performance is discussed and placed in relation to the potential impacts associated to the proposed survey area.

A total of five socioeconomic impacts were identified as potentially being associated with the proposed survey/prospecting activities. These are listed in Table 1-1. Potential impacts associated with the seismic survey and prospecting activities were identified as 1) Temporary disturbance of marine resources 2) Exclusion of fishing vessels from the concession area 14A; 3) Degradation of water quality in Concession Area 14A, 4) Increase in local socio-economic performance, and 5) Increase in regional socio-economic performance. The former three impacts are anticipated to potentially impact the livelihoods and household income of marine fisheries groups (i.e., Inshore net fishers, traditional Line Fishers, West Coast Rock Lobster fishers, subsistence fishers and small pelagic purse seine fishers) as well as the operational success of the Doring Bay Abalone aquaculture facility. All five negative impacts were assessed as 'very low' without mitigation (Table 1-1). After recommended mitigation measures were assessed, the impacts were all reduced to 'insignificant'. Although these potential impacts associated with the proposed prospecting activity is of 'very low' significance, it should be emphasized that the influence regarding the decision on the application of the proposed prospecting activity should take into account the poor economic performance of the coastal community, particularly, the Doringbaai community who have a high dependence on marine resources to support their household income and livelihoods.

**Table 1-1 Potential impacts identified associated with the prospecting activities after mitigation measures are applied.**

Impact	Consequence	Probability	Significance	Status	Confidence
Impact 1: Inshore net fishers group	Low	Definite	<b>VERY LOW</b>	-ve	High
With mitigation	Very low	Possible	<b>INSIGNIFICANT</b>	-ve	High
Impact 2: Small Scale fisheries	Low	Definite	<b>VERY LOW</b>	-ve	High
With mitigation	Low	Probable	<b>INSIGNIFICANT</b>	-ve	High
Impact 3: West Coast Rock Lobster Fisheries	Low	Definite	<b>VERY LOW</b>	-ve	High
With mitigation	Low	Probable	<b>INSIGNIFICANT</b>	-ve	High
Impact 4: Small Pelagic Purse Seine	Low	Definite	<b>VERY LOW</b>	-ve	High
With mitigation	Low	Probable	<b>INSIGNIFICANT</b>	-ve	High
Impact 5: Doring Bay Abalone aquaculture facility	Low	Definite	<b>VERY LOW</b>	-ve	High
With mitigation	Low	Probable	<b>INSIGNIFICANT</b>	-ve	Medium

Impact	Consequence	Probability	Significance	Status	Confidence
Impact 6: Local socio-economic performance No mitigation	Very Low	Possible	<b>INSIGNIFICANT</b>	+ve	Medium
Impact 7: Regional socio-economic performance No mitigation	Low	Definite	<b>LOW</b>	+ve	Medium

It is strongly recommended that mitigation measures be further developed in consultation with local stakeholders so that effective and mutually acceptable mitigation measures can be implemented during the seismic survey, prospecting and future mining phase activities. In addition, Trans Atlantic Diamonds should aim to incorporate codes of good practice on Broad Based Black Economic Empowerment issued under Section 9 of the Broad Based Black Economic Empowerment Act, Act 53 of 2003, as amended by Act 46 of 2013. This will include skills transfer programmes, job creation, and supporting local service industry organizations such as manufacturing, production and/or packaging services.

Additional compensation and resource support measurements have previously been identified by community members from Doringbaai and Lamberts Bay to reduce the severity of the impacts on the socio-economic performance (see SU 2013; Nthane et al., 2015):

- Skills Development through training programs and formal education opportunities such as financial management skills which was emphasised by the Lamberts Bay fisher's community.
- Support of local initiatives, investments, and entrepreneurship (e.g., communal vegetable garden and opening of the jetty restaurant in Doringbaai).
- Support the development of a local Lamberts Bay fisheries label and assist in the export of fish locally and internationally. In addition, assist partnership between local fisheries and retail markets.
- Assist local communities in navigating new Small Scale Fisheries Policy structures.
- Assist in the development of a streamlined communication platform between local community, community representatives, stakeholders, and government officials.
- Support the establishment of an annual abalone festival in Doringbaai.

# TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	I
TABLE OF CONTENTS .....	III
LIST OF ABBREVIATIONS.....	IV
<b>1 INTRODUCTION .....</b>	<b>1</b>
<b>2 STUDY AREA .....</b>	<b>1</b>
2.1 REGIONAL STUDY AREA .....	1
2.2 LOCAL STUDY AREA.....	3
2.2.1 Strandfontein.....	3
2.2.2 Lamberts Bay.....	3
2.3 PROJECT SITE.....	4
2.3.1 Matzikama municipality.....	4
2.3.2 Doringbaai.....	4
<b>3 SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH THE MARITIME SECTOR .....</b>	<b>6</b>
3.1 POTENTIAL SOCIO ECONOMIC IMPACTS .....	6
3.1.1 Inshore net fishing .....	6
3.1.2 Subsistence fisheries.....	7
3.1.3 Traditional Linefish Sector .....	9
3.1.4 West Coast Rock Lobster Sector .....	10
3.1.5 Small Pelagic Purse Seine Fisheries .....	12
3.1.6 Impact on aquaculture farming .....	13
<b>4 SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH LOCAL AND REGIONAL ECONOMIC PERFORMANCE. ....</b>	<b>14</b>
<b>5 CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>16</b>
<b>6 REFERENCES.....</b>	<b>17</b>

## LIST OF ABBREVIATIONS

Anchor/ AEC	Anchor Environmental Consultants (Pty) Ltd.
B-BBEE	B Broad Based Black Economic Empowerment
CPUE	Catch per unit effort
FLO	Fisheries Liaison Officer
GDP	Gross domestic product
GDPR	Gross domestic product
MMO	Marine Mammal Observer
OMP	Operational Management Plan
PAM	Passive Acoustic Monitoring
TAC	Total allowable catch
TAD	Trans Atlantic Diamonds (Pty) Ltd
TAE	Total allowable effort
WCDM	West Coast District Municipality

## 1 INTRODUCTION

Trans Atlantic Diamonds (Pty) Ltd (hereafter referred to as TAD) is applying for a prospecting right for Concession Area 14A (1 240 ha in extent), inshore of the Western Cape coast, adjacent to the Doringbaai coastal community. Anchor Environmental Consultants (Pty) Ltd (AEC) were appointed as the Environmental Assessment Practitioner (EAP) to undertake the required Basic Assessment Process and support TAD with this application. AEC has inhouse marine specialist expertise and therefore also undertook this socio-economic impact statement. Concession area 14A falls under the local Matzikama Municipality and greater West Coast District Municipality (WCDM). The proposed prospecting activity is anticipated to directly impact coastal communities in the Matzikama municipality, particularly Doringbaai, Strandfontein, and to a lesser extent Lamberts Bay which falls under the local Cederberg municipality.

## 2 STUDY AREA

To assess the potential socio-economic impacts of the proposed project it is important to understand the socio-economic context in which the proposed project is to be developed and its potential area of impact. Depending on the scale of the potential socio-economic impacts, it may extend beyond the boundaries of the project. Here, the focus will be placed on the regional, local and project area. The proposed prospecting/survey activity falls within the regional West Coast District Municipality (WCDM) and local Matzikama Municipality, located near Strandfontein in the north and Lamberts Bay to the south, adjacent to the project site, Doringbaai. This socio-economic impact statement will thus consider these regions, focussing on the potential impact on the project site.

### 2.1 Regional Study Area

The West Coast District Municipality extends over an area of 31 099 km<sup>2</sup> and has a total population of 464 056 inhabitants and 122 074 households (Table 2-1). The district includes five local municipalities (Matzikama, Cederberg, Bergrivier, Saldanha Bay, and Swartland) which all have access to the Atlantic Ocean as well as the N7 national road (with the exception of Saldanha municipality) (WCDM, 2021). The population consists of 50.3% female and 49.7% male, with three predominant population group; Coloured (66.58%), Black African (16.36%), and White (15.71%) communities. Most of the populations' first language is Afrikaans (83.67%) followed by IsiXhosa (8.58%), English (3.98%) and other indigenous languages (IsiNdebele, Sesotho, and Setswana).

The WCDM population dependency ratio is quite high (45.9%) with 68% in the working age group (15-64 years), followed by the young (25%, 0-14 years) and the elderly group (7%, 65+ years). A high dependency ratio puts greater strain on people who are part of the workforce to support their economic dependents (children and elderly people). A higher dependency ratio also means greater pressure on social systems and the delivery of basic services. The level of education in the WCDM is relatively low, with a literacy rate was 79.1% (lower than the average of the Western Cape's 87.2% and slightly lower than the rest of South Africa 80.9%) (Socio Economic Profile West Coast District Municipality). The dropout rate for high school learners (Grades 10 to 12) within the West Coast local municipalities varied from 23.2% to 33%. These high levels of dropouts were influenced by socio-

economic factors such as teenage pregnancy, availability of no-fee schools and unemployment (Socio Economic Profile West Coast District Municipality). The average income in the WCDM fall within three ranges: no income (10.5%), R1 to R9 600 per annum (5.3%) and R9 601 to R76 400 per annum for which most of the population can be categorised (57.8%). There were 183 969 people employed in the WCDM in 2018, which constitutes 7.1% of the total employment in the Western Cape. The WCDM experienced an average annual increase of 3 480 jobs over the period 2014-2018, with the Swartland municipality generating the most employment opportunities of 1 146 in the last year, conversely to Matzikama and the Bergriver municipality which only created some 546 jobs. In 2019, the WCDM experienced a loss of 389 jobs, which will have a significant impact on the WCDM economy if this trend continues.

The WCDM experienced the slowest economic growth in the Western Cape between 2005-2013, averaging 3.0% (WCDM 2021). In contrast, the province showed a growth rate of 6.8% over the same period. The West Coast experienced strong growth in its construction (6.2%) and commercial services (6.1%), which include wholesale and retail trade, catering and accommodation; transport, storage and communication; and finance, insurance, real estate and business services sectors (WCDM 2021). The sectors that experienced a reduction over the 2005-2013 period was the agriculture (0.3%), manufacturing (0.3%) and other sectors (3.0%). The general government and community, social and personal (CSP) services sector in the West Coast experienced a steady 2.8% growth. The largest sectors in the West Coast economy in 2013 were the finance, insurance, real estate and business services (27%), manufacturing (017%), agriculture, forestry and fishing (14%) and wholesale and retail trade, catering and accommodation services (13%) (WCDM 2021). The agriculture, forestry and fishing sector were the primary source of employment, with 70 060 jobs in 2018, contributing 38.1% to total employment in the WCDM. However, the agriculture, forestry and fishing sector contributed the most to the WCDM employment in 2018 (38.1%, or 70 060 jobs).

**Table 2-1 Demographic profile summary of the West Coast District Municipality, Lamberts Bay, Strandfontein, and Doringbaai.**

Indicator	West Coast District	Lamberts Bay	Strandfontein	Doringbaai
<b>Population Total</b>	391 766	6120	431	1260
<b>Household Total</b>	106 781	1710	92	315
<b>Area (km<sup>2</sup>)</b>	31 118.6	45.73	4.18	1.79
<b>Population group</b>				
Coloured (%)	66.58	74.53	14.8	90.17
Black African (%)	16.36	8.97	50.6	6.90
White (%)	15.71	15.90	33.2	2.7
Indian or Asian(%)	0.56	0.23	0.9	0.08
Other (%)	0.79	0.38	0.5	0.16
<b>Gender distribution</b>				
Male (%)	49.7	49.1	51.4	49.29
Female (%)	50.3	50.9	48.6	50.71

Indicator	West Coast District	Lamberts Bay	Strandfontein	Doringbaai
<b>First language</b>				
Afrikaans (%)	83.67	90.87	69.4	96.37
English (%)	3.98	1.75	3.2	2.66
IsiXhosa (%)	8.58	5.80	22.6	0.32
Setswana (%)	0.63	0.55	0	0.32
<b>Dependency ratio</b>	45.9	52.9	18.1	44.2

## 2.2 Local Study Area

### 2.2.1 Strandfontein

Strandfontein (31.7481° S, 18.2303° E) is mostly a residential resort situated along the west coast of South Africa some 52.5km from Vredendal (Mayson *et al.*, 2020). It has limited economic activities and is characterised by a very low economic growth potential and socio-economic needs (Mayson *et al.*, 2020; SM, 2018). Major economic activities are livestock farming and employment through mining but most inhabitants are unemployed. However, Strandfontein ranked relatively highly for composite resource and development potential (2nd and 28th, respectively) out of 131 towns in the Western Cape province. Strandfontein has a population of 431 inhabitants and combined with local villages such as Kliprand, Bitterfontein, Nuwerus, Molsvlei, etc. amounts to 7 000 inhabitants) and 92 Households (Table 2-1, Census 2011). The population is 48.6% female and 51.4% male, with the predominant population group being of Black African (50,6%) followed by, White (33.2%), Coloured (14.8%), Indian/Asian (0.9%), and other (0.5 %) communities. Most of the populations' first language is Afrikaans (69,4%), followed by isiXhosa (22,6%), English (3.2%), Sesotho (2,7%) IsiZulu (1,1%), and Sepedi (0,5%). Strandfontein's population dependency ratio 18.6%, with 84.7% of the population falling in the working age group (15-64 years), followed by young (8.4%, 0-14) and then the elderly group (7%, 65+). Level of education is relatively low: 1.4% have no schooling, 38.6% completed matric, and 17.2% of the population educated to a higher degree. The average household income in Strandfontein ranges from no income (10.9%), R1 to R 9600 (3.3%), with most (47.8%) of the population earning between R9 601-R76,400 per annum.

### 2.2.2 Lamberts Bay

Lamberts bay (32.0978° S, 18.3267° E) is a small coastal fishing village located along the west coast some 36.4 km from Doringbaai, and falls under the Cederberg Local municipality, and greater WCDM. Lamberts Bay is considered a popular tourist destination. It is known as the Diamond of the west coast and is renowned for its pristine beaches, year-round moderate climate, and attractive wildlife sighting such as the endemic Heaviside's Dolphin and blue-eyed gannet (WCI 2020; Cape Nature 2017). Other activities in Lamberts Bay includes a golf-courses, hiking trails and whale watching. Nevertheless, fishing practices have been an integral part of the local community's heritage and livelihood. Lamberts Bay has a total population of 6 120 inhabitants and 1 710 households (Table 2-1). The population consists of 50.9% female and 49.1% male, with the predominant population group being of Coloured (74.5%), White (15.9%), Black African (9.0%), and Indian/Asian (0.2%) descent. Most of the



populations' first language is Afrikaans (90.9%) followed by IsiXhosa (5.8%), English (1.7%) and other indigenous languages (IsiNdebele, Sesotho, and Setswana). Lamberts Bay population dependency ratio is quite high (52.9%) with 65.4% in the working age group (15-64), followed by the young (24.5%, 0-14) and the elderly group (10.1%, 65+). Level of education is relatively low where 2.5% has no schooling, 26.4% completed matric, and 8.3% is educated to a higher degree. The average income in Lamberts Bay fall within three ranges: no income (10.5%), R1-R9 600 (5.3%) and R9 601-R76 400 per annum for which most of the population can be categorised (57.8%).

## 2.3 Project Site

### 2.3.1 Matzikama municipality

The Matzikama municipality is situated on the north-west coast of the Western Cape and borders the Northern Cape Province (Kamiesberg municipality in the north and Hantam municipalities in the east), the Atlantic Ocean on the west, and the Western Cape (Cederberg municipality) in the south (WCDM 2021). The municipality consist of 18 towns, with three coastal settlements (Doringbaai, Papendorp, and Strandfontein) and several small inland towns which serves as agriculture service centres (Ebenhauser, Lutzville, and Koekenaap) (MM 2019; WCGPT 2018). Matzikama municipality is defined by an arid environment with a flourishing natural irrigation system sustained by the Olifants River. The Olifants River (Vanrhynsdorp Government Scheme) consist of 237 km canals and supply water for several towns, industrial and domestic waste, local agriculture, and irrigation (DWS 2019). Most of the economic activities are concentrated in the south of the municipality, with Vredendal being the largest town and primary economic node (WCGPT 2018). The agriculture sector is largely attributed by the viniculture industry and combined with the forestry and fishing sector contributed the most towards Matzikamas municipal GDP and employment in 2018 (Mayson *et al.*, 2020; MM 2019). The agriculture, forestry and fishing sector employed approximately 25 492 people in 2014 consisting of a mixed workforce of semi-skilled and unskilled workers (PGWC 2018). Matzikama's real GDP per capita in 2018 was R39 000 which is considerably lower than most surrounding municipalities, including the WCDM (at R59 000). Matzikama municipality real GDP per capita decreased between 2018 and 2019 by 2.5%, in addition to a low GDP growth rate of 2.1% over the period 2008-2017, which is 0.3% less than the WCDM average growth rate (WCDM 2021; MM 2020). It is estimated that the Matzikama municipality experienced its largest decline in its annual GDP growth rate in 2019 (4%) when compared to the GDP growth rate between 2014 and 2018 (MM 2021/22). It is anticipated that the ongoing COVID-19 pandemic will worsen Matzikamas local economy as a decline in economic performance has already been observed since 2018. A further reduction in municipal revenue, unemployment in the private sector, land grabs for informal housing and the stagnation of development programs is likely to occur in 2021. (MM 2021/22).

### 2.3.2 Doringbaai

Doringbaai (31.81 S, 18.2388 E) is a small west coast fishing village situated approximately 50 km from Vredendal with a population of 1700, consisting of 303 households (Table 2-1). The primary first language in Doringbaai is Afrikaans (96,4%), with some English, IsiNdebele, IsiXhosa and IsiZulu speaking inhabitants. The population is equally divided amongst gender with the population

consisting of 50.7% female and 49.3% male. Most of the population is of a Coloured descent (90.2%), followed by Black African (2.7%), Indian/Asian (0.1%), White (6.9%) and other (0.2%). The level of education in Doringbaai is relatively low with 18.6% of the population educated to matric level, 4.4% completed higher education, while 2.7% have no schooling. Education is a vital part of the economic and human development since it improves access to employment opportunities. In addition, low education levels result in an underdeveloped skilled labour workforce and low household income levels. Therefore, poor level of education in Doringbaai is reflected in the low average household income which falls within three ranges: no income (10.2%), R1-R9 600 (9%) and R9 601-R76 400 per annum for which most of the population can be categorised (57%). Similar average household income is observed in neighbouring coastal communities such as Strandfontein and Lamberts Bay. In addition, Doringbaai has a high dependency ratio with 69.4% of the population in the working age group (ages 15-64 years) followed by the young (0-14, 24.2%) and the elderly (65+, 6.4%) age group. A high dependency ratio is commonly observed in developing countries and have been found to show significant relationship with economic growth, poverty, and employment (Vijayakumar 2013). In fact, the dependency ratio in an area such as Doringbaai has shown a significant impact on poverty and conversely, poverty a strong impact on the dependency ratio. Again, reinforcing that a skilled labour force is vital to an economy's growth and development (Vijayakumar 2013).

The Doringbaai local economy has been characterized as vulnerable since the closing of the Oceana factory in 2006 with living standards having continuously been adversely impacted by the declining fishing industry (Mayson *et al.*, 2020; DGES 2013). Several coping responses since the loss of the Oceana factory, has been financial support from government grants, external financial support from family member outside of Doringbaai, as well as small-scale fishing activities, and home-based businesses (DGES 2013). As such, the local community is heavily constrained by economic opportunities. This is further aggravated by expensive transport and limited access to employment opportunities and formal education outside of Doringbaai (DGES 2013). Therefore, most of the employment opportunities are limited to seasonal work, informal trading, welfare grants, and marine resources (DGES 2013). However, pending strategic projects such as the establishment of the Farmer Production Support Unit/s and Aquaculture hubs is likely to improve economic growth in Doringbaai and the WCDM (According to the 2021-2022 Review for the Integrated Development Plan, 2017-2022) (WCDM 2021). The development of sectors such as the aquaculture and tourism industry could potentially mitigate the high unemployment rate that has increased to 85% which were associated to the declining fishing industry in the area (Meyer *et al.*, 2020, MM 2016/17). Additional activities that support the economic potential of Doringbaai include tourist activities, hiking trails, 4 x 4 routes, and a world-renowned succulent nursery such as the Namaqualand's flowers during late winter and spring. There are also several holiday accommodations available from guest houses to self-catering units (WCI 2021). Doringbaai has the potential to be an exciting tourist destination if local infrastructure such as the jetty and harbour could be improved and access roads from Lamberts Bay to Doringbaai is converted to a tar road (DGES 2013).

### 3 SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH THE MARITIME SECTOR

The South African fisheries sector has an estimated value of R6 billion (DAFF 2021), contributing 0.1% to the national GDP. Of the 22 commercial sectors (listed in SAG 2013/14) the most economically valuable with the greatest catch volumes are the demersal-trawl (hake) and small-pelagic sectors (pilchards, anchovy and red-eye round herring) (Brick & Hasson 2016; SAG 2013/14). The Western Cape is estimated to account for most of the industry value (90%), employment and income, with the primary commercial fisheries (as well as main fisheries ports, and therefore associated industry services) concentrated along the west and south coast of South Africa (Hara *et al.*, 2008; Karaan & Rossouw 2004). The marine specialist study identified four fishery sectors (small pelagic, traditional linefish, west coast rock lobster and inshore netfish) that may overlap with the concession area as well as an aquaculture facility in Doringbaai (Doring Bay Abalone Pty Ltd). (Biccard et al 2021). In addition, small scale fishers and subsistence fishers along the west coast, particularly in Doringbaai, Strandfontein, and Lamberts Bay may potentially be impacted by the proposed prospecting activities in concession 14A.

The socioeconomic significance of the potential impacts that would result from the proposed prospecting activities is determined below in order to assist with informed decision-making in the prospecting rights application. The significance of an impact is defined as a combination of the consequence of the impact occurring and the probability that the impact will occur. The impact assessment methodology followed that provided in Appendix 1 of the Marine Specialist Report (Biccard et al 2021).

#### 3.1 Potential socio economic impacts

##### 3.1.1 Inshore net fishing

The commercial inshore net fisheries are described in the Marine Specialist Report (Biccard et al 2021). In proximity to Concession area 14 A, a Total Allowable Effort of 10 inshore net permits are allocated for the marine management zone C. Four rights were issued to this zone, two are active from Lamberts Bay, whilst two right holders operate in the Doringbaai area using gill nets to target harders. Catches in this region are typically less than those made further south in St Helena Bay but would still constitute an important income and food source to the rights holders, their crew (approximately 4-6 fishers) and their dependents. Prospecting activities in concession 14A are, however, not expected to have a significant negative impact (Table 3-1) on this fishery that typically operates in shallow waters (<50 m depth), beyond the operational range of the proposed seismic survey and sampling vessel.

**Table 3-1 Impact rating of the prospecting activity on the Beach-Seine and Gillnet Fisheries.**

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Medium 2	Short-term 1	Very Low 4	Probable	<b>VERY LOW</b>	-ve	High
<b>Essential mitigation measures:</b>								
<ul style="list-style-type: none"> <li>Undertake surveys when fishing effort is lower (preferably out of fishing seasons).</li> </ul>								

- Appoint a fisheries liaison officer (FLO) to facilitate communication with fishing community in Doringbaai. The FLO should report daily on vessel activity and respond and advise on action to be taken in the event of encountering fishing gear in the survey area.

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**Best Practice:**

- Prior to survey commencement, key stakeholders (see below) should be consulted and informed of the proposed survey activity and the likely implications thereof.

With mitigation	Local 1	Low 1	Short term 1	Very Low 3	Improbable	<b>INSIGNIFICANT</b>	-ve	High
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### 3.1.2 Subsistence fisheries

“A Subsistence fisher is someone who catches fish to help feed themselves and their family, while occasionally trade excess catch, but never on a commercial basis.” (Paraphrased from section 19 of the Marine Living Resource Act, 1998)

Although the subsistence fishers community contribute less than 1% to the national GDP (Isaacs and Hara, 2015), it’s an important sector that provides food security and income in poor west coast communities. It is estimated that along the South African coastline approximately 29 233 potential subsistence fishers exist, predominantly living along the East Coast (Clark *et al.*, 2002). It’s estimated that there are some 8 078 subsistence fishers operating in South Africa (Isaacs and Hara 2015) with the industry valued at approximately R16 million (Hara *et al.*, 2008). However, subsistence fishers often work as seasonal workers on-board commercial fishing vessels and are in possession of “modern-day” equipment (boats and motorized vehicle) traditionally not associated to subsistence fishing which have resulted in underrepresentation of this community.

In particular, subsistence fishers living within the area just south of Olifants River (Area B, Figure 3-1) have been active in fishing activities for >50 years and regard marine resources in the nearshore environment as extremely valuable for both their household income and livelihoods. Subsistence fishers in this region primarily harvest fish (96%), rock lobster (70%) and rocky intertidal invertebrates (48%)(Clark *et al.*, 2002). Subsistence fishers in Area B (Figure 3-1) are estimated to live quite close to harvesting spots (on average = 11.1km) and use approximately 66 km to 200 km of the coastline (Clark *et al.*, 2002). Therefore, it’s critical that subsistence fishers in close proximity to the concession area 14A must be identified since harvesting spots may directly overlap with potential prospecting activities in Doringbaai and neighbouring communities (Strandfontein and Lamberts Bay).

Most (85%) subsistence fishers employ traditional line fishing methods, which is generally considered labour intensive and associated to low revenue output (Brick and Hasson 2018). Line fishers typically operate in shallow water (generally <100 m depth) and would potentially be negatively impacted by coastal and nearshore seismic exploration, prospecting and mining operations. Subsistence line fishers use simple handheld lines or rods with no more than 10 baited hooks per line. Subsistence line fishers are expected to primarily target harders, snoek and seabream close to or within the Concession area 14A (e.g., Doringbaai) and may potentially be negatively impacted by the proposed prospecting.

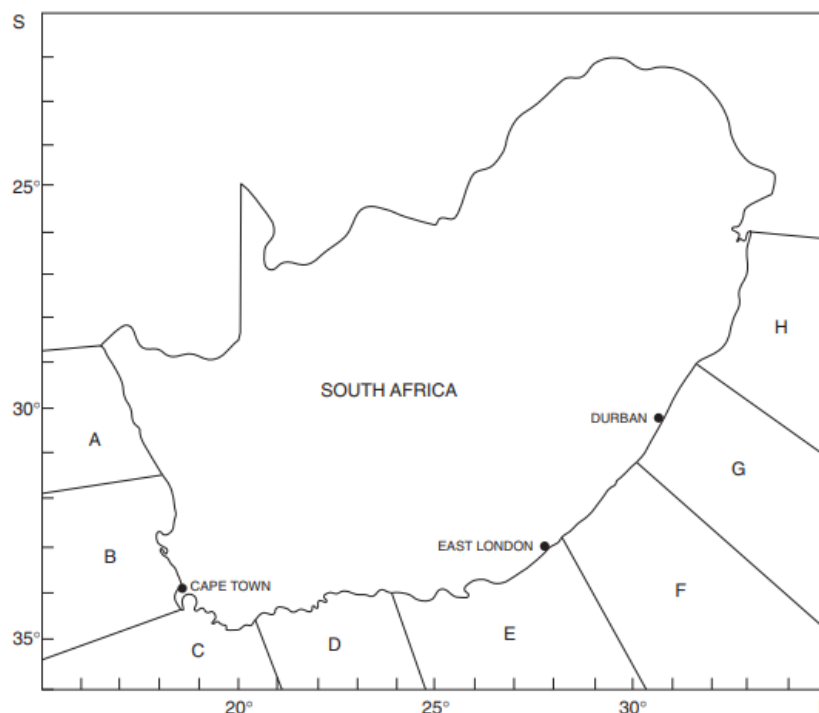


Figure 3-1 Regions identified for the number and profile of subsistence fisheries communities around the south African coastline (e.g., Area B: Western Cape, Olifants River to Hout Bay) (Clarke *et al.*, 2002).

The distance from the impact of the proposed prospecting activity in concession Area 14A is well within the daily travel range of the small scale line fishers operating from Doringbaai (and Lamberts Bay) harbours and the depth range of the concession area (0-30 m) lies within the most frequently fished depths for subsistence fishers target species such as harders, hottentot seabream and west Coast rock lobster. As a result, there may well be fishing grounds that are important to the local subsistence fishing community within the 14A concession Area and these must be identified in consultation with local stakeholders so that effective and mutually acceptable mitigation measures can be implemented during seismic survey, prospecting and mining phase activities. Due to the importance of and reliance on nearshore marine resources by subsistence fishers from the coastal community of Doringbaai (SU 2013), the socioeconomic impact is assessed as high intensity. However the local scales and short term duration of the impact results in a LOW overall significance which can be reduced to INSIGNIFICANT with effective implementation of mitigation.

Table 3-2 Impact rating of the prospecting activity on the Subsistence Fisheries group.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	High 3	Short-term 1	Low 5	Probable	<b>LOW</b>	-ve	High
<b>Essential mitigation measures:</b>								
<ul style="list-style-type: none"> <li>Undertake surveys when fishing effort is lower (preferably out of fishing seasons).</li> <li>Appoint a fisheries liaison officer (FLO) to facilitate communication with fishing community in Doringbaai. The FLO should report daily on vessel activity and respond and advise on action to be taken in the event of encountering fishing gear in the survey area.</li> </ul>								
<b>Best Practice mitigation measures:</b>								

- Prior to survey commencement, key stakeholders (see below) should be consulted and informed of the proposed survey activity and the likely implications thereof
- Inform & empower all staff about sensitive marine species & suitable disposal of waste

With mitigation	Local 1	Low 1	Short term 1	Very Low 3	Improbable	<b>INSIGNIFICANT</b>	-ve	High
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### 3.1.3 Traditional Linefish Sector

The history and management of the traditional line fishing sector is described in the marine specialist report (Biccard et al 2021). This sector targets multiple species (up to 200 species) of which 95 species are commercially and recreationally significant (DAFF, 2013). The line fisheries along the west coast (Line fish management Zone A - Orange River to Cape Infanta) target the nomadic coastal migrant species, snoek (*Thyrstites atun*), which also contributed the most in terms of catch weight in the commercial line fisheries (total landings of up to 5 800 tonnes) (Kerwath *et al.*, 2017). Management regulations include a size limit (60 cm in total length) for both the recreational and commercial line fisheries with additional restrictions (10 bag-limit per person per day) for the recreational line fishers (Kerwath *et al.*, 2017). Snoek, has prominent nursing grounds just north of the Cape Columbine (Griffiths 2000), and spawns offshore from the Agulhas banks, relying on the Benguela current to transport eggs and larvae further north along the west coast. Snoek season extends between May and September (Isaac 2003) with total annual catches ranging between 1 063 and 7 872 tonnes over the period 1985 to 2018 (DEFF 2020). Nearshore snoek catches also show a high inter-annual variability with catches reaching an record low in 2015, which was attributed to a lowered market value and limited stock (DEFF 2020).

When snoek is less abundant, the hottentot seabream (*Pachymetopon blochi*) is harvested. Hottentot species is primarily found between Port Nolloth and Cape Agulhas in depths between the littoral zone to some 55 m depth, while spawning occurs year-round, reaching greatest stock densities in summer and winter (Heemstra and Heemstra 2004; Pulfrich and Griffiths 1988; Pulfrich 1987). Total annual seabream catches are much lower than snoek over the period 1985 and 2018 ranging between 79 and 953 t with 215 t landed in 2018 (DEFF 2020). According to the Linefish Scientific Working Group, both the hottentot seabream and snoek is being fished below the MSY (DEFF 2020). Therefore, seabream stock could survive an increase mortality of 20% without compromising fish stocks. Whereas increase allocation of fishing permits could potentially increase the harvesting of snoek, however subsequent effects could be detrimental to other line fish species when snoek is unavailable in the nearshore environment.

The reported catch data from the commercial linefish sector shows a direct overlap with Concession Area 14A, although only a small proportion of the annual average reported national catch is made in this area (Biccard et al 2021, DFFE 2017). Furthermore the proposed prospecting activities will be of short duration at a local scale and the potential negative impact of the proposed prospecting within concession area 14A on the traditional linefish sector is assessed as VERY LOW and INSIGNIFICANT with mitigation. However, there may well be fishing grounds that are important to the local community within the 14A concession Area and these must be identified in consultation with local stakeholders so that effective and mutually acceptable mitigation measures can be implemented during seismic survey, prospecting and mining phase activities.



**Table 3-3 Impact rating of the prospecting activity on the Traditional Linefish Sector.**

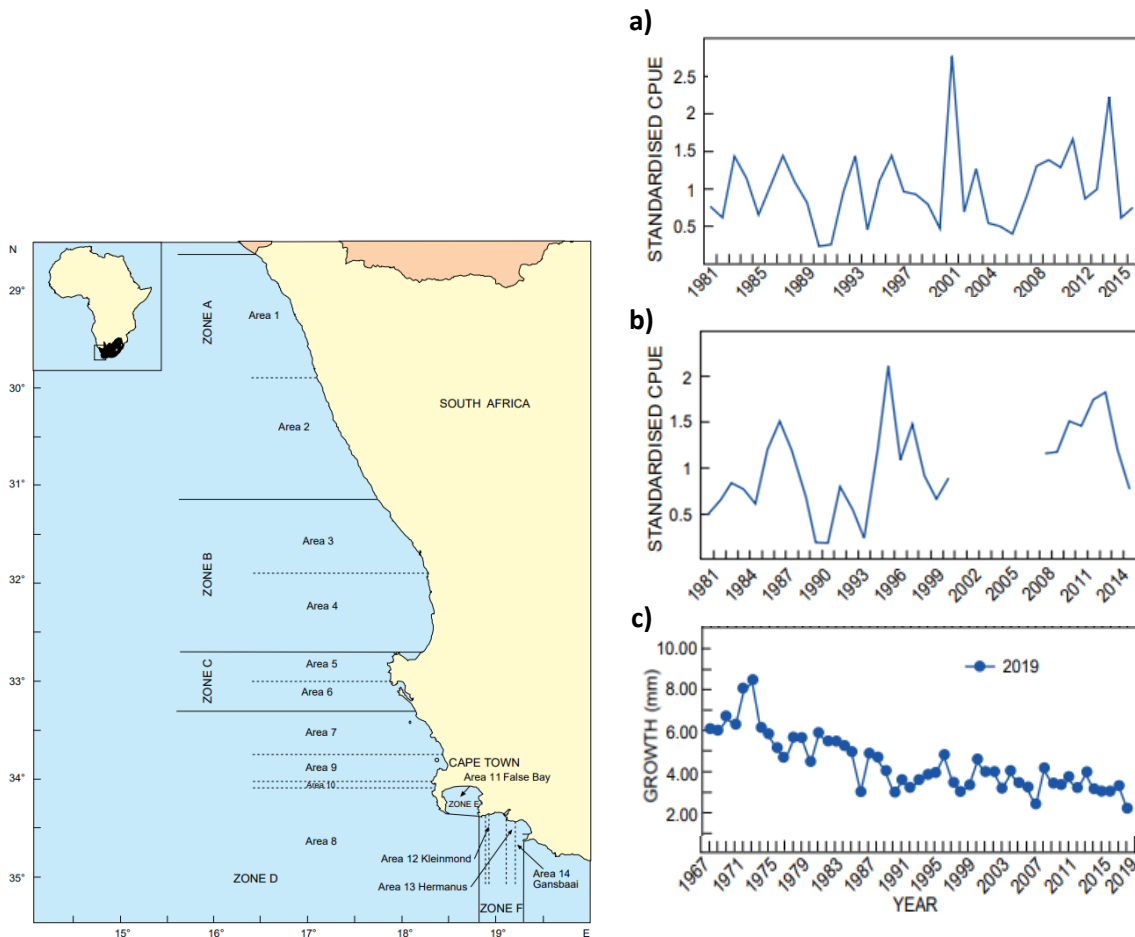
	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Medium 2	Short-term 1	Very Low 4	Probable	<b>VERY LOW</b>	-ve	High
<b>Essential mitigation measures:</b>								
<ul style="list-style-type: none"> <li>Undertake surveys when fishing effort is lower (preferably out of fishing seasons).</li> <li>Appoint a fisheries liaison officer (FLO) to facilitate communication with fishing community in Doringbaai. The FLO should report daily on vessel activity and respond and advise on action to be taken in the event of encountering fishing gear in the survey area.</li> <li></li> </ul>								
<b>Best Practice:</b>								
<ul style="list-style-type: none"> <li>Prior to survey commencement, key stakeholders (see below) should be consulted and informed of the proposed survey activity and the likely implications thereof.</li> </ul>								
With mitigation	Local 1	Low 1	Short term 1	Very Low 3	Improbable	<b>INSIGNIFICANT</b>	-ve	High

### 3.1.4 West Coast Rock Lobster Sector

The South African West Coast Rock Lobster Fisheries (WCRL) targets the West Coast rock lobster (*Jasus lalandii*) which inhabits temperate waters, rocky crevices, and reefs along the coast to depths greater than 100m from Namibia to East London, South Africa. The west coast rock lobster migrates according to season between inshore and offshore waters according to favourable environmental conditions (DEFF 2020). The WCRL fishery is divided into two sectors which include near-shore and offshore fisheries, operating in a water depth below 30 m and to depths greater than 100 m, respectively (DEFF 2020; SLR, 2019). The commercial offshore sector comprised of 246 right holders (according to the IDGP 2013 report) and approximately 138 registered vessels which uses net traps and metal frames for harvesting (CapMarine 2021). The nearshore sector fleet is far greater, with 823 right holders (according to the IDGP 2013 report), and 653 registered vessels, using hoop nets deployed from “bakkies” (rowing boats) (CapMarine 2021; DEFF 2020). The WCRL fisheries is managed by Total Allowable Catch (TAC) according to four sub-sector (i.e., commercial offshore, commercial nearshore, small-scale and recreational fisheries). The latest TAC allocated to the subsistence (interim relief measure) fishing and small-scale fishing sector (offshore) for the 2020/2021 period were 131.03t and 108.97 t, respectively, which is a considerable reduction from the previous year (2019/2020) of 170.25t and 140.83 t respectively.

WCRL fisheries is the considered one of the most important fisheries in terms of market value (R500 million per annum) and employment, with approximately 4 200 people employed in this fishery along the west coast (DEFF 2020). Both the subsistence/near-shore and small scale offshore WCR Lsectors are at risk of being directly impacted by the proposed prospecting activities in Concession Area 14A. Physical and seismic disturbance during the prospect activities are likely to disturb the benthic environment impacting the near shore WCRL fisheries sector, including recreational fishers and subsistence fishers that operate primarily in the summer (DEFF 2020). Other possible impacts could result from the generation of fine sediment plumes, however Pulfriich *et al.* (2003) found that fine sediment plumes generated by diamond mining activities may not adversely impact rock lobster populations (sex-ratio, size, and abundance etc).

The proposed prospecting activity falls within the management area Zone B (Area 3 and 4), which in line with WCRL catches nationally, has been experiencing a decreasing CPUE for both hoop-net and trap-net fishing since 2012 (Figure 2). In addition, somatic growth trends have decreased considerable over the period 1967 to 2019 (Figure 2). Potential impacts resulting from the proposed prospecting activity could further reduce CPUE and stagnate population recovery. Similar to line fishing, west coast rock lobster fishing constitutes an important economic activity for residents of Doringbaai, where few other livelihood options exist. The allocation of TAC by right holder residential address shows that approximately 1% (3 tonnes) of the national near shore allocation (~300 tonnes) is held by right holders who reside in Doringbaai. It is frequently the same fishers who target line fish and west coast rock lobster and as recommended above, important rock lobster fishing grounds within the 14A Concession Area must be identified in consultation with local stakeholders so that effective and mutually acceptable mitigation measures can be implemented when seismic exploration and prospecting is undertaken. The intensity of this potential socioeconomic impact on the local community is considered ‘medium’ but due to the local scale and short term nature of the proposed prospecting activity is rated as VERY LOW negative significance and INSIGNIFICANT with mitigation (Table 3-4).



**Figure 3-2** (A) West Coast rock lobster fishing zones and areas along the south and west coast of South Africa (Area of interest for the proposed prospecting activity: Areas 3–4, Zone B (DEFF, 2020). (B) Standardised CPUE for (a) hoopnet and (b) trap for Zone B (Area 3 and 4) and (c) the somatic growth trends for Zone B (Area 3 and 4).



**Table 3-4 Impact rating of the prospecting activity on the West Coast Rock Lobster Fisheries Group.**

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Medium 2	Short-term 1	Very Low 4	Probable	<b>VERY LOW</b>	-ve	High
<b>Essential mitigation measures:</b>								
<ul style="list-style-type: none"> <li>• Avoid prospecting activity in designated fishing spots</li> <li>• Avoid important rock lobster fishing grounds</li> <li>• Conduct surveys outside of rock lobster fishing season</li> <li>• Planning and management of potential discharges to ensure that tailings are not discarded onto potentially sensitive habitats</li> </ul>								
With mitigation	Local 1	Low 1	Short term 1	Very Low 3	Improbable	<b>INSIGNIFICANT</b>	-ve	High

### 3.1.5 Small Pelagic Purse Seine Fisheries

The small pelagic fishery has the largest catch volume for any of the South African fishery sectors and has the second largest annual catch value, estimated at around R2.164 billion in 2017, which is approximately one fifth of the combined value of South African Fisheries (Japp and Wilkinson 2021). The industry supports around 4 500 full time staff, 2 500 seasonal staff and more than 700 fishers. The support industries contribute an estimated further 2 400 jobs. The small pelagic fishery is managed using an Operational Management Plan (OMP) that involves a trade-off between maximizing overall sardine and anchovy catches, whilst minimizing the risk of resource collapse. This trade-off is required as juvenile anchovy (which form the bulk of the anchovy catch) and juvenile sardine shoal together for much of the year. Allowance is therefore made for a sardine total allowable by-catch (TAB) of juvenile sardine in both the early and late anchovy allocations as well as a fixed TAB for adult sardine in the round herring directed fishery. The OMP is tuned to minimize risk of resource collapse which is defined as the probability of adult biomass falling below defined historical levels at least once during the simulation model projection period of 20 years. Stock status of anchovy and round herring are currently considered optimal, whilst sardine stocks are considered depleted (DEFF 2020).

The small pelagic purse-seine fishery operates between the Orange River and East London mostly in nearshore waters (within 10 km of the coast). The 14A Concession Area does overlap with identified priority fishing areas for anchovy and with part of the sardine directed fishing ground (Norman et al. 2018). A quantitative spatial analysis using commercial catch return data (all small pelagic species combined) for the period 2006-2011, however, suggests that Concession Area 14A itself, does not constitute an area where a substantial proportion of the average annual purse seine catch is made. Despite the importance of partially overlapping reporting grid blocks to the small pelagic fishery that account for an average annual catch in the region of 3 300 tonnes, a relatively small proportion of the average annual catch over this period ~300 tonnes which is <0.05% of the national total, was made within Concession Area 14A itself (assuming uniform distribution of catches within a survey block and area-based allocation of catch to the concession area 14A, which is a conservative approach given the shallow water depths of <10m throughout much of the concession area that would preclude the deployment of large purse sein nets). Furthermore, the target species are pelagic and their distribution is variable, so the fishery group is unlikely to be significantly negatively affected by small temporary closures/exclusion zones around survey vessels and geotechnical survey sites.

**Table 3-5 Impact rating of the prospecting activity on the Small Pelagic Purse Seine Fisheries.**

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Medium 2	Short-term 1	Very Low 4	Probable	VERY LOW	-ve	High
<b>Essential mitigation measures:</b>								
<ul style="list-style-type: none"> <li>Undertake surveys when fishing effort is lower (preferably out of fishing seasons).</li> <li>Appoint a fisheries liaison officer (FLO) to facilitate communication with fishing community in Doringbaai. The FLO should report daily on vessel activity and respond and advise on action to be taken in the event of encountering fishing gear in the survey area.</li> </ul>								
<b>Best Practice mitigation measures:</b>								
<ul style="list-style-type: none"> <li>Prior to survey commencement, key stakeholders (see below) should be consulted and informed of the proposed survey activity and the likely implications thereof</li> <li>Inform &amp; empower all staff about sensitive marine species &amp; suitable disposal of waste</li> </ul>								
With mitigation	Local 1	Low 1	Short term 1	Very Low 3	Improbable	INSIGNIFICANT	-ve	High

### 3.1.6 Impact on aquaculture farming

The establishment of the Doring Bay Abalone (DBA) aquaculture facility in 2014 has empowered the local community through creating employment opportunities, concurrently uplifting the social economic standards (Hutchings *et al.*, 2019). Aquaculture developments such as Doring Bay Abalone Pty Ltd (DBA) is aligned with the objectives of the national programme “Phakisa- unlocking the blue economy”, which motivates for sustainable economic activity. Therefore, the success of this project is not only critical for the livelihoods for over 50 local staff members that DBA employs but to the lasting economic sustainability of Doringbaai (Hutchings *et al.*, 2019).

The potential impacts resulting from the proposed drill sampling activity is the generation of fine sediment plumes and increased turbidity, degrading water quality. DBA has one seawater intake point and could require two more for the successful operation of the aquaculture facility and proposed mariculture facility. It is essential that intake seawater conditions such as good water quality and a water temperature between 16 °C and 18 °C is maintained at the aquaculture and mariculture facility for the optimal growth of abalone (*Haloites midae*), and DBA economic returns. The generation of sediment plumes during prospecting activity are likely to effect water quality in concession area 14A in a localised and temporary manner. Fine sediment plumes can become trapped in the surf zone or carried alongshore with coastal processes such as rip currents, extreme wave action, and wind driven currents, transporting plumes along the coast. Fine sediment plumes have been linked to the permanent loss of intertidal habitats, and reduced habitat complexity and diversity (CapMarine 2016; Balata *et al.*, 2007). However, the degradation of water quality (e.g., reduced oxygen due to sedimentation, WDFW 2009) remains the primarily concern for the DBAs’ land-based aquaculture facility. Due t the local and temporary nature of the proposed prospecting, however, the potential impact of the proposed prospecting activity on DBA’s operational success is very low and was reduced to insignificant after mitigation measures are applied (Table 3-6).

**Table 3-6 Impact on the Doring Bay Abalone (DBA) aquaculture facility.**

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Medium 2	Short-term 1	Very Low 4	Probable	<b>VERY LOW</b>	-ve	High
<b>Essential mitigation measures:</b>								
<ul style="list-style-type: none"> <li>• Avoid prospecting activity surrounding the seawater intake points.</li> <li>• Ensure compliance with relevant MARPOL standards.</li> <li>• Develop a waste management plan using waste hierarchy.</li> <li>• A Shipboard Oil Pollution Emergency Plan (SOPEP) must be prepared for all vessels and should be in place at all times during operations.</li> <li>• Deck drainage should be routed to a separate drainage system (oily water catchment system) for treatment to ensure compliance with MARPOL (15 ppm).</li> <li>• All process areas should be bunded to ensure drainage water flows into the closed drainage system.</li> <li>• Drip trays should be used to collect run-off from equipment that is not contained within bunded areas and the contents routed to the closed drainage system.</li> <li>• Low-toxicity biodegradable detergents should be used in the cleaning of all deck spillages.</li> <li>• All hydraulic systems should be adequately maintained and hydraulic hoses should be frequently inspected.</li> <li>• Spill management training and awareness should be provided to crew members of the need for thorough cleaning-up of any spillages immediately after they occur in order to minimise the volume of contaminants washing off decks.</li> <li>• Monitor water-quality surrounding the sediment plumes.</li> </ul>								
With mitigation	Local 1	Low 1	Short term 1	Very Low 3	Improbable	<b>INSIGNIFICANT</b>	-ve	High

#### 4 SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH LOCAL AND REGIONAL ECONOMIC PERFORMANCE.

Mining is economically important as it can create broad scale employment opportunities and boost the national and local economy. Previous offshore diamond mining operations in Doringbaai did not however, employ many local community members (SU 2013) which leads to poor community support. The potential impact on the socio-economic performance is likely to be insignificant on a local scale (i.e., in Doringbaai community, Table 4-1). Conversely, investment from Trans Atlantic Diamonds in South Africa will have a greater positive impact on the regional economy (Table 4-2). Trans Atlantic Diamonds should aim to incorporate codes of good practice on Broad Based Black Economic Empowerment issued under the section 9 of the Broad Based Black Economic Empowerment Act, Act 53 of 2003, as amended by Act 46 of 2013. Therefore, the following resource support aims is recommended:

- At least 25% cost of sales excluding labour cost and depreciation must be procured from local producers or local suppliers in SA.
- Job creation – 50% of jobs created are for persons of colour provided that the number of such employees since the immediate prior verified B-BBEE measurements is maintained. Employment opportunities that could be fulfilled:
  - Employment of local security companies.
  - Employment allocated to port duties

- If feasible, employment of local small-scale fishers vessels as support vessels during survey operations.
- Employment of local or national Geologists, a vessel manager, captain, crew members, scientists etc.
- At least 25% transformation of raw material or beneficiation which includes local manufacturing, production and/or assembly, and/or packaging, or at least 85% of labour cost paid to South African employees by service industry organizations
- prospecting equipment can be sourced within South Africa or neighbouring communities.
- investigate if support for operational activities can be provided by local Doringbaai services for; e.g. Refueling, general supplies, and possible equipment repair)
- Skills transfer – Training opportunities:
  - Environmental officers
  - Health and Safety Officers
  - Marine Mammal Observers (MMO's) and Passive Acoustic Monitoring (PAM) operators
  - general crew/ deck member
  - Commercial divers to help with surveys

Compensation needs identified by local community members from Doringbaai and Lamberts Bay were the following (SU 2013; Nthane *et al.*, 2015):

- Skill Development through training programs and formal education opportunities such as financial management skills which was emphasised by the Lamberts Bay fishers group.
- Support of local initiatives, investments, and entrepreneurship (e.g., communal vegetable garden and opening of the jetty restaurant in Doringbaai).
- Support the development of a local Lamberts Bay fisher label and assist in the export of fish locally and internationally. In addition, assist in partnership with retail markets.
- Assist local communities in navigating new SSFP structures.
- Assist in the development of a streamlined communication platform between local community, community representatives, stakeholders, and government officials.
- Support the establishment of an annual abalone festival in Doringbaai.

**Table 4-1 Impact rating of the prospecting activity on the local socio-economic performance.**

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Medium 2	Short-term 1	Very Low 4	Possible	INSIGNIFICANT	+ve	Medium
<b>No mitigation measures</b>								

**Table 4-2 Impact rating of the prospecting activity on the on the regional socio-economic performance.**

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Regional 2	Low 1	Medium-term 2	Low 5	Definite	LOW	+ve	Medium
<b>No mitigation measures</b>								

## 5 CONCLUSIONS AND RECOMMENDATIONS

Although the potential negative impacts are anticipated to be very low for the agriculture and private sector services (tourism, hotels, commerce etc.), a potential negative impact is anticipated for the maritime sector, particularly the Doring Bay Abalone aquaculture facility and local subsistence fisher groups. Positive impacts associated with the proposed prospecting activities are likely to result from compensation recommendations, such as employment opportunities, skills development programs, and the support of local suppliers of goods and services.

Anchor Environmental Consultants were requested to undertake a socio-economic assessment for Trans Atlantic Diamonds (Pty) Ltd who are applying for a diamond prospecting right for Concession Area 14A, inshore of the Western Cape Coast. The proposed prospecting activity is anticipated to directly impact coastal communities in the Matzikama municipality, particularly Doringbaai, Strandfontein, and to a lesser extent Lamberts Bay which falls under the local Cederberg municipality. A description of Matzikama municipality and Doringbaai's demographic profile is provided. A brief overview of the economic performance was discussed and placed in relation to the potential impacts associated to the proposed survey area. The likelihood of the proposed survey to impact the socio-economic standing of areas surrounding concession area 14A was rated, based on available resources (i.e., Marine Specialist Report 1987/1 and the wider literature), and the significance of impacts were reported on. Important user groups were identified and potential impacts from the proposed exploration and prospecting activities were identified. Impacts were assessed and, where possible, compensation and mitigation measures have been identified to avoid/minimise/reduce any impacts.

Negative potential impacts associated with the proposed activities are mostly assessed as Very Low significance. After mitigation measures were applied, negative potential impacts associated with the proposed activities were reduced to INSIGNIFICANT. Potential impacts associated to the seismic survey and sampling/prospecting activities were identified as: 1) Temporary disturbance of marine resources 2) Exclusion of fishing vessels from the concession area 14A, 3) Degradation of water quality in Concession Area 14A, 4) Increase in local socio-economic performance, and 5) Increase in regional socio-economic performance. The former three impacts are anticipated to negatively impact the livelihoods and household income of marine fisheries group (i.e., Inshore net fishers, the West Coast Rock Lobster fishers, subsistent fishers, and small pelagic purse seine fishers) as well as the operational success of the Doring Bay Abalone aquaculture facility. Although, these potential impacts associated to the proposed prospecting activity is of very low significance, it should be emphasized that the influence regarding the decision on the application of the proposed prospecting activity should take into account the poor economic performance of the coastal community Doringbaai, and the communities' high dependence on marine resources to support household income and livelihoods.

To mitigate for the potential prospecting impacts, it is recommended that mitigation measures must be further developed in consultation with local stakeholders so that effective and mutually acceptable mitigation measures can be implemented during seismic survey, prospecting and future mining phase activities. In addition, Trans Atlantic Diamonds should aim to incorporate codes of good practice on Broad Based Black Economic Empowerment issued under the section 9 of the Broad Based Black Economic Empowerment Act, Act 53 of 2003, as amended by Act 46 of 2013. This will include skills transfer programmes, job creation, and supporting local service industry organizations such manufacturing, production and/or packaging services.

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