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7 December 2022

Re. THE GREEN CONNECTION COMMENTS ON TEEPSA BLOCK 5/6/7 - DRAFT ENVIRONMENTAL IMPACT REPORT

Contents

A. INTRODUCTION.....	3
B. MAJOR OIL SPILL (UNPLANNED EVENT) WOULD RESULT IN UNACCEPTABLE POLLUTION, ECOLOGICAL DEGRADATION AND SOCIO-ECONOMIC IMPACTS	6
(i) OSM.....	7
Release Point 1.....	8
Release Point 2.....	13
Release Points 1 and 2	18
Synthesis	20
(ii) Marine Ecology.....	21
Plankton	25
Sandy Shores.....	25
Rocky Shores.....	26
Estuaries.....	27
Marine Protected and Sensitive Areas.....	27
Fish	29
Seabirds.....	31
Turtles	32
Seals	32
Whales	34
Significance	36
(iii) Fisheries	37
(iv) Social (Socio-Economic)	44
(v) Cultural Heritage	48
(vi) Synthesis	49

C. NEED AND DESIRABILITY	50
(i) Climate change.....	53
(ii) The 'climate crisis'	58
(iii) South Africa's international climate change commitments.....	64
(iv) Gas as a transition fuel.....	66
(v) Ecological and Economic Risk of a Major Oil Spill	74
(vi) Synthesis	75
D. ALTERNATIVES.....	76
(i) Location Alternatives	76
(ii) The No-Go Alternative	76
E. BLOWOUT CONTINGENCY PLAN (BOCP) AND OIL SPILL CONTINGENCY PLAN (OSCP).....	78
F. PUBLIC PARTICIPATION	80
G. ROLE OF PASA IN NEMA EIA PROCESS	81
H. CONCERN OVER INDEPENDENCE OF EAP AND FISHERIES SPECIALIST.....	85
I. OTHER COMMENTS.....	88
(i) Avoid Drilling during Austral Winter	88
(ii) Avoid key migration seasons.....	88
(iii) Assessment of impact of oil leak from abandoned well	88
J. CONCLUSION.....	90

1.

A. INTRODUCTION

These comments are submitted by the Green Connection, a registered non-governmental organisation, that believes that economic growth and development, improvement of socio-economic status and conservation of natural resources can only take place within a commonly understood framework of sustainable development. The Green Connection aims to provide practical support to both the government and non-governmental/civil society sectors, which are an integral part of sustainable development.

2.

The comments are in respect of an application by TotalEnergies EP South Africa Block 567 (Pty) Ltd (TEEPSA) for environmental authorisation to undertake exploration well drilling in Block 5/6/7 off the West Coast of South Africa. A draft Environmental Impact Report (EIR) prepared as part of the Environmental and Social Impact Assessment (ESIA) process being undertaken has been made available for public comment. TEEPSA proposes to drill up to five wells, depending on the success of the initial well, in water depths ranging between 700 m and 3 200 m. The anticipated well depth is 3 570 m, with the closest point of the application area being 60 km from the shoreline. The anticipated earliest commencement date is between the last quarter of 2023 and second quarter of 2024. Drilling of the well is indicated to take approximately 3 to 4 months (excluding mobilisation and demobilisation processes).¹

3.

These comments focus primarily on two major concerns:

- Firstly, the draft EIR reveals that the risk of a major oil spill (wellhead blowout) cannot be eliminated, and that the significant ecological and socio-economic impacts that are likely to occur as a result of such a spill cannot be prevented: even with capping, spill response and the application of subsea dispersants (assuming that such mitigation measures are not thwarted by extreme weather conditions common to the

¹ DMRE Record of Decision for the Scoping Report, Draft EIR Appendix 3.

area) the impact significance is rated as VERY HIGH or HIGH. The proposed area of interest for the exploration well drilling is located in relative close proximity to the Cape Peninsular, and (depending on weather conditions and the season) any oil spill is predicted to reach the shoreline in as little as 0.6 days. In addition to Cape Town being an important economic hub that supports various fishing sectors and a multi-billion rand tourism industry, the potentially affected shoreline (which also includes the West Coast and Southern Cape Coast) includes important and sensitive habitats (such as estuaries). The socio-economic impacts associated with a major oil spill have in the Green Connection's view not been adequately assessed, and in particular the socio-economic impacts on small-scale fishers and fishing dependent communities has not been fully assessed (in terms of magnitude) or quantified. The ocean in which the proposed drilling will take place is also a unique, ecologically rich and diverse marine ecosystem that provides habitat for numerous species that would be impacted by a major oil spill. Various commercially and culturally important fish species are to be found in the broader area (such as Hake and Snoek), which also serves as spawning grounds and provides nursery areas for a number of these species. The area also provides habitat for numerous other marine species, including threatened and endangered species such as certain species of whales, turtles and turtle hatchlings, seals and seabirds. Oil is toxic and would negatively impact marine species through various pathways, including (but not limited to) direct oiling and ingestion of prey contaminated by oil. This in turn has ecosystem-wide implications for certain species, and would also put humans that eat contaminated fish and other seafoods at risk. Furthermore, the oil spill modelling indicates that (depending on the season and well location), a major oil spill could reach as far as southern Namibia and Gqeberha, as well as international waters outside of South Africa's exclusive economic zone (i.e. would be regional and international in extent).

- Secondly, the draft EIR fails to adequately assess the need and desirability - from a climate crisis and right to food perspective - of the proposed exploration well drilling project and the oil and/or gas extraction, production and usage that would follow should commercially exploitable oil and gas be found, extracted, produced and used. The development of new oil or gas fields is inconsistent with international efforts to

respond to the climate crisis by limiting global warming to 1.5° C (which will require rapid, deep and sustained reductions in global Greenhouse Gas (GHG) emissions). The extraction, production and use of fossil fuels (including for electricity generation) is a major contributor of GHGs such as carbon dioxide and methane gas emissions (which are estimated at having 84-86 times more global warming impact than carbon dioxide over a 20 year period). With long lead-in times of about a decade, developing new oil and gas fields is not a magic pill that will solve South Africa's energy and electricity needs in the short-term, and could lead to stranded assets and a burden on future generations when gas is inevitably phased out in the future (while also exposing South Africa to additional risks, such as the risk that in the future tariffs will be levied on various goods exported by fossil-fuel dependent countries). Rather than assessing need and desirability of fossil fuels (and in particular gas) from a security of supply perspective, the Green Connection believes that the EIA should rather assess whether more oil and gas is needed from a climate change and right to food perspective, including a thorough and balanced assessment of whether alternative renewable technologies could meet South Africa's needs with less harm and risk to the people of South Africa, the environment and the planet.

4.

Other concerns raised in these comments relate to: the adequacy of assessment of alternatives (including location alternatives given the sensitivity of the area that would be impacted by a major oil spill, as well as the potential benefits of the no-go option); the failure to make the blowout contingency plan and oil spill contingency plan available for public comment; the lack of meaningful public participation (in particular by small-scale fishers and fishing dependent communities); the role played by PASA in the early stages of the EIA (in particular in hosting pre-application meetings with the application); and concern over the independence of the EAP and fisheries specialist. Notwithstanding that the Green Connection believes that environmental authorisation should be refused, additional submissions are made relating to the avoidance of drilling during the Austral Winter (when the likelihood of a major oil spill reaching the shoreline is highest), the avoidance of key migration and breeding

seasons (when the impacts of a major oil spill on various species and their reproductive success would be highest), and monitoring of abandoned exploration wells for leaks.

5.

The Green Connection also submitted comments on the draft Scoping Report. While some of the issues raised have been revisited in these comments on the draft EIR, other comments have not been included. While the Green Connection notes the responses to its comment provided by SLR in the *Comments and Responses Report*, the Green Connection stands by its submissions on the draft Scoping report (which should be read as specifically incorporated into these comments on the draft EIR).

6.

The Green Connection submits that for the these (and other) reasons, the proposed exploration drilling project exposes South Africa to an unacceptable risk of significant pollution, ecological degradation and socio-economic impacts (both in the event of a major oil spill and from a climate change perspective), and that environmental authorisation should be refused.

7.

B. MAJOR OIL SPILL (UNPLANNED EVENT) WOULD RESULT IN UNACCEPTABLE POLLUTION, ECOLOGICAL DEGRADATION AND SOCIO-ECONOMIC IMPACTS

The draft EIR acknowledges that:

Offshore drilling operations carry an inherent risk of oil entering the marine environment as a consequence of an unplanned oil spill event. The greatest environmental threat from offshore drilling operations, although unlikely, is the risk of a major spill of crude oil/condensate occurring from a well blow-out.

8.

While considered 'unlikely', major oil spills (such as a spill resulting from an uncontrolled well-head blowout) can and do occur (such as the infamous Macondo / Deep Water Horizon

catastrophe in the Gulf of Mexico in 2010, the Montara incident (loss of well control) in the Timor Sea, Australia in 2009, and a blowout on Total's 22/30c-G4 well on the Elgin Wellhead Platform on 25 March 2012). There is also a higher risk of spills in deep water locations, as well as locations that experience extreme and challenging weather conditions (which could in turn prevent, hinder or reduce the effectiveness of spill response measures).

9.

The specialist studies conducted as part of the TEEPSA-567 ESIA include oil spill modelling (OSM), as well as specialist reports on marine ecology, fisheries, social impact assessment and cultural impact assessment (among others). These specialist reports and the draft EIR were in turn informed by the OSM.

10.

The following sections of the Green Connection's comments highlight some of the key issues and likely impacts of a major oil spill (wellhead blowout) that are highly relevant to the decision on authorisation.

11.

(i) OSM

The draft EIR includes modelling of a crude oil spill scenario as a 'worst-case' scenario (in comparison to a gas condensate spill scenario). Two discharge or release points (i.e. hypothetical exploration well drilling locations) were selected at different locations closest to the coast and sensitive areas at two different depths. Release Point 1 is located 72 km from the coast at a 719m depth, while Release Point 2 is located 155 km from the coast at a depth of 1357m.

12.

Four modelling periods were considered for the OSM, namely Season 1: Dec - Feb; Season 2: Mar - May; Season 3: June - Aug; Season 4: Sept – Nov. The modelling took two approaches, namely a stochastic simulation (a statistical calculation/analysis based on results from many

sets of similar releases under a wide range of weather and/or seasonal conditions) and a deterministic simulation (which studies the trajectory and fate of an individual oil slick).² The modelled scenarios simulated a continuous blow-out of 25 000 bbls/day and 700 000 Sm³ of gas/day for a period of 20 days.

13.

In its comments on the draft Scoping Report, the Green Connection highlighted its concerns regarding the assumed duration of a worst-case scenario oil spill (well-head blowout), as well as its concern that various assumptions and parameters for an various assumptions and parameters used in the OSM were not made available for public comment at the Scoping phase. While the Green Connection does not agree that the assumed duration, volume and input parameters subsequently used in the OSM represent the 'worst-case scenario' (the Macondo blowout was only capped after 87 days, and it is unclear how long it would take should capping be unsuccessful and should the drilling of a relief well be required), this section of the comment relies on the results of the OSM provided - with the *caveat* that less conservative assumptions and input parameters would inevitably show greater impacts. In addition, the Green Connection records its objection to the assumptions and parameters not having been subject to public consultation.

14.

Release Point 1

In brief, the OSM report indicates regarding **Release Point 1** that (among other things):

- The stochastic and deterministic results for show that the period with the maximum oil onshore is Season 3 (June to August) due to northward surface currents and winds driving the oil slick towards North of Cape Town area (i.e. North from Table Mountain National Park), and then strong winds from northwest driving the spill directly towards the South African shoreline.

² App 7, p13.

- During the rest of the year, west to northwest currents are dominant, driving the spill away from the coasts, especially for Season 1 (December to February). This is indicated as the period with the lowest probability of oil reaching the coast and lowest amount of oil onshore.
- The Cape Peninsula (i.e. from Kommetjie to Simon's Town) always has the highest probability of impact (up to 99% during Season 3). The coast of North of Cape Town displays low to medium probability of impact.
- Even with efficient Surface Response and SSDI (subsea dispersants injection), the Cape Peninsula remains highly susceptible to shoreline oiling during Season 3 (up to 95% with Surface Response and SSDI), due to the currents and winds main directions drifting oil quickly onto the nearby coastline.
- During the rest of the year (Seasons 1, 2 and 4), a spill seems to have less impact on the shoreline (with capping only or with additional surface response and SSDI) than during Season 3, with the lowest probability of shoreline impact during season 1 (December-February).³

15.

A summary of the results in respect of Release Point 1 are presented in the OSM in Table 22 (reproduced below).⁴ The following is highlighted:

- The maximum shoreline impact probability is 99% (with capping only) and reduces to 95% with Surface Response and SSDI (Season 3). The lowest probability of shoreline impact probability is 33% with Surface Response and SSDI (Season 1).
- The minimum Shoreline Arrival Time for spilled oil is 0.6 days under both capping and with Surface Response and SSDI (Season 3). The maximum Shoreline Arrival Time is 1.6 days (Season 1).
- The maximum amount of oil reaching the shore is 6159 tons (stochastic) (Season 3).

³ App 7, p91.

⁴ App7, p92.

- The deterministic worst case maximum oil shoreline concentration is 14.6 kg/m² (Season 2).
- The deterministic worst-case maximum shoreline length with oil concentration >0.01kg/m² is 1230km (Season 4).

Table 22: Summary of the results for Release Point 1

Scenario	1A / Capping Only	1B / Surface Response + SSDI	2A / Capping Only	2B / Surface Response + SSDI	3A / Capping Only	3B / Surface Response + SSDI	4A / Capping Only	4B / Surface Response + SSDI
Spill	Blowout - Crude Oil Release							
Flow Rate / Amount	Qoil = 25 000 bbl/day Qgas = 700 000 Sm ³ /day							
Period	Season 1	Season 1	Season 2	Season 2	Season 3	Season 3	Season 4	Season 4
Stochastic - Max Distance of Oil Presence Probability>1% in 60 days / Drift Direction (Thickness >5µm)	1105 km NW from release point	648 NW from release point	770 km NW from release point	861 NW from release point	690 km W from release point	633 NW from release point	700 km WNW from release point	687 km WNW from release point
Stochastic - Shoreline length that could receive oil (considering all the simulations)	2640 km	1163 km	1830 km	1367 km	2063 km	1642 km	1894 km	1346 km
Stochastic - MAX. % shoreline impact probability	60	33	89	80	99	95	83	76
Stochastic MAX. Oil amount onshore (tons)*	4414	894	5432	2080	6159	3494	3490	1430
Stochastic - Minimum Shoreline Arrival Time (days)	1.6	1.6	1.1	1.1	0.6	0.6	1	1
Stochastic - Water Column Probability of contamination	Surface: 90% until 165 km NW Deep: 90% until 14 km SE	Surface: 90% until 96 km NW Deep: 90% until 18 km SE	Surface: 90% until 76km NW Deep: 90% until 10 km SE	Surface: 90% until 92km NW Deep: 90% until 14 km SE	Surface: 90% until 76 km NW Deep: 90% until 9 km SE	Surface: 90% until 83 km NW Deep: 90% until 4 km SE	Surface: 90% until 111 km NW Deep: 90% until 5.5 km SE	Surface: 90% until 112 km NW Deep: 90% until 5.6 km SE
Deterministic Worst- case Maximum Oil Shoreline Concentration	12.8 kg/m ²	6.2 kg/m ²	14.6 kg/m ²	14.5 kg/m ²	13.9 kg/m ²	13.1 kg/m ²	9.9 kg/m ²	8.7 kg/m ²
Deterministic Worst- case Maximum Shoreline Length with Oil Concentration >0.01 kg/m ²	960	505	650	492	860	709	1230	1031

*The maximum oil amount onshore corresponds to the single deterministic simulation part of the stochastic scenario with the maximum oil amount onshore at the end of the simulation duration (60 days)

16.

The modelling also indicates regarding water column and surface layer probability of

contamination that, depending on the season, stochastic simulation results of the oil spill modelling study indicated that at Release Point 1 the hydrocarbon mixture escaping from the well reaches the higher probability for contamination of the deep layers at 380 m to 420 m depth before forming a subsurface plume that is transported in a NW direction by the current. For this deep layer, 90% probability is reached at distances between approximately 9 km and 14 km from the well site, but spreading up to 70 km to the SE (Season 1) and in the direction of the sensitive Brown's Bank MPA and EBSA, and up to 97 km to the NW (Season 4) in the direction of the Cape Canyon. The probability of contamination of surface water (0-20 m depth) extends up to 165 km to the NW (90% probability), but spreading up to 1 420 km to the NW (Worst case: Season 1). The draft EIR goes on to state that considering the mitigated scenario, the implementation of SSDI results in an increase in the deep layer contamination area and the depth of contamination at both release points. For Release Point 1 there is a 90% probability of contamination up to 18 km and maximum distance 61 km SE to 114 km NW at maximum depths of 400 – 420 m, as the dispersant decreases the size of the droplets, reducing the speed of ascent to the surface, thereby increasing the presence of oil in the deep layers, especially close to the release point.⁵

17.

The results of the OSM stochastic simulation in respect of surface and shoreline oiling probability results for Season 3 at Release Point 1 are depicted in the diagram below:⁶

⁵ Chapter 10, p444.

⁶ App 7, p67.

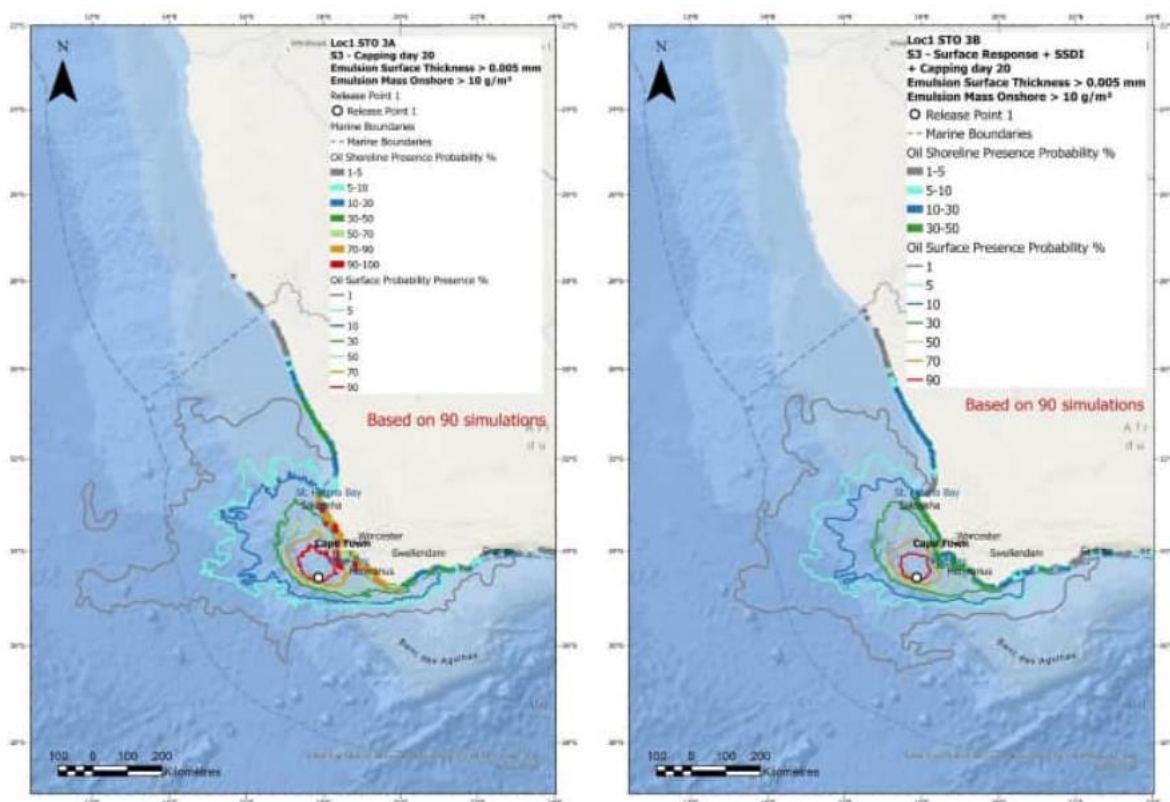


Figure 35: Loc1 - Stochastic Simulation No Response (A) VS Response (B) - Season 3 - Surface and shoreline results

18.

The results of the OSM relating to water column probability of contamination is indicated in the diagram below:⁷

⁷ App 7, p70.

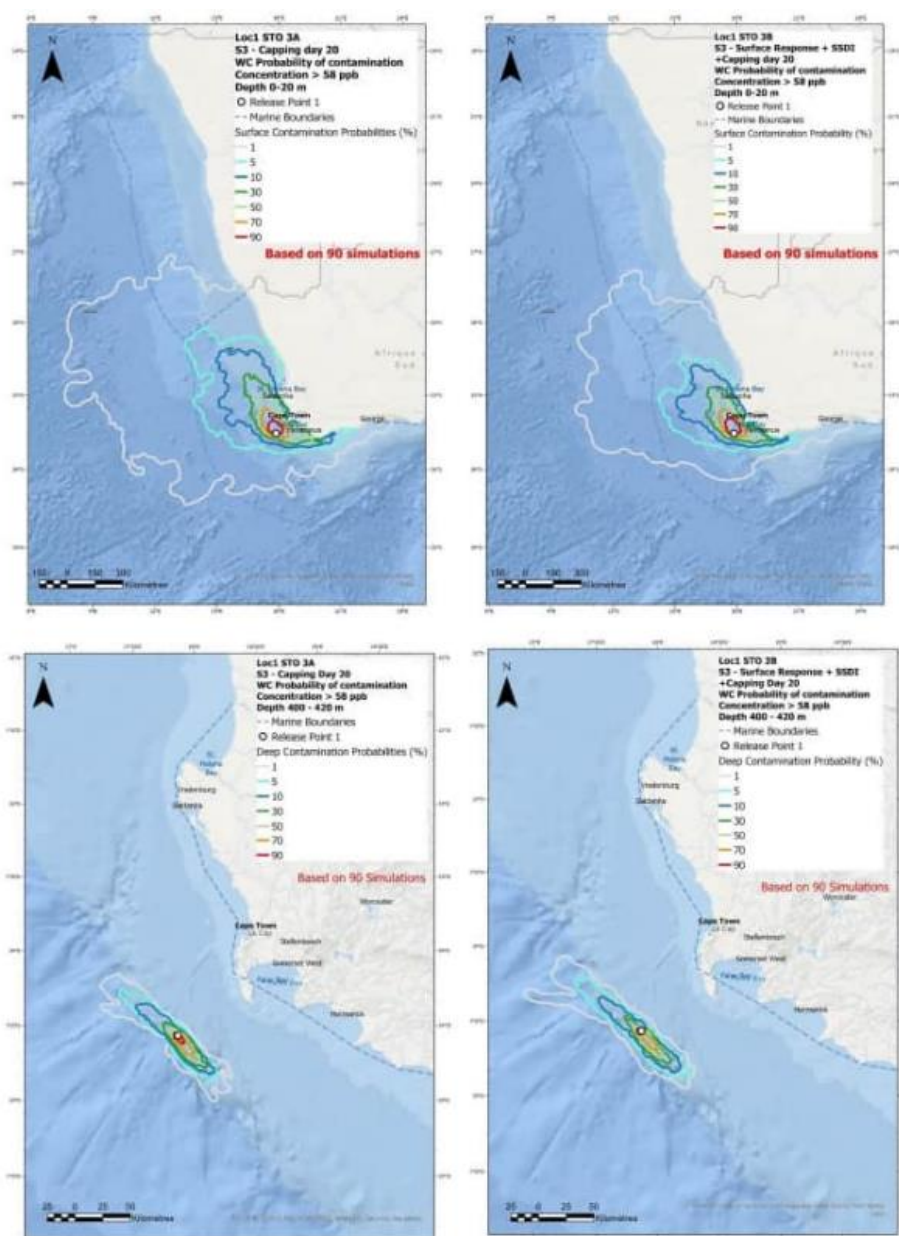


Figure 37: Loc1 - Stochastic Simulation No Response (A) VS Response (B)- Season 3 - Water Column Probability of Contamination - Top figures: Surface Layers; Bottom figures: Deep layers

19.

Release Point 2

In brief, the OSM indicates regarding **Release Point 2** that (among other things):

- From all the results (Stochastic and Deterministic simulations), the period with the maximum probability and highest amount of oil onshore is Season 3 (June to August) due to eastward to north-eastward surface currents and winds from W-NW directly driving the spill towards E-NE thus towards the South African shoreline.

- During the rest of the year, west to northwest currents are dominant, driving the spill away from the coasts, especially for Season 1 (December to February), which is the period with the lowest probability of oil reaching the coast and lowest amount of oil onshore.
- The coastline from Hermanus to Cape Agulhas has the highest probability of impact (up to 98% during Season 3 – without response), and North of Cape Town and vicinity of George remain sheltered most of the time. The coast of the Cape Peninsula and False Bay (i.e. from New Cape Point Lighthouse to Rooi-Els) displays low to medium probability of impact.
- Even with efficient Surface Response and SSDI, Cape Agulhas remains highly susceptible to be impacted during Season 3 (up to 87% with response) due to the main direction of the currents and winds drifting oil quickly onto the nearby coastline. During the rest of the year (Seasons 1, 2 and 4), a spill seems to have less impact on the shoreline (with capping only or with Surface Response and SSDI) than during Season 3, with the lowest probability of shoreline impact during Season 1 (December-February).

20.

A summary of the OSM results in respect of Release Point 2 are presented in the OSM in Table 25 (reproduced below).⁸ The following is highlighted:

- The maximum shoreline impact probability is 98% (with capping only) and reduces to 87% with Surface Response and SSDI (Season 3). The lowest probability of shoreline impact probability is 37% with Surface Response and SSDI (Season 1).
- The minimum Shoreline Arrival Time for spilled oil is 2.2 days under both capping and with Surface Response and SSDI (Season 3). The maximum Shoreline Arrival Time is 4.4 days (Season 4).
- The maximum amount of oil reaching the shore is 1700 tons (stochastic) (Season 3).

⁸ App 7, p137.

- The deterministic worst case maximum oil shoreline concentration is 9.4kg/m² (Season 3).
- The deterministic worst case maximum shoreline length with oil concentration >0.01kg/m² is 800km (Season 3).

Table 25 : Release point 2: Summary of the Stochastic and Deterministic Simulation for Release Point 2 – Capping Only and Surface Response + SSDI scenarios

Scenario – Loc2	1A / Capping Only	1B / Surface Response + SSDI	2A / Capping Only	2B / Surface Response + SSDI	3A / Capping Only	3B / Surface Response + SSDI	4A / Capping Only	4B / Surface Response + SSDI
Spill	Blowout - Crude Oil Release							
Flow Rate / Amount	Qoil = 25 000 bbl/day Qgas = 700 000 Sm ³ /day							
Period	Season 1	Season 1	Season 2	Season 2	Season 3	Season 3	Season 4	Season 4
Stochastic - Max Distance of Oil Presence Probability >1% in 60 days / Drift Direction (Thickness >5µm)	755 km NW from release point	613 NW from release point	703 km NW from release point	802 NW from release point	600 km W from release point	499 NW from release point	590 km from release point	556 km from release point
Stochastic - Shoreline length that could receive oil (considering all the simulations)	940 km	609 km	1634 km	1262 km	1533 km	1211 km	1635 km	887 km
Stochastic - MAX. % shoreline impact probability	47	37	90	75	98	87	80	65
Stochastic – MAX. oil onshore amount (tons)*	1629	757	1210	996	1700	946	1405	818
Stochastic - Minimum Shoreline Arrival Time	3.3	3.9	3.1	3.1	2.2	2.2	4.4	3.9
Stochastic - Water Column Probability of contamination	Surface: 90% until 91 km NW Deep: 90% until 8 km SE	Surface: 90% until 93 km NW Deep: 90% until 18 km SE	Surface: 90% until 79km NW Deep: 90% until 16 km SE	Surface: 90% until 84km NW Deep: 90% until 7.5 km SE	Surface: 90% until 87 km NW Deep: 90% until 13 km SE	Surface: 90% until 87 km NW Deep: 90% until 11 km SE	Surface: 90% until 74 km NW Deep: 90% until 16 km SE	Surface: 90% until 77 km NW Deep: 90% until 14 km SE
Deterministic Worst-case Maximum Oil Shoreline Concentration	7.9 kg/m ²	5.6 kg/m ²	6.5 kg/m ²	4.2 kg/m ²	9.4 kg/m ²	7.3 kg/m ²	10.3 kg/m ²	9.3 kg/m ²
Deterministic Worst-case Maximum Shoreline Length with Oil Concentration >0.01 kg/m²	570	450	730	660	800	714	520	527

**The maximum oil amount onshore corresponds to the single deterministic simulation part of the stochastic scenario with the maximum oil amount onshore at the end of the simulation duration (60 days)*

21.

The modelling also indicates regarding water column and surface layer probability of contamination that depending on the season, for Release Point 2 in deeper water, higher

probability for contamination of the deep layers is reached at between 1 000 m and 1 020 m depth, with the oil in most cases being transported in a NW direction by the current reaching 90% probability between approximately 8 km and 16 km from the well site (depending the season), but spreading up to 77 km to the SE (Season 1) and in the direction of the sensitive Brown's Bank MPA and EBSA. The probability of contamination of surface water (0-20 m depth) extends up to 91 km to the NW (90% probability) but spreading up to 1 172 km to the WNW (Worst case: Season 1). Again considering the mitigated scenario, the implementation of SSDI results in an increase in the deep layer contamination area and the depth of contamination. At Release Point 2, the contamination area extends up to 18 km SE for the 90% probability for Season 1, but with a maximum distance of 62 km SE for Season 4, and maximum depths of 980 – 1 000 m.

22.

The results of the OSM stochastic simulation in respect of surface and shoreline results for Season 3 at Release Point 2 are depicted in the diagram below:⁹

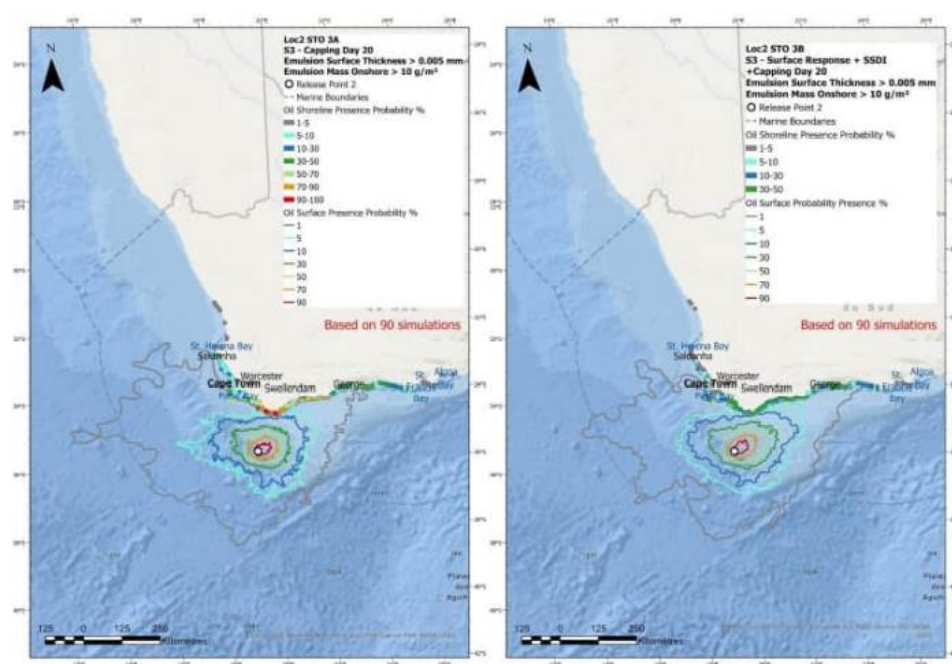


Figure 67: Loc 2: Stochastic Simulation No Response VS. Response - Season 3 - Surface and shoreline results

⁹ App 7, p110.

23.

The results of the OSM relating to water column probability of contamination is indicated in the diagram below:¹⁰

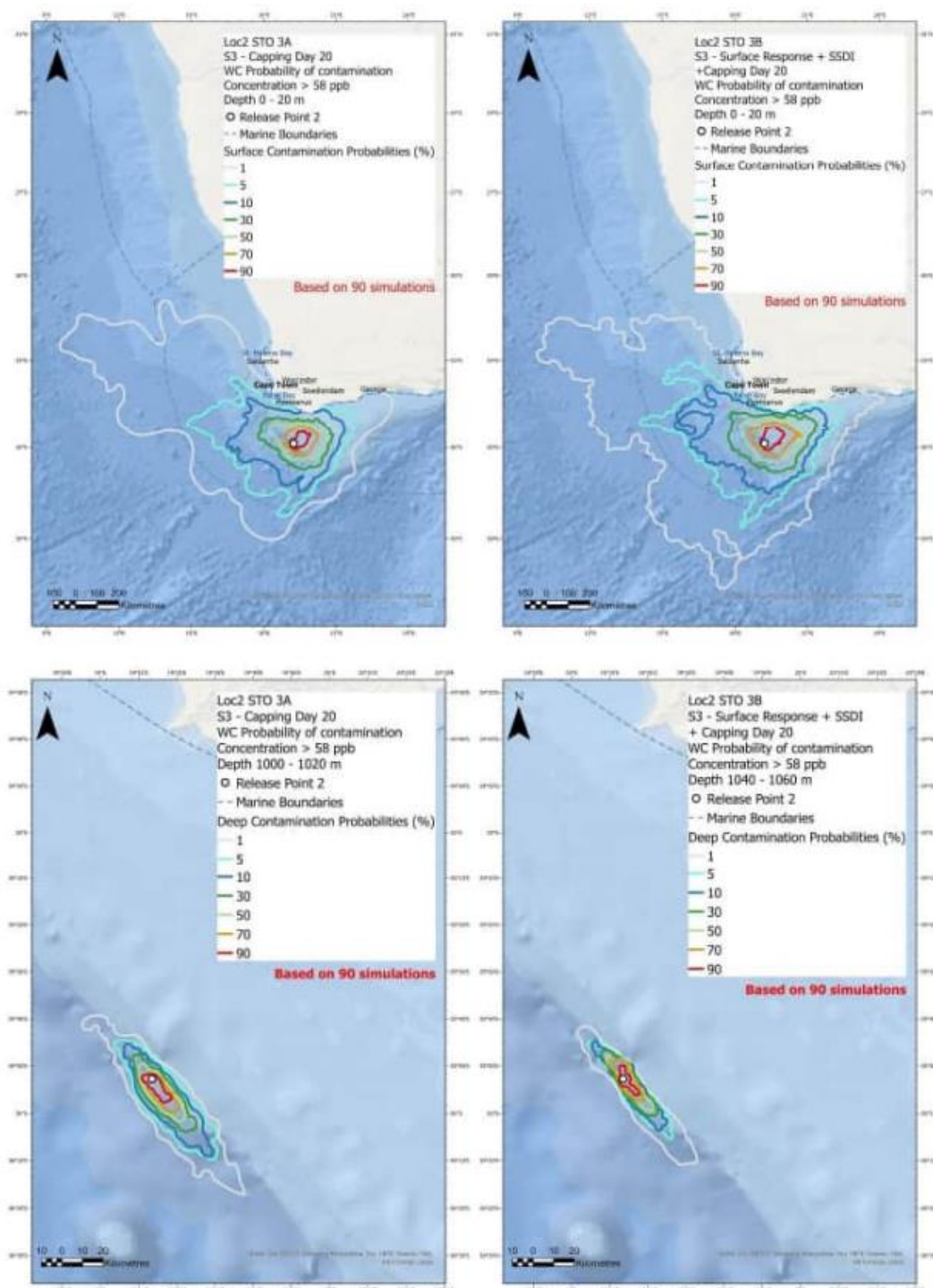


Figure 69: Loc 2: Stochastic Simulation No Response VS. Response – Season 3 – Water Column Probability of Contamination – Top figures: Surface Layers; Bottom figures: Deep layers

¹⁰ App 7, p113.

24.

Release Points 1 and 2

A comparison of the shoreline oiling results for Season 3 at both Release Points 1 and 2 is presented in the OSM in Table 26 (reproduced below):¹¹

Table 26: Point 1 versus Point 2 worst period stochastic comparison

Release Point	Release Point 1		Release Point 2	
Stochastic Simulation Worst Period - Season 3	Season 3 - Capping Only	Season 3 - Surface Response + SSDI	Season 3 - Capping Only	Season 3 - Surface Response + SSDI
Flow Rate / Amount	Qoil = 25 000 bbl/day Qgas = 700 000 Sm3/day			
Main direction of the Spill Drift	towards W or NW	towards NW	towards E or NW	towards E-NE
MAX. distance of the 90%-oil-surface-probability contour	92 km from Release Point 1	72km from Release Point 1	47 km E from Release Point 2	47 km NE from Release Point 2
MAX. distance of the 1%-oil-surface-probability contour	650 km NW and 690 km W from Release Point 1	633km NW from Release Point 1	600 km NW from Release Point 2	499 km NW from Release Point 2
Offshore waters reached by the spill	South African and International	South African, Namibian, and International	South African and International	South African and International
Shoreline length that could receive oil (considering all the simulations)	2063 km	1642 km	1533 km	1211 km
MAX. % shoreline impact probability	99%	95%	98%	87%
North of Cape Town probability of shoreline oiling	Up to 88%	Up to 77%	Up to 30%	Up to 4%
Vicinity of George probability of shoreline oiling	up to 30%	up to 10%	Up to 70%	Up to 43%
Cape Peninsula to False Bay probability of shoreline oiling	up to 99%	up to 95%	Up to 70%	Up to 33%
Hermanus bay to Cape Agulhas probability of shoreline oiling	up to 90%	up to 90%	Up to 98%	Up to 87%
MAX. Oil onshore amount (tons)*	6159	3494	1700	946
Minimum Shoreline Arrival Time	0.6 day	0.6 day	2.2 days	2.2 days

**The maximum oil amount onshore corresponds to the single deterministic simulation part of the stochastic scenario with the maximum oil amount onshore at the end of the simulation duration (60 days)*

25.

The above table shows that under certain modelled scenarios the oil spill reaches Namibian waters, as well as international waters outside of South Africa's exclusive economic zone (EEZ).

¹¹ App7, p138.

26.

The OSM indicates further that:

- Despite the different localization of the two release points, strong winds and currents drive the oil spill directly towards the shoreline during Winter (Season 3).
- For both release locations for Season 3, the addition of Surface Response and SSDI reduces the probability of shoreline oiling: it is more effective in reducing the probability of shoreline oiling for Release Point 2 than for the Point 1, but it is less effective in decreasing its oil surface probability and shows greater results in reducing the oil surface probability for Release Point 1 than for Release Point 2.
- An oil spill from the Release Point 2 would be less impactful than from the Release Point 1: a lower oil amount reaches the shore, the oil presence probability on the coast is lower, and arrival times to shore higher.
- For the rest of the year, for both release points, Season 1 displays a maximum probability of shoreline oiling in one point lower than for other seasons (47% for Release Point 2 and 60% for Release Point 1). Seasons 2 and 4 show approximately similar probability of shoreline oiling.
- Even if the probability of shoreline oiling is not significantly different from one Release Point to another, the coastline areas susceptible to be the most impacted are different. For Release Point 1, the most impacted shoreline would be the coast from St. Helena Bay to the Cape Peninsula, including North of Cape Town, and sometimes further south reaching Hermanus. For Release Point 2, the most impacted coastline would be from Hermanus to Cape Agulhas.
- The deterministic simulations show that the Surface Response and SSDI is more efficient when surface and winds direction are constant and less efficient when surface and winds are highly variable.

- Additionally, an oil spill from Release Point 1 could reach the Namibian offshore waters (< 30% of probability), while an oil spill from Release Point 2 would not reach Namibian offshore waters and shoreline.¹²

27.

The OSM presents a summary of the main results of the onshore impact of an oil spill from Release Point 1 and Release Point 2 for the worst and best case scenarios in Table 27:

Table 27 Summary of the worst case / best case onshore impact results for both release points

	Release Point 1				Release point 2			
Period	Worst Case		Best Case		Worst Case		Best Case	
Season	Season 3 - Capping Only	Season 3 - Surface Response + SSDI	Season 1 - Capping Only	Season 1 - Surface Response + SSDI	Season 3 - Capping Only	Season 3 - Surface Response + SSDI	Season 1 - Capping Only	Season 1 - Surface Response + SSDI
MAX. % shoreline impact probability	99%	95%	60%	33%	98%	87%	47	37
MAX. Oil onshore amount (tons)*	6159	3494	4414	894	1700	946	1629	757

**The maximum oil amount onshore corresponds to the single deterministic simulation part of the stochastic scenario with the maximum oil amount onshore at the end of the simulation duration (60 days)*

28.

Synthesis

In summary, the OSM predicts that in the event of an uncontrolled oil spill as a result of a wellhead blowout, the oil spill will (depending on wind and current directions prevalent at the time) quickly reach South Africa's shoreline, and in more limited scenarios may reach as far as Namibian and international waters. While capping, Surface Response and SSDI reduces the concentration of surface oil reaching South Africa's coastline, it does not eliminate the probability of significant shoreline contamination.

¹² App7, p139.

29.

The OSM also predicts that a subsurface plume would under some of the modelled scenarios spread in the direction of the sensitive Brown's Bank MPA and EBSA (Release Points 1 and 2) and in the direction of the Cape Canon (Release Point 1). The implementation of SSDI results in an increase in the deep layer contamination area and the depth of contamination for both release points.

30.

As mentioned earlier, these OSM results are in turn relied upon to inform the assessment of the significance of the impact of a major oil spill on marine ecology, fisheries, socio-economic sectors and on culture. These impacts are discussed in the sections that follow.

31.

(ii) Marine Ecology

The Marine Ecology Impact Assessment Report includes an assessment of the significance of (among other things) an uncontrolled oil spill on marine ecology. The potential impacts are indicated as including toxic effects on marine biota and reduced faunal health, and pollution and smothering of coastal habitats.¹³

32.

The report indicates that the highest sensitivities to a major oil spill (unplanned event) are:

- Large migratory and resident cetaceans;
- Brown's Bank and Cape Canyon deep-water reefs that support potentially vulnerable, long-lived benthic invertebrate species;
- Offshore MPAs, EBSAs and CBAs in the broader project area;
- Coastal and estuarine habitats along the West Coast;

¹³ TEEPSA567-App11 Marine Ecology, p vi.

- African Penguins and Cape Gannets, who have their largest colonies on the Saldanha Bay Islands, Dassen Island and at Robben Island;
- Critically endangered, endangered and vulnerable pelagic seabirds (primarily albatrosses); and
- Loggerhead and leatherback turtles that migrate through the area.¹⁴

33.

The table¹⁵ reproduced below shows the close proximity of the exploration drilling area of interest (AOI) to critically endangered, endangered and vulnerable ecosystems (which would be impacted by a major oil spill under certain weather conditions):

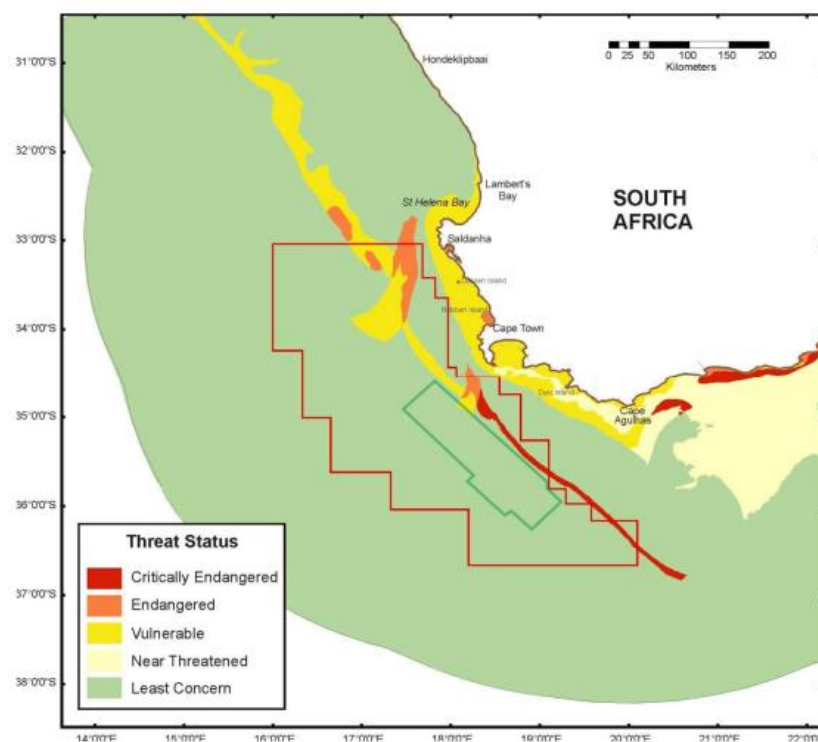


Figure 53: Block 5/6/7 (red polygon) and the Area of Interest for drilling (green polygon) in relation to the ecosystem threat status for coastal and offshore benthic and pelagic habitat types on the South African West and South Coasts (adapted from Sink *et al.* 2019).

¹⁴ Ibid, pvi.

¹⁵ App 11, at p119.

While it is noted that the Marine Ecology report indicates that TEEPSA positioned the AOI to avoid MPAs and EBSAs,¹⁶ it is submitted that although this may reduce the impacts of ‘normal’ drilling operations on such areas, it would not necessarily prevent mobile oil in the water column or on the surface from being transported to and impacting on such areas.

34.

The Marine Ecology report also highlights the risk of a major spill, stating that:

...the greatest environmental threat from offshore drilling operations is the risk of a major spill of crude oil occurring either from a blow-out or loss of well control. A blow-out is the uncontrolled release of crude oil and/or natural gas from a well after pressure control systems have failed’.¹⁷ The report warns that ‘oil spilled in the marine environment would have an immediate detrimental effect on water quality, with the toxic effects potentially resulting in mortality (e.g. suffocation and poisoning) of marine fauna or affecting faunal health (e.g. respiratory damage). If the spill reaches the coast, it can result in the smothering of sensitive coastal habitats’.¹⁸

35.

Importantly, the report goes on to point out that although the AOI is ‘*located in the marine environment, far removed from coastal MPAs and any sensitive coastal receptors (e.g. key faunal breeding/feeding areas, bird or seal colonies and nursery areas for commercial fish stocks), a large spill could still directly affect these sensitive coastal receptors, as well as migratory pelagic species transiting through the drill area*’.¹⁹ The report states further that the while benthic biota inhabiting unconsolidated sediments of the outer shelf and continental slope are very poorly known, at the depths of the proposed well are expected to be relatively ubiquitous. However, while the AOI for drilling avoids vulnerable marine ecosystem (VME) species in the Brown’s Bank Corals EBSA and MPA, it does overlap with Critical Biodiversity Areas (CBAs).

¹⁶ App11, p136.

¹⁷ Ap 11, p246.

¹⁸ Ibid.

¹⁹ App 11, p247.

36.

The report goes on to report as follows:

Being highly toxic, oil released during a blow-out would negatively affect any marine fauna it comes into contact with. The taxa most vulnerable to hydrocarbon spills are coastal and pelagic seabirds. Some of the species potentially occurring in the drill area, are considered regionally 'Endangered' (e.g. African Penguin, Cape Gannet, Cape Cormorant, Bank Cormorant, Roseate Tern, Atlantic and Indian Yellow-nosed Albatross, Northern Royal Albatross, Sooty Albatross, Grey-headed Albatross) or 'Vulnerable' (e.g. White Pelican, Caspian Tern, Damara Tern, Wandering Albatross, Southern Royal Albatross, Leach's Storm Petrel, White-chinned Petrel, Spectacled Petrel). Numerous species of fish, turtles and cetaceans occurring in the project area are also considered regionally 'Critically Endangered' (e.g. Leatherback turtle, blue whale), 'Endangered' (e.g. loggerhead and green turtles, Fin and Sei whales, shortfin mako, whale shark, southern bluefin tuna), 'Vulnerable' (e.g. longfin mako, great white shark, whitetip sharks, sperm whale) or 'Near threatened' (e.g. blue shark). Although species listed as 'Endangered' or 'Vulnerable' may potentially occur in the drill area, due to their extensive distributions their numbers are expected to be low. Overall sensitivity of offshore receptors to a large oil spill is considered to be **HIGH**.

As the oil is predicted to reach the shore, sensitive nearshore and coastal receptors must also be considered. Ecosystem types between Cape Agulhas and Cape Columbine considered 'Critically Endangered' (Southeast Atlantic Upper Slope), 'Endangered' (Cape Upper Canyon and Southern Benguela Muddy Shelf Edge) and 'Vulnerable' (Cape Lower Canyon, Southern Benguela Rocky Shelf Edge and Southern Benguela Sandy Shelf Edge) could potentially be affected by a spill. Coastal sensitivity along most of the southwestern Cape coast is considered 'Vulnerable' although portions of the coastline (particularly in Table Bay and Saldanha Bay) are considered 'Endangered'.... Similarly, there are a number of estuaries considered 'Critically Endangered' and 'Endangered' along the West Coast ..., with most others between Cape Agulhas and Mossel Bay considered 'Vulnerable'. Although not all of these habitats will be impacted concurrently, and the species inhabiting them have fairly extensive distributions, the sensitivity of the coastal habitats, especially coastal bird breeding colonies (e.g. Saldanha Bay Islands, Dassen Island, Robben Island, Dyer Island) is considered of **VERY HIGH** sensitivity.

The overall sensitivity of marine ecology/environment to a large oil spill is considered **VERY HIGH**.²⁰ (underlining added)

37.

The Marine Ecology report states further that the components of oil known to be toxic to marine organisms include volatile organic compounds (VOCs) such as benzene, toluene,

²⁰ App 11, p247-248.

ethylbenzene, and xylene, collectively known as BTEX, as well as polycyclic aromatic hydrocarbons (PAHs), which are known for their persistence in the environment.²¹

38.

Plankton

The draft EIR indicates that plankton is particularly abundant in the shelf waters off the West Coast, being associated with the upwelling characteristic of the region. This includes phytoplankton (the principle primary producers), zooplankton and ichthyoplankton (fish eggs and larvae). Major fish spawning areas (including for hake, snoek, sardine and anchovies) are presented in Figure 7-23 of the draft EIR²² (reproduced below):

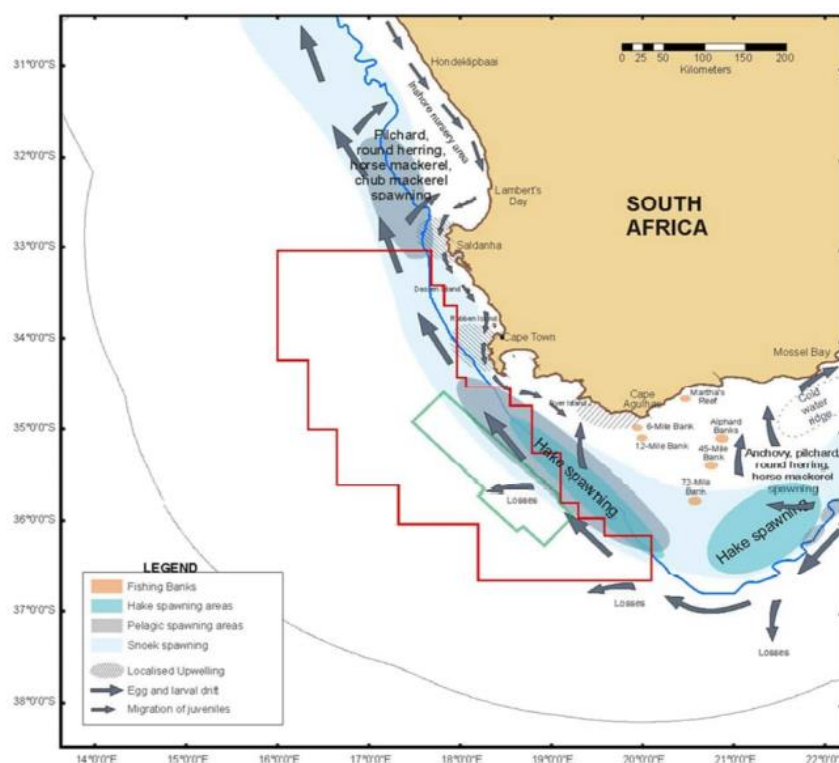


FIGURE 7-23: BLOCK 5/6/7 AND THE AREA OF INTEREST IN RELATION TO MAJOR SPAWNING AREAS IN THE SOUTHERN BENGUELA REGION

Adapted from Cruikshank 1990

39.

Sandy Shores

Regarding sandy shores, the Marine Ecology report indicates that while only a portion of the

²¹ App 11, p249.

²² Draft EIR, ch 7, p162.

oil spilled from an offshore well typically reaches the shoreline, even small amounts can cause widespread contamination of coastal habitats and ecosystems (including estuaries and wetlands).

40.

Weathered oil from a spill can appear on beaches as tar mats, and despite clean-up efforts can remain on sandy shorelines for a number of years, as smaller oil fragments and mats can become buried in the sediments to depths of over a metre through accretion. Heavy weather conditions and littoral drift can re-expose these deposits, redistributing the oil particles and mats along the shore and resulting in the re-oiling of beaches even three years after the initial oil stranding.

41.

The report states that oil spilled on beaches results in significant declines in abundance, biomass and diversity of meiofaunal and macrofaunal communities, with recovery of macrofaunal communities typically occurring at between 2-5 years but with recovery of burrowing and long-lived species potentially taking up to 10 years on heavily oiled beaches. Recovery of meiobenthos is typically more rapid, while in some cases recovery of the invertebrate communities is hampered by both re-oiling frequency and the type and degree of beach clean-up following the spill, while in other cases clean-up attempts promote recovery.²³

42.

Rocky Shores

With regard to rocky shores, the Marine Ecology report indicates that natural recolonisation begins after the processes of physical and chemical degradation have started, with recovery of benthic communities typically occurring within three years. However, active clean-up operations of rocky shores can have a negative or marginal influence on the rate of recovery

²³ App 11, p254.

(sterilising the substratum by removing or killing those biota that survived the initial effects of oiling, which biota would have formed the basis of the subsequent recovery process).

43.

Estuaries

The Marine Ecology report indicates that there are 64 estuarine systems along the West Coast between the Orange River and Cape Agulhas, with a further 30 systems between Cape Agulhas and Plettenberg Bay. Approximately 75% of the Cool Temperate bioregion estuarine ecosystem (West Coast) types are 'Critically Endangered' or 'Endangered', while 13% are considered 'Vulnerable'.²⁴

44.

The draft EIR notes that estuaries are highly productive systems and offer rich feeding grounds, warmer temperatures and sheltered habitat for many organisms. The high productivity is exploited by many line-fish and harvested invertebrate species either as a nursery or later in life either directly through habitat availability or indirectly through the contribution to overall coastal productivity. The contribution of the estuarine nursery function has been estimated as R960 million in 2018 terms (equivalent to over R1 billion in 2020) to the South African economy, with the highest value attributed to the estuaries of the South-Western and Eastern Cape.

45.

Marine Protected and Sensitive Areas

The draft EIR indicates that while License Blocks 5/6/7 overlap with two offshore MPAs (Brown's Bank and Southeast Atlantic Seamounts MPAs), the AOI for the proposed exploration drilling avoids these MPAs. Notwithstanding this, it is submitted that these MPAs (and other sensitive areas discussed below) could be impacted by a major oil spill if the subsea

²⁴ App 11, p105.

plume or surface oil was transported in the direction of these MPAs by prevailing current and wind directions.

46.

According to the draft EIR, coastal MPAs within the project's indirect area of influence include the Namaqua National Park MPA, Rocher Pan MPA, West Coast National Park MPA network (Langebaan Lagoon, Sixteen Mile Beach, Marcus Island, Malgas Island and Jutten Island), Table Mountain National Park MPA, Helderberg MPA, Walker Bay MPA, De Hoop MPA, Goukamma MPA and Robbeberg MPA. Offshore MPAs within the project's indirect area of influence include Orange Shelf Edge MPA, Namaqua Fossil Forest MPA, Child's Bank MPA, Benguela Muds MPA, Cape Canyon MPA, Robben Island MPA, Agulhas Bank Complex MPA, Agulhas Muds MPA and the South West Indian Seamount MPA.²⁵

47.

Block 5/6/7 also overlaps with five EBSAs (although the AOI for the exploration drilling avoids these EBSAs), while there are also a number of other EBSAs in the indirect area of influence (to the north and east).²⁶

48.

Importantly, the draft EIR indicates that Block 5/6/7 overlaps with areas mapped as Protected Area, Critical Biodiversity Area 1 (CBA 1) Natural, CBA 1 Restore, Critical Biodiversity Area 2 (CBA 2) Natural, CBA 2 Restore and Ecological Support Area (ESA), whereas the AOI for the proposed exploration drilling overlaps with CBA 1 Natural & Restore and CBA 2 Natural & Restore mainly in the north, but also marginally in the south. Approximately 5.4 % of the AOI is covered by CBA 1 and CBA 2.²⁷ CBA 1 indicates irreplaceable or near-irreplaceable sites that are required to meet biodiversity targets with limited, if any, option to meet targets

²⁵ Draft EIR ch7, 204-208.

²⁶ Draft EIR ch7, p208-212.

²⁷ Draft EIR ch7, p212. The report indicates that CBA 1 indicates irreplaceable or near-irreplaceable sites that are required to meet biodiversity targets with limited, if any, option to meet targets elsewhere, whereas CBA 2 are "best design sites" and there are often alternative areas where feature targets can be met; however, these will be of higher cost to other sectors and / or will be larger areas.

elsewhere, whereas CBA 2 are "best design sites" and there are often alternative areas where feature targets can be met; however, these will be of higher cost to other sectors and / or will be larger areas.

49.

The draft EIR points out that numerous coastal Important Bird Areas (IBAs) are also located in the general project area, inshore of Block 5/6/7. Block 5/6/7 overlaps with the proposed Bird Island / Dassen Island / Heuningnes River and estuary system / Lower Berg river wetlands marine IBA and the Atlantic Southeast 19 IBA. The AOI for the proposed exploration drilling overlaps with the proposed Atlantic Southeast 19 IBA.²⁸

50.

Eleven Ramsar Sites also occur within the project's indirect area of influence.²⁹

51.

The draft EIR goes on to point out that while much of the West Coast of South Africa has not yet been assessed with respect to its relevance as an Important Marine Mammal Area (IMMA), the coastline from the Olifants River mouth on the West Coast to the Mozambiquan border overlaps with three declared IMMAs.³⁰ While these are not located in the AOI for the proposed exploration drilling, these IMMAs could be impacted by (for example) a major oil spill.

52.

Fish

The Marine Ecology report states that adult free-swimming fish in the open sea seldom suffer long-term damage from oil spills because oil concentrations in the water column decline rapidly following a spill, rarely reaching levels sufficient to cause mortality or significant harm.

²⁸ Draft EIR Ch 7, p214.

²⁹ Draft EIR Ch 7, p216.

³⁰ Draft EIR, CH 7 p219.

Adult pelagic fish are expected to actively avoid very contaminated waters, and consequently documented cases of fish-kills in offshore waters are sparse. However in extreme cases of coastal spills when gills become coated with oil, effects can be lethal, particularly for benthic or inshore species.

53.

The report goes on to point out that sub-lethal and long-term effects can include disruption of physiological and behavioural mechanisms, reduced tolerance to stress and opportunistic pathogens, and incorporation of PAHs through ingestion of contaminated sediments or prey that has accumulated oil. Gene expression and potential effects on sex determination, sexual differentiation, growth regulation and DNA damage in fish was found to be a robust indicator of oil exposure in fish.

54.

The draft EIR indicates further that the embryonic and larval life stages of fish show acute toxicity to PAHs, even at low concentrations, although effects vary depending on the species and the extent of exposure. Toxicity effects on the early life stages of fish are generally defined by the occurrence of pericardial edema, which is often accompanied by reduced heart rate and atrial contractility, particularly in large predatory pelagic species such as tunas and billfish. The cardiotoxic effect may also be accompanied by spinal curvature, finfold damage, and craniofacial malformations. Impaired cardiovascular development in fish embryos is thought to reduce individual cardiovascular performance and reduce swimming performance in later life, and there is therefore a high risk for reduced productivity of some commercially-important species.

55.

The Green Connection submits that there is also a risk of humans eating contaminated fish (which could be weaker and more prone to being predated or caught), including a risk of bioaccumulation in the food chain.

56.

Seabirds

With regard to seabirds, the Marine Ecology report states that chronic and acute oil pollution is a significant threat to both pelagic and inshore seabirds, many of which breed on the Saldanha Bay Islands, Dassen Island, Robben Island and Dyer Island, which could be impacted by a large spill.

57.

The report states that diving sea birds that spend most of their time on the surface of the water are particularly likely to encounter floating oil, and will die as a result of even moderate oiling, which damages plumage and eyes. The majority of associated deaths are as a result of the properties of the oil and damage to the water repellent properties of the birds' plumage. This allows water to penetrate the plumage, decreasing buoyancy and leading to sinking and drowning. In addition, thermal insulation capacity is reduced requiring greater use of energy to combat cold. Oil is also ingested as the birds preen in an attempt to clear oil from plumage and may furthermore be ingested over the medium to long term as it enters the food chain. The effects of ingested oil include anaemia, pneumonia, intestinal irritation, kidney damage, altered blood chemistry, decreased growth, impaired osmoregulation, and decreased production and viability of eggs. Furthermore, even small concentrations of oil transferred from adult birds to the eggs can cause embryo mortalities and significantly reduce hatching rate.

58.

Oil spills can thus affect shorebirds through direct acute mortality, as well as indirectly or long term by sub-lethal effects on bird health and behaviour. Habitat degradation of distant feeding or breeding areas may affect bird populations in ways that carry over to subsequent seasons.

59.

Turtles

The Marine Ecology report states that turtle hatchlings carried southwards in the Agulhas Current and into the Agulhas retroflection zone may become oiled. As turtles spend much of their time at the surface, inhalation of the volatile oil fractions will occur leading to respiratory stress, while coating of eyes, nostrils and mouths with oil will cause vision loss, inhalation and ingestion. Indirect ingestion of oil through contamination of their gelatinous prey or coastal foraging sites is also possible.

60.

The report points out that as turtles often feed in convergence zones, they are particularly at risk to oiling as such oceanic features tends to accumulate oil. Direct miring in oil is the most likely impact, decreasing an animal's ability to move and dive, causing exhaustion, dehydration, overheating, and eventually death. Any turtle deaths from oil exposure would remove them from the breeding population. For species considered 'endangered' or 'critically endangered' such a loss can be significant.³¹

61.

Seals

The Marine Ecology report indicates that little work has been done on the effect of an oil spill on fur seals and sea lions (pinnipeds), but states that they are expected to be particularly vulnerable as oil would clog their fur and - depending on how they maintain their core body temperature - they may die of hypothermia.

62.

The report documents that seal colonies within the broader project area that may be affected by a spill are at Bucchu Twins near Alexander Bay, at Cliff Point (~17 km north of Port Nolloth), at Kleinzee (incorporating Robeiland), Strandfontein Point (south of Hondeklipbaai),

³¹ App11, p255-256.

Paternoster Rocks and Jacobs Reef at Cape Columbine, Vondeling Island, Robbesteen near Koeberg, Seal Island in False Bay, Geyser Rock at Dyer Island, Quoin Point and Seal Island in Mossel Bay.

63.

The report goes on to point out that although pinnipeds should be able to detect oil through vision and/or smell, they apparently do not actively avoid oil, and are therefore likely to come in contact with it if it comes into their habitat. Acute and long-term chronic exposure to oil in pinnipeds negatively affects the mucous membranes, eyes, ears, external genitalia, and internal organ systems. However, due to small sample sizes, the magnitude of the harm and its long-term consequence to individuals and local populations remain unknown.

64.

The report advises that sea lions, seals, walrus and elephant seals are likely to be less vulnerable to oiling. However, fur seals rely mostly on air trapped in their fur, rather than blubber for insulation, and individuals would likely face a serious challenge in maintaining their core body temperature if oiled.

65.

The report also points out that population-level impacts are also likely if spilled oil reaches the haul-out sites and rookeries where these seals rest or annually mass to breed. An ill-timed large spill in the vicinity of a fur seal breeding colony would thus likely be devastating.

66.

The feeding and movement pattern of pinnipeds would also directly affect their susceptibility to an oil spill, especially in species that forage at great distances from their breeding colonies. Fur seals tend to forage in the coastal zone along the continental shelf and will thus be more susceptible to both the acute and chronic effects of an oil spill, especially where the oil is transported to the coast. Differences in foraging behaviour will also result in differences in

exposure after an oil spill, with benthic foragers being more susceptible to chronic exposure through bioaccumulation of PAHs in their prey than pelagic-feeding species.³²

67.

Whales

According to the Marine Ecology report, several species of whales and dolphins occur of the southern African coast, with 35 species known or likely to occur in the waters of the South-West Coast, including the ‘critically endangered’ blue whale, ‘endangered’ sei whales, and ‘vulnerable’ fin and sperm whales.³³

68.

Humpback whales are indicated as likely to be the most frequently encountered baleen whale in the project area, ranging from the coast out beyond the shelf, with year round presence but numbers peaking during the northward migration in June – February and a smaller peak with the southern breeding migration around September – October but with regular encounters until February associated with subsequent feeding in the Benguela ecosystem.³⁴

69.

The report indicates further that with regard to Southern Right whales, given that a high proportion of the population is known to feed in the southern Benguela, and current numbers reported, it is highly likely that several hundreds of right whales can be expected to pass through Block 5/6/7 when migrating southwards from the feeding areas between April and June.³⁵ The area of interest coincides with ‘blue corridors’ or ‘whale superhighways’ used by Humpback and Southern Right whales when migrating between southern Africa and the Southern feeding grounds:

³² App11, p256.

³³ App 11, p74.

³⁴ App11, p86.

³⁵ App 11, 087.



Figure 39: Block 5/6/7 in relation to 'blue corridors' or 'whale superhighways' showing tracks of Humpback whales (orange) and Southern Right whales (green) between southern Africa and the Southern Ocean feeding grounds (adapted from Johnson *et al.* 2022).

70.

The Marine Ecology report advises that the effects of oil pollution on cetaceans are poorly understood, but suggests low vulnerability to oil attributable to their ability to detect and avoid slicks (although the report also points out that conflicting reports on this exist).

71.

According to the report, dispersants added to oil spills have been found to be cytotoxic and genotoxic to whale skin fibroblast cells. The most likely immediate impact of an oil spill on cetaceans is the risk of inhalation of volatile, toxic benzene fractions when the oil slick is fresh and un-weathered. Common effects attributable to the inhalation of such compounds include absorption into the circulatory system leading to narcosis and drowning, inflamed mucous membranes, lung congestion leading to pneumonia, neurological damage and liver disorders, compromised health status and increased disease prevalence, and mild irritation to permanent damage to membranes of eyes, mouth and respiratory tract.

72.

The report points out that for certain species that frequent or live in nearshore waters, a spill may pose significant risk. For example, populations of coastal-oriented odontocetes (that show strong site fidelity restricted to nearshore habitats) could be significantly impacted by a spill oiling nearshore waters. If those habitats were oiled, the animals would experience both acute and chronic exposure through their respiratory system and through ingestion of oil-contaminated prey, which could have long-term effects on population structure and size.

73.

The report goes on to point out that, in contrast, in highly mobile, wide-ranging species, the contact with an oil spill would be relatively brief. In offshore species, the potential for oil disrupting the reproductive behaviour is indicated as remote. However, it is a concern for inshore reproducers, particularly in highly social species, where the disruption of social groups through loss of some key individuals could potentially impact reproductive success over the long-term.

74.

The report points out that the impact of oil pollution on local and migrating cetacean populations will obviously depend on the timing and extent of the spill. The report assumes that the majority of cetaceans will be able to avoid oil pollution, though effects on the population could occur where the region of avoidance is critical to population survival. However, oil pollution in areas of cetacean critical habitat (areas important to the survival of the population), such as the extreme near-shore calving / nursing grounds of the Southern Right whale (e.g. in the vicinity of False Bay, Walker Bay and St Helena Bay), could be the most likely to impact populations.³⁶

75.

Significance

The Marine Ecology report rates the impacts of an oil spill on marine fauna before mitigation

³⁶ App11, p256-257.

as being of **VERY HIGH** significance. With the implementation of various best-practice mitigation measures, the residual impact to deep-sea benthic macrofauna, pelagic fish and larvae, seabirds, marine mammals and turtles would still be of high intensity but the extent and duration would decrease. However, 'Overall, the residual impacts would be of **VERY HIGH significance**' (underlining added).³⁷

76.

(iii) Fisheries

With regard to the impacts of a major oil spill (unplanned event), the Fisheries Impact Assessment report indicates that there are several possible direct and secondary impacts of hydrocarbon spills on fisheries, namely:

- Oil contamination of mobile finfish species, in particular of juveniles in nursery areas could result in displacement of species from normal feeding and protective areas as well as possible physical contamination and/or physiological effects such as clogging of gills, both of which would lead to fish mortality;
- Oiling of sessile or sedentary species would result in physical clogging on individuals, disturbance and or removal of habitat for these species and gill clogging for filter feeding species such as mussels, all of which is likely to result in mortality;
- Oiling of passively drifting spawn products (eggs and larvae) would result in their contamination and mortality (the extent of mortality would depend on the nature and extent of the contaminants) leading to reduced recruitment and loss of stock;
- Exclusion of fisheries from areas that may be polluted or closed to fishing due to contamination of sea water by the oil or for example the chemicals used for cleaning oil spills; and
- Gear damage due to oil contamination.³⁸

77.

Regarding the sensitivity of receptors, the Fisheries report refers to the Marine Ecology report

³⁷ App 11, p265.

³⁸ App 12, p113.

as providing a review of the effects of a large-scale oil blow-out on marine fauna for the proposed project (see the Marine Ecology section of these comments above).

78.

The Fisheries report goes on to consider the spatial and temporal distribution of spawning areas, inshore nursery ground areas and fishing grounds in relation to the spatial distribution of the various different oiling scenario probabilities presented in the OSM report. The spatial extent of surface oiling is also considered in assessing the potential scale of an impact of contamination of fishing grounds:

A variety of pelagic species, including anchovy, pilchard, and horse mackerel, are reported to spawn off the Western, Southern and Eastern Agulhas Bank. The eggs and larvae spawned in this area are thought to largely remain on the Agulhas Bank. Demersal species that spawn along the South Coast include the cape hakes and kingklip. Spawning of the shallow-water hake occurs primarily over the shelf (<200m) whereas that by the deep-water hake occurs off the shelf. Similarly, kingklip spawn off the shelf edge to the south of St Francis and Algoa Bays. Squid spawn principally in the inshore waters (<50m) between Knysna and Gqeberha, with larvae and juveniles spreading westwards. The inshore area of the Agulhas Bank serves as an important nursery area for numerous linefish species, a significant proportion of which originate from spawning grounds along the east coast, as adults undertake spawning migrations along the South Coast into KwaZulu-Natal waters... The eggs and larvae are subsequently dispersed southwards by the Agulhas Current, with juveniles using the inshore Agulhas Bank as nursery grounds. As is evident above, off the South Coast spawning areas are mostly located inshore (that is on the shelf from the coastline to approximately the 200 m depth contour). The coastal bays and estuarine environments are critical nursery areas for many of the fish stocks on which the various commercial fisheries are based. In particular, the small pelagic species of anchovy, sardine, red-eye round herring and juvenile horse mackerel and numerous linefish and demersal species are found in these protected areas in their juvenile stages. Any contamination of these areas would result in mortality of ichthyoplankton and impact in the short term on recruitment of species to the demersal trawl sectors, demersal longline, small pelagic purse-seine, midwater trawl, linefish and squid jig sectors.

The eggs and larvae are also carried around Cape Point and up the coast in northward flowing surface waters. At the start of winter every year, the juveniles recruit in large numbers into coastal waters across broad stretches of the shelf between the Orange River and Cape Columbine to utilise the shallow shelf region as nursery grounds before gradually moving southwards in the inshore southerly flowing surface current, towards the major spawning grounds east of Cape Point. Following spawning, the eggs and larvae of snoek are transported to inshore (<150m) nursery grounds north of north of Cape Columbine and east of Danger Point, where the juveniles remain until maturity. There is, therefore, some overlap of Block 5/6/7 with the northward egg and larval drift of commercially important species, and the return migration of recruits. Thus,

ichthyoplankton abundance in the inshore portion of the Area of Interest is likely to be seasonally high, particularly in late winter and early spring. The embryonic and larval life stages of fish, however, show acute toxicity to PAHs, even at low concentrations, although effects vary depending on the species and the extent of exposure. In the context of the detrimental effect on ichthyoplankton (spawn products) on recruitment to fisheries, all affected fishing sectors are considered to be vulnerable to unplanned and uncontrolled major events and are rated as HIGH sensitivity.

Mariculture activities are highly sensitive to water quality variability. The effects of oil spills would potentially have the greatest impact on sessile filter feeding (e.g. mussels and oysters) and grazing species (e.g. abalone) resulting in mortality through physical clogging and or direct absorption. For shore-based collection of abalone, white mussels and any mariculture activities, any pollution associated with oil reaching the shoreline could be devastating for the industry resulting in complete loss of stock. Oil reaching the shoreline could contaminate any water intake for fish farming at the various shore-based aquaculture facilities.... Any discharge into the Saldanha Bay area may affect both natural fish populations and bivalve mariculture within the ADZ area. Impacts on juvenile and adult fish can be lethal, as gills may become coated with oil. Sub-lethal and long-term effects can include disruption of physiological mechanisms, reduced tolerance to stress, and incorporation of carcinogens into the food chain... The result of which would cause severe decrease in overall production rates of any farm within the vicinity of the contaminated area.

Although the Area of Interest is located in the offshore marine environment (more than 60 km offshore), a large spill could directly affect sensitive coastal receptors such as inshore nursery grounds for commercial fish stocks.³⁹ (underlining added)

79.

Figure 3.2⁴⁰ below shows the distribution of eggs and larvae for both species of hakes:

³⁹ App 12, p115-116.

⁴⁰ App 12, p12.

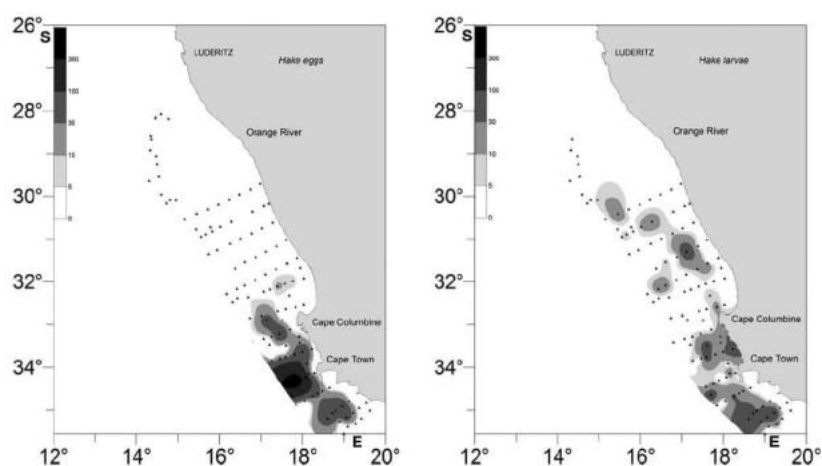


Figure 3.2: Station map showing the distribution of eggs (left) and larvae (right) of Cape hakes (both species combined) during a research survey conducted between September and October 2005. Numbers per 10 m² (Stenevik *et al.*, 2008).

80.

Figure 3.4⁴¹ below shows a composite distribution map for sardine eggs:

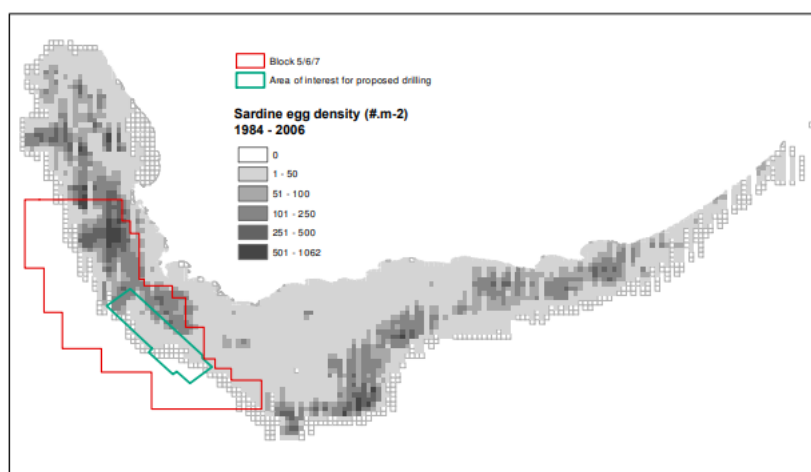


Figure 3.4: Block 5/6/7 and the area of interest in relation to the distribution of sardine spawning areas, as measured by egg densities (Source DFFE).

81.

Figure 3.5⁴² below shows a composite distribution map for anchovy eggs:

⁴¹ App 12, p14.

⁴² Ibid.

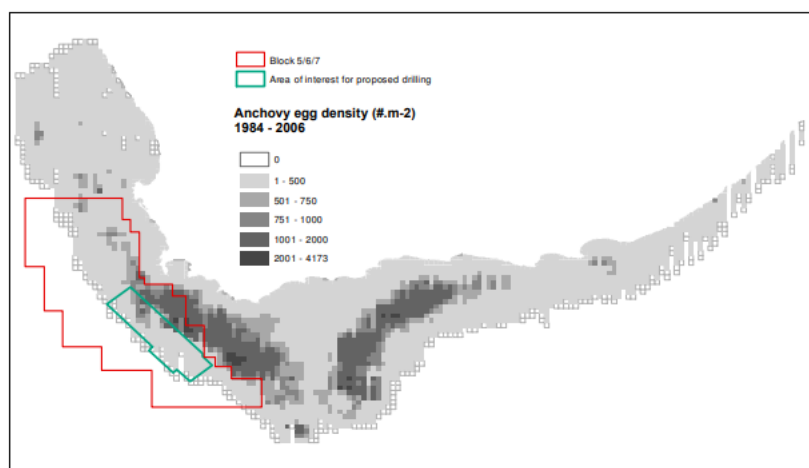


Figure 3.5: Block 5/6/7 and the area of interest in relation to the distribution of anchovy spawning areas, as measured by egg densities (DFFE).

82.

Figure 3.8⁴³ below shows the spawning grounds, distribution and transport of eggs and larvae, and nursery areas in respect of snoek:

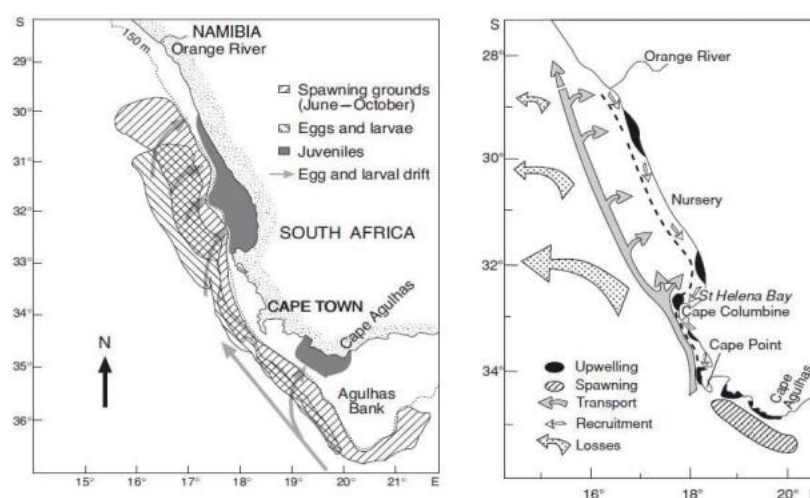


Figure 3.8: Conceptual model depicting the life history of snoek (left; Source: Griffiths, 2002) and anchovy (right; Hutchings et al., 1992) in the southern Benguela ecosystem, including spawning grounds, distribution and transport of eggs and larvae, and the nursery areas.

83.

Figure 3.9⁴⁴ below shows the known spawning periods of key commercial species off the

⁴³ App12, p16.

⁴⁴ App12, p17.

South and West Coasts:

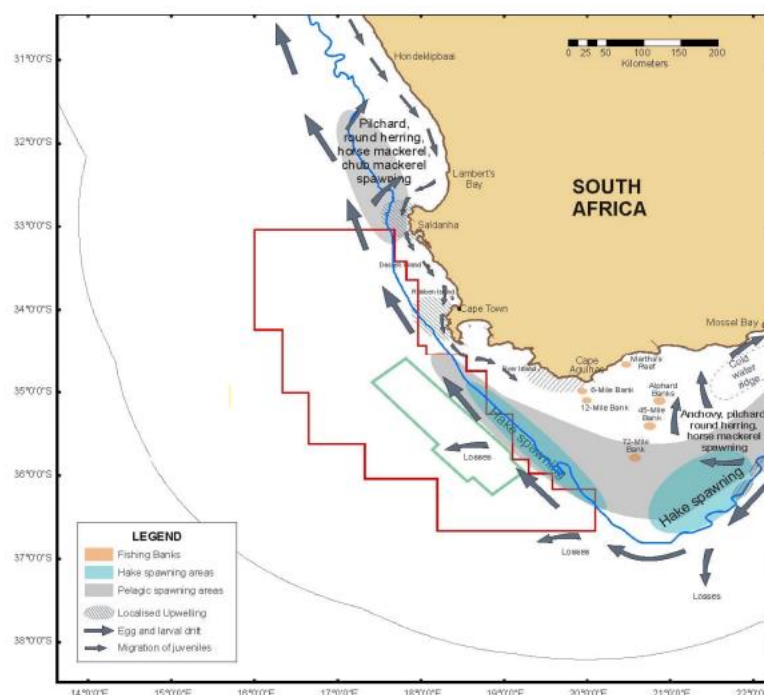


Figure 3.9: Block 567 (red polygon) and the area of interest for drilling (green polygon) in relation to major spawning areas in the southern Benguela region (Pulfrich, 2021 adapted from Cruikshank, 1990).

84.

The Fisheries report indicates regarding water column and surface layer probability of contamination that the plume can move in the direction of Brown's Bank MPA and EBSA.⁴⁵ The report also points out that the application of SSDI at the Release Points results in an increase in the deep layer contamination area and the depth of contamination.⁴⁶

85.

The Fisheries report indicates further that with regard to large spills, the extent of the surface oiling could be **regional to international**. Large scale effects on fishing operations would also be likely to include area closures and exclusion of fisheries from areas that may be polluted or closed to fishing due to contamination of surface waters by oil or the chemicals used for cleaning oil spills. Based on the possible extent of surface oiling (and overlap with major fish spawning and nursery areas, and key fishing areas), the intensity of the impact on most

⁴⁵ Appendix 12, pp117

⁴⁶ Ibid.

commercial fisheries would be high. Based on the extent of surface oiling of a large scale blow-out, the operations of most commercial fisheries would be affected on a regional scale, namely the demersal trawl, midwater trawl, demersal longline, small pelagic purse-seine, large pelagic longline, tuna pole-line, traditional linefish, west coast rock lobster, south coast rock lobster and squid jig.

86.

The report states further that in addition to these offshore fisheries, nearshore small-scale fishing (beach seine, gillnet, seaweed harvesting, white mussels, oysters, abalone, etc.) as well as aquaculture facilities could be affected by shoreline oil contamination.

87.

The report points out that for crude oil, the weathering processes over the short-term (hours to weeks) include evaporation, dispersion, dissolution, photo-oxidation, emulsification and spreading, whereas biodegradation and sedimentation dominate the weathering processes over the medium- to long-term (weeks to years).

88.

Due to the scale (**regional to international**) extent and **medium-term duration** (due to impact on recruitment) of the impact, the magnitude of the impact on these sectors is expected to be **VERY HIGH**. In all cases impacts are partially reversible.⁴⁷

89.

Regarding residual impact after the implementation of the mitigation measures, the report indicates that although the intensity and duration would remain, the extent would decrease, thereby reducing the magnitude to high and significance to **HIGH significance**.⁴⁸

⁴⁷ App 12, p120-121.

⁴⁸ App 12, p123.

90.

(iv) Social (Socio-Economic)

The Social Impact Assessment (SIA) report indicates that an oil spill (unplanned event) can result in several (indirect negative) socio-economic impacts.⁴⁹

91.

The SIA report acknowledges that *'All coastal communities and activities along the South-West coastline (key area affected) are considered to be of very high sensitivity to major oil spills: it is a high value coastline that services extensive regional tourism, recreation, residential development, and near-shore and offshore fishing'*.⁵⁰

92.

The SIA report states that in a worst-case scenario, *'the socio-economic impacts associated with an unlikely large oil spill will likely be focused along portions of the coastline between southern Namibia and Gqeberha depending on the well location and season. Specifically, if the blowout were to happen in mid-winter when there are westerly winds blowing, and the emergency response from Saldanha does not cap it, oil could reach the shores in the densely populated areas between Saldanha and Cape Agulhas.'*⁵¹

93.

The SIA states that *'the ramifications of an actual unplanned events in terms of social impacts are beyond this scope of this SIA. However, the legal, financial and reputational risks are likely to be substantive*⁵²(underlining added).

94.

The Green Connection submits that the socio-economic impacts of a major oil spill have not been adequately assessed, and in particular the potential socio-economic impact on small-

⁴⁹ SIA, p80.

⁵⁰ Ibid p81.

⁵¹ Ibid.

⁵² TEEPSA567 App13-SIA, p87.

scale fishers and communities that are dependent on the oceans for their livelihoods has not been fully assessed (including in terms of magnitude) or quantified. Such impacts are likely to be devastating to small-scale fishers and fishing dependent communities, and could also have a significant impact on other sectors (and those employed) such as marine aquaculture. Small-scale fishers are simply mentioned in the draft EIR as a sector that *'could be affected by shoreline oil contamination'*,⁵³ an oil spill is indicated as potentially resulting in a reduction in small-scale (and other) fishing (exclusion areas for fishing, non-consumption due to toxicity, decline in fish stocks),⁵⁴ while in terms of magnitude only an estimated reduction in commercial fishing is quantified as an 'indicator'.⁵⁵ The Green Connection submits that the failure to fully assess and quantify negative socio-economic impacts of a major oil spill on some sectors constitutes a fatal flaw in the EIA.

95.

The Green Connection recorded its concern regarding the planned socio-economic assessment in its comment on the draft Scoping Report, noting that despite acknowledging that the greatest potential risk of oil and gas exploration activities in the marine environment is the impact of an unplanned event such as a well blow-out with negative social and economic impacts, the draft Scoping Report suggested that the *'assessment of the economic impacts as a result of unplanned events (i.e. such as a well blow-out) is challenging to accurately perform due to the many variables, assumptions and uncertainties that would be involved. The outputs of such an assessment are likely to be so broad that it would be of little direct value in informing the impact assessment process or the development of mitigation measures and ultimately decision-making'*.⁵⁶ It was pointed out further that the draft Scoping Report sought to rely on the applicant's oil spill response planning and the development of well-specific OSCPs (in respect of which only framework documents would be included in the ESMP for public comment) and OSM. It was also noted that the draft Scoping Report suggested that the management of compensation in the event of a major oil spill falls outside of the scope of the ESIA process and will not be addressed directly, and that a process of

⁵³ TEEPSA567 Ch10 p463.

⁵⁴ Ibid, p465.

⁵⁵ Ibid, p466.

⁵⁶ DSR, p280.

determining the economic effects and related compensation would be initiated. The Green Connection stands by its submission that, notwithstanding that it may be difficult to perform, an assessment of the socio-economic impacts of a major spill is a crucial aspect of the EIA which cannot be ignored, and that an assessment of the economic impacts of a major spill (acknowledged in the draft Scoping Report as the greatest potential risk of oil and gas exploration) and the adequacy of provisions made by TEEPSA to compensate anyone impacted by such a spill, should be conducted in the assessment phase of the EIA. The Green Connection submitted further that not only would such an assessment be directly relevant to a consideration of the Need and Desirability of the planned exploration drilling activities, but the potential economic impact of a major oil spill (including but not limited to the potential economic impact on small-scale fishers and communities that are dependent on the oceans for their livelihoods) is a highly relevant factor that the decision-maker will have to take into account when making the decision on authorisation. An *ex post facto* determination of the economic impacts of an oil spill defeats the objective of an EIA process, which is to identify and assess the potentially significant impacts of a proposed project. The Green Connection stands by these submissions.

96.

Notwithstanding the failure to thoroughly assess and quantify the negative economic impacts of a major spill (including but not limited to the economic impacts on small-scale fishers and fishing dependent communities, the SIA report provides some limited information on the likely 'range and nature' of socio-economic impacts that could likely occur from such an event, namely:

1. Degradation of portions of the coastline in terms of aesthetic and landscape appeal. This would be seen as a major and significant impact immediately on coastal cities and communities, particularly those dependent on tourism and beach associated recreation, and would draw national attention. Wesgro reports that, in 2019, total visitor spend in Western Cape was R26.3 billion. In a survey, 61.5% of visitors to the Western Cape gave "holiday" as the reason for their visit, others were visiting relatives etc. Assuming a spill that lasts a full month, and cuts tourism visits completely by an equivalent amount (i.e. by 1/12th of those visiting for holiday reason), visitor spend would drop by roughly R1.35 billion.
2. Degradation of portions of the coastline that supports a variety of commercial and private recreational activities. In affected areas, such activities will probably need

to be suspended during the clean-up along the coastline. This will result in losses for commercial enterprises while disrupting the use of beaches by the public at large.

3. The affected coastline supports domestic and international tourism, and the degradation of portions of the coastline will likely result in the temporary, but significant, reduction in tourism during and after the clean-up along the impacted coastline. This will result in losses for tourism operators and establishments, while potentially disrupting tourism trends in the region in the near future.
4. Reduction in recreational, small-scale, and commercial fishing in the impacted area, including near-shore and offshore fishing. This may result in undermining fishing by the public at large. Large scale effects on fishing operations would also be likely to include area closures and exclusion of fisheries from areas that may be polluted or closed to fishing due to contamination of surface waters by oil or the chemicals used for cleaning oil spills. Based on the possible extent of surface oiling (including major fish spawning and nursery areas), the intensity of the impact on most commercial fisheries would be high. As an indicator, assuming a 10% drop in value of fisheries, sustained over a full three years, the revenue lost would be about R600m a year. The percentage drop is however difficult to estimate.
5. Reduction in income for secondary and tertiary sectors that support tourism, recreational, fishing, and other coastal economies. Reduction in income and livelihoods impacts on those dependant on small scale fisheries.
6. Pressure on national, regional, and local public services and facilities as part of any shoreline responses. Given the relatively undeveloped oil and gas sector nationally, there may be insufficient capacity, resourcing, and expertise to manage and respond to any major spills.
7. National, regional, and local collapse in public trust and increase in conflict related to environmental and social impacts from major spills.
8. Impacts on national GDP and economic growth which may see both a negative downturn as well as a positive upswing from clean-up costs.

97.

The Green Connection also takes issue with statements made in the draft EIR document set which suggest that clean-up costs associated with a major oil spill could have positive impacts on GDP, as well as a footnote comment that *‘typically unemployed people earn an income cleaning beaches, and those who suffer directly can put in a claim. This would be money coming into the country from abroad. This impact is not considered in the assessment however’*.⁵⁷ In the context of the devastating negative ecological and socio-economic impacts associated with a major oil spill, the attempt to categorise clean-up costs as a positive impact on GDP (without even attempting to substantiate this reach) is misguided and insensitive.

⁵⁷ SIA, p81.

The SIA goes on to state that the *'social impacts will, however, be substantive in the case of unplanned events with severe negative outcomes'*.⁵⁸ The socio economic and social impacts in the event of catastrophic events (well blow-out) are indicated as be of **VERY HIGH** significance both before and after mitigation.⁵⁹

98.

(v) Cultural Heritage

The draft EIR indicates regarding 'intangible cultural heritage' that in addition to the impact of a major oil spill on the marine environment, it would also result in the degradation of the coastline in terms of aesthetic and landscape appeal, and that any impact on the integrity of the coastal and marine ecosystem through a large oil spill could in turn impact various aspects that makes up people's intangible cultural heritage (indirect negative impact).⁶⁰

99.

The draft report recognises (among other things) that the sea is described as 'living' waters and is believed to play a critical role in spiritual and health management in indigenous groups specifically (First Peoples and Nguni), and that any impact on these 'living' waters may, therefore, impact communication with the ancestors or its use as an emetic or in other ritual practices. The sensitivity of this receptor is rated as HIGH to VERY HIGH, as ritual practice and spiritual engagement with the sea requires a healthy ocean, or at the very least, a not visibly polluted ocean.⁶¹ It also recognises that certain stakeholder groups display a high regard of the sea due to their spiritual and cultural connection with the ocean and are directly reliant on the ocean and coast for their livelihood (such as fishing, shellfish harvesting, leisure, tourism, etc). The sensitivity of this receptor to an oil spill is also rated as VERY HIGH having regard to the many coastal communities that rely on the ocean and coast for their livelihoods.⁶²

⁵⁸ TEEPSA567 App13-SIA, p90.

⁵⁹ Ibid, p83 and p90.

⁶⁰ Draft EIR, Ch 10 p467.

⁶¹ Draft EIR, Ch10 p468.

⁶² Ibid.

100.

(vi) Synthesis

The OSM clearly shows that in the event of a major oil spill (well-head blowout), there is a high probability that (depending on the season) broad expanses of sensitive coastline and nearshore areas will be impacted by surface oil polluting the shoreline. Depending also on the season as well as the location of the well, the spill could be regional and international in extent (reaching as far as southern Namibia on the West Coast and Gqeberha on the South-East Coast).⁶³

101.

The draft EIR and various specialist reports indicate the significance of such impacts would be VERY HIGH (in respect of marine ecology, commercial fisheries, coastal and nearshore users and cultural heritage) without mitigation, and remain VERY HIGH (marine ecology and coastal/nearshore users) and HIGH (commercial fisheries and cultural heritage) with effective mitigation (capping, Surface Response and SSDI), as shown in the table below:

No.	Activities	Aspects	Impacts on Main Receptors	Pre-Mitigation Significance	Project Controls / Key Mitigation	Residual Significance
4	WELL BLOW-OUT					
1.3.1	Loss of well control / well blow-out	Reduction of water quality and smothering of coastal resources	Impacts on marine ecology/environment	VERY HIGH	• Design and Technical Integrity • Detailed Technical Risk Analysis • Blow-out Preventer • Oil Spill Contingency Plan • Emergency Response Plan • Blow-Out Contingency Plan • Cap and Containment Equipment • Grievance mechanism	VERY HIGH **
1.3.2			Impacts on marine commercial fishing	VERY HIGH		HIGH
1.3.2			Impacts on coastal and nearshore users	VERY HIGH		VERY HIGH
			Impact on intangible cultural heritage	VERY HIGH		HIGH

102.

The Green Connection submits that a major oil spill would also have devastating socio-economic impacts on affected small-scale fishers and fishing dependent communities, who rely on the oceans for their livelihoods. Other activities such as aquaculture (and the jobs provided by such activities) would also be significantly impacted.

⁶³ Draft EIR, Ch 7 p127.

103.

The OSM also shows that in the event of a major oil spill (well-head blowout), the subsurface plume would under some of the modelled scenarios spread in the direction of the sensitive Brown's Bank MPA and EBSA (Release Points 1 and 2) and in the direction of the Cape Canon (Release Point 1), and that the implementation of SSDI results in an increase in the deep lawyer contamination area and the depth of contamination for both release points.

104.

The Green Connection submits that the competent authority cannot close its eyes to the possibility of a major oil spill occurring either during the proposed exploration well drilling and testing or during potential future production well drilling and operation. While considered 'unlikely', wellhead blowouts can and do occur, and it is submitted that a major oil spill as a result of a wellhead blowout will clearly result in unacceptable pollution, ecological degradation and socio-economic impacts. As a result, and given that the risk of a major spill (well-head blowout) cannot be eliminated or the significant impacts of a major oil spill prevented, it is submitted that environmental authorisation should be refused.

105.

C. NEED AND DESIRABILITY

The NEMA EIA Regulations stipulate that one of the objectives of the EIA process is to, through a consultative process, describe the need and desirability for the proposed activity, including the need and desirability of the activity in the context of the development footprint of the approved site as contemplated in the accepted scoping report.⁶⁴ An EIA report must contain

⁶⁴ NEMA EIA Regulations, Appendix 3, section 2(b). With regard to need and desirability, a distinction is drawn between the 'general purpose and requirements' of the proposed activity and 'need and desirability'. The 2017 Guideline on Need and Desirability states as follows (at p10):

In order to properly interpret the EIA Regulations' requirement to consider "need and desirability", it is necessary to turn to the principles contained in NEMA, which serve as a guide for the interpretation, administration and implementation of NEMA and the EIA Regulations. **With regard to the issue of "need", it is important to note that this "need" is not the same as the "general purpose and requirements" of the activity. While the "general purpose and requirements" of the activity might to some extent relate to the specific requirements, intentions and reasons that the applicant has for proposing the specific activity, the "need" relates to the interests and needs of the broader public.**

...

The consideration of "need and desirability" in EIA decision-making therefore **requires the consideration of the strategic context of the development proposal along with the broader societal needs and the public**

the information that is necessary for the competent authority to consider and come to a decision on the application, and must include (among other things), a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report.⁶⁵

106.

Chapter 5 of the draft EIR report addresses need and desirability, and is in some respects similar to the same chapter presented in the draft Scoping Report. However, the draft DSR Chapter 5 downloaded from SLR's website by the Green Connection ended on page 56, and was thus incomplete.⁶⁶ It is noted that the final Scoping Report (which was released to the public but not for comment) included a number of additions, including:

- Reference to South African refinery shutdowns;
- Reference to the Western Cape Climate Change Response Strategy (February 2016);
- Paragraphs 5.2.10 on, namely sections on the SA Economic Reconstruction and Delivery Plan (2020); SA's Low-Emission Development Strategy (SA-LEDS) 2050 (February 2020); South Africa's Nationally Determined Contribution (NDC) (2021); South Africa's Gas Masterplan Base Case Report (DMRE, 2021); International Energy Agency: Net Zero by 2050 – a Roadmap for the Global Energy Sector (IEA, 2021); Just

interest. The government decision-makers, together with the environmental assessment practitioners and planners, are therefore accountable to the public and must serve their social, economic and ecological needs equitably. Ultimately development must not exceed ecological limits in order to secure ecological integrity, **while the proposed actions of individuals must be measured against the short-term and long-term public interest in order to promote justifiable social and economic development – i.e. ensuring the simultaneous achievement of the triple bottom-line.** Considering the merits of a specific application in terms of the need and desirability considerations, it must be decided which alternatives represent the **"most practicable environmental option"**, which in terms of the definition in NEMA and the purpose of the EIA Regulations are **that option that provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long-term as well as in the short-term.** (emphasis added)

The Guideline requires need and desirability assessments to **address the impact of planned activities on global and international responsibilities relating to the environment, including climate change** (at p11).

⁶⁵ Ibid, section 3(f).

⁶⁶ The draft Scoping Report has been removed from SLR's website, and the Green Connection was thus unable to verify whether the draft DSR Chapter 5 was incomplete, or whether the documents downloaded by the Green Connection failed to download fully. Notwithstanding this, the reference to the refinery shutdowns and the section titled 'Implications of the No-Go Alternative' are underlined and were therefore additions to the final Scoping Report.

Transition and Climate Pathways Study for South Africa (NBI, 2021), Climate Change Bill (2022);

- A section titled 'Consistency with NEMA principles';
- Brief sections titled 'Securing ecological sustainable development and use of natural resources' and 'Promoting justifiable economic and social development'. While referring to further investigations to be conducted in the Assessment Phase, these sections are identically reproduced in the draft EIR report;
- A Need and Desirability Summary; and
- A section titled 'Implications of the No-Go Alternative' (this section is omitted from Chapter 5 of the draft EIR report, and is indicated as being discussed in Section 9.5).

107.

Similar to the Chapter 5 of the draft DSR, Chapter 5 of the draft EIR includes an overview of need and desirability for the proposed project, and indicates that it essentially considers the strategic context of the proposal within broader societal needs and the public interest. The chapter seeks to highlight the applications for the use of hydrocarbons, and to indicate how these applications are aligned within the strategic context of South Africa[n] national policy and energy planning, broader societal needs, and regional planning.

108.

Regarding the use of hydrocarbons and the petroleum industry in South Africa, the draft EIR also draws information based 'mostly' on information summarised from a report by KPMG for the South African Petroleum Industry Association. The report indicates that South Africa relies on imports of crude oil and refined fuels to meet its liquid fuel needs, and that South Africa has limited proven reserves of oil and natural gas. The market for refined products is indicated as 'essentially flat'. The draft EIR adds that a number of South Africa's six refineries have shutdown (ENREF, SAPREF and NATREF) or lack feedstock (PetroSA GLT Plant), resulting in increased quantities of refined product being imported.

109.

Regarding alignment with national policy and energy planning, the draft EIR report references various outdated or draft policy documents that mostly pre-date the 'climate crisis'. Several

references are made to the potential use of LNG as a ‘transitional fuel’ in power generation, while reference is made to Operation Phakisa’s (2014) key target of drilling 30 exploration well within ten years. TEEPSA’s drilling of up to 5 exploration wells is presented as ‘*an opportunity to further establish the extent and economic viability of the indigenous gas reserves and/or oil in Block 5/6/7 and contribute to the above-mentioned target of the drilling of exploration wells*’.⁶⁷

110.

It is also noted that the draft EIR report includes a discussion on how the NEMA section 2 principles were taken into account during the ESIA process. The Green Connection does not seek to engage on each and every point made by SLR in this section of its comment, but where appropriate raises selected inconsistencies with the NEMA section 2 principles elsewhere in this submission.

111.

(i) Climate change

The draft EIR’s ‘need and desirability’ motivation does not include an assessment of the need and desirability of ultimately producing and using new oil and gas reserves (including in the context of the climate change crisis and the right to food). And while a *Climate Change and Air Emissions Impact Assessment*⁶⁸ specialist report was undertaken, the climate change assessment was limited to the exploration well drilling stage only.

112.

In its responses to the Green Connection’s comments on the draft DSR relating to this issue, the environmental assessment practitioner SLR states as follows:

The scope of this ESIA is limited to the assessment of activities proposed as part of this exploration project, i.e. drilling up to five exploration wells. Possible impacts from future production (i.e. extraction) are not assessed in this EIA. They would be considered as part of a separate EA application, should exploration identify a commercial resource and

⁶⁷ TEEPS 567 draft EIR, p72.

⁶⁸ TEEPSA567 draft EIR, Appendix 15.

production be proposed by the applicant.

The outcome of the proposed exploration activities will determine the nature and extent of any potential resources within the license block. Should the results of the currently proposed exploration be promising, a separate EIA application would need to be undertaken in order the future to assess the potential impacts associated with the next phase in the lifecycle a typical development project. Thus, additional exploration and/or production activities (not currently proposed and assessed as part of the current ESIA) will only take place if an EA is granted. This is in line with the MPRDA and EIA Regulations 2014 (as amended) which clearly separates ‘exploration activities’ from ‘production activities’ and sets out the distinct application/assessment processes by which an applicant would have to obtain further Environmental Authorisation.

The EIA Regulations 2014 require the consideration of the ‘cumulative impact’, which includes the “reasonably foreseeable future impact of an activity”. While it is foreseeable that further exploration and future production activities could arise from the Exploration Right (if granted and successful), there is not currently sufficient information to make reasonable assertions as to [the] nature of any future activities. This is due to the current lack of relevant geological information, which the proposed exploration aims to address. The possible range of the future exploration or production activities that may or may not arise vary hugely in scope, location, extent, and duration depending on whether a petroleum resource(s) is discovered, its size, properties and location, etc. These cannot be reasonably defined until this study has been completed and further exploration undertaken. It would not be reasonable to undertake an assessment of the environmental impacts of an undefined project. Potential impacts could not be reliably assessed, and the range of outcomes is so vast that the findings would be speculative at best and of no value in in ascertaining potential impacts. It is also possible that the proposed, or future, exploration determines that an economic petroleum resource does not exist, in which case there would be no production or potential impacts.

The provisions of NEMA and the EIA Regulations 2014 neither provide for, nor contemplate, that potential impacts and risks of productions (sic) activities must be considered and assessed at the exploration stage. Any potential further or future activities would need to be subject to the requisite environmental assessment and authorisation process under the NEMA, during which, the impacts related to these activities would need to be assessed as part of this separate EIA process. This is typical of the lifecycle of a development project.

Thus, a decision on the current EA application does not in any way guarantee the holder future approvals that would be required to undertake further exploration and future production activities.

This is in line with the numerous onshore and offshore exploration / production and prospecting / mining EIAs undertaken in South Africa.⁶⁹

As a result, the draft EIR does not consider or assess the potential climate change impacts of

⁶⁹ TEEPSA567 ESIA Comments and Response Report, p280-281.

subsequent oil and gas production and use, even in broad terms.

113.

While the Green Connection is aware that the NEMA EIA listing notices list exploration activities separately to other stages in upstream offshore oil and gas development (such as activities requiring a production right under the MPRDA), it is submitted that in reality these activities are successive steps in a single process (which culminates in the production and combustion of oil and gas and the emission of GHGs that will exacerbate the climate crisis and impact on the livelihoods and access to food of small-scale fishers and fishing-dependent communities). The Green Connection submits that it is artificial to exclude a consideration of the impacts of future offshore oil and gas production, as well as the need for and desirability of producing oil and gas, when assessing the potential impacts of the exploration activities. Under the MPRDA, the close connection between exploration and production is also clear: section 82 of the MPRDA provides that the holder of an exploration right *‘has the exclusive right to apply for an be granted a production right in respect of the petroleum and the exploration area in question’*. The granting of environmental authorisation for exploration drilling lays the foundation for the future approval of an environmental authorisation for production (as well as the future granting of a production right under the MPRDA).

114.

Further to the above, the issue of whether the decision-maker properly considered climate change impacts was referred to in the judgment of the full bench of the Makhanda High Court in the Shell Wild Coast seismic survey case.⁷⁰ The court stated in its judgement that the intervening parties’ contention that the decision-maker gave no proper consideration to climate change impacts of the decision to grant the exploration right is an important factor to be considered in the process of granting an exploration right.

115.

The court referred to expert testimony relied upon to support this contention, which showed

⁷⁰ *Sustaining the Wild Coast NPC & Others v Minister of Mineral Resources and Energy & Others*, High Court of South Africa, Eastern Cape Division, Makhanda – Case No. 3491/2021, at paras 120 to 125.

that ‘most of the discovered reserves of oil and gas cannot be burnt if we are to stay on the pathway to keep global average temperature increases below 1.5 degrees Celsius. Authorising new oil and gas exploration, with its goal of finding exploitable oil and/or gas reserves and consequently leading to production, is not consistent with South Africa complying with its international climate change commitments’.⁷¹

116.

The court noted that according to the respondents (Shell and others) in the case, climate change considerations are irrelevant when considering an application for an exploration right, and these considerations are premature because they fall to be considered at a much later stage.

117.

The court pointed out that on the authority of the *Save the Vaal* case,⁷² the ‘processes are discrete stages in a single process that culminates in the production and combustion of oil and gas, and the emission of greenhouse gases that will exacerbate the climate crisis and impact communities’ livelihoods and access to food’.⁷³ The court stated further that the respondent’s thesis did not find support in *Earthlife Africa Johannesburg v Minister of Environmental Affairs and Others* either, and referred approvingly to the following passage in Murphy J’s judgement:

The absence of express provision in the statute requiring a climate change impact assessment does not entail that there is no legal duty to consider climate change as a relevant consideration and does not answer the interpretative question of whether such a duty exists in administrative law. Allowing for the respondents’ argument that no empowering vision in NEMA or the regulations explicitly prescribes a mandatory procedure or condition to conduct a formal climate change assessment, the climate change impacts are undoubtedly a relevant consideration as contemplated by section 240 of NEMA for the reasons already discussed. A formal expert report on climate change impacts will be the best evidentiary means of establishing that this relevant factor in its multifaceted dimensions was indeed considered, while the absence of one will be

⁷¹ Ibid, at para 121.

⁷² *Director: Mineral Development, Gauteng Region and Another v Save the Vaal Environment and Others* (133/98)[1999] ZASCA 9 (12 March 1999).

⁷³ Ibid, para 123.

symptomatic of the fact that it was not.⁷⁴

118.

The court in the Shell Wild Coast seismic survey case went on to state the following:

It seems clear from the foregoing, even taking into account the contentions raised by the respondents, that, had the decision-maker had the benefit of considering a comprehensive assessment of the need and desirability of exploring for new oil and gas reserves for climate change and the right to food perspective, the decision-maker may well have concluded that the exploration is neither needed nor desirable.⁷⁵ (emphasis added)

119.

In light of the above, the Green Connection submits that the draft EIR does not include information that is necessary for the competent authority to consider and come to a decision on the application: the draft EIR is deficient, and the 'need and desirability' consideration and motivation incomplete, without at the very least a broad assessment of the climate change impacts should commercially exploitable oil and gas resources be identified through the exploration drilling (and should these resources ultimately be produced and utilised). It would be pointless to authorise this (and other) exploration drilling should such an assessment conclude that the development of new oil and gas fields is incompatible with South Africa's climate change commitments.

120.

Given that exploration operations are intended to define traps to be tested by drilling of a well with the intention of locating a discovery (of hydrocarbons below the seabed), and which in turn would likely lead to production operations should commercially exploitable hydrocarbon resources be discovered, the Green Connection is of the view that addressing the need and desirability within the context of ecologically sustainable development should give consideration to the potential impacts of the proposed exploration for new offshore oil and gas resources **throughout its life cycle**⁷⁶ (rather than ring-fencing the consideration of

⁷⁴ Ibid, para 124.

⁷⁵ Ibid, para 125.

⁷⁶ Section 2(4)(e) of NEMA stipulates that responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.

need and desirability to the exploration well drilling phase only).

121.

(ii) The 'climate crisis'

The need and desirability (from a climate change perspective) of conducting exploration drilling (which aims to identify oil and gas resources to be used in energy production and/or processing or manufacturing of materials) is particularly important given that climate change has been acknowledged as a 'crisis' with human-induced climate change impacts being experienced in every region. It is also recognised that the climate change 'crisis' requires immediate, rapid and large-scale reductions in greenhouse gas (GHG) emissions to limit global warming to 1.5°C (including accelerated action in this decade to reduce global carbon dioxide emissions by 45 per cent by 2030 relative to the 2010 level and to net-zero around mid-century). In support of these submissions, some of the recent developments relating to the climate crisis are discussed briefly below.

122.

In August 2021, the Intergovernmental Panel on Climate Change (IPCC) (an international body for assessing the science related to climate change) released its 6th Assessment Report (AR6).⁷⁷ In its summary for policymakers, the IPCC indicates (among other things) that:

- It is unequivocal that human influence has warmed the atmosphere, ocean and land, and that widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred;⁷⁸
- The scale of recent changes across the climate system as a whole – and the present state of many aspects of the climate system – are unprecedented over many centuries to many thousands of years;⁷⁹
- Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes in extremes

⁷⁷ Climate Change 2021: The Physical Science Basis, available online at: <https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/>

⁷⁸ Para A.1

⁷⁹ Para A.2

such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since AR5;⁸⁰

- Global surface temperature will continue to increase until at least mid-century under all emissions scenarios considered, and that global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO₂ and other GHG emissions occur in the coming decades;⁸¹
- Many changes in the climate system become larger in direct relation to increasing global warming. They include increases in the frequency and intensity of hot extremes, marine heatwaves, heavy precipitation, and, in some regions, agricultural and ecological droughts; an increase in the proportion of intense tropical cyclones; and reductions in Arctic sea ice, snow cover and permafrost;⁸²
- Continued global warming is projected to further intensify the global water cycle, including its variability, global monsoon precipitation and the severity of wet and dry events;⁸³
- Many changes due to past and future GHG emissions are irreversible for centuries to millennia, especially changes in the ocean, ice sheets and global sea level;⁸⁴
- From a physical science perspective, limiting human-induced global warming to a specific level requires limiting cumulative CO₂ emissions, reaching at least net zero CO₂ emissions, along with strong reductions in other GHG emissions. Strong, rapid and sustained reductions in CH₄ emissions would also limit the warming effect resulting from declining aerosol pollution and would improve air quality.⁸⁵

123.

On 9 August 2021, the IPCC issued a press release relating to its AR6 report. It states that the report provides new estimates of the chances of crossing the global warming level of 1.5°C in the next decades, and finds that unless there are immediate, rapid and large-scale reductions

⁸⁰ Para A.3

⁸¹ Para B.1

⁸² Para B.2

⁸³ Para B.3

⁸⁴ Para B.5

⁸⁵ Para D.1

in GHG emissions, limiting warming to close to 1.5°C or even 2°C will be beyond reach.⁸⁶

124.

Also on 9 August 2021, UN Secretary-General António Guterres described the AR6 report as nothing less than "*a code red for humanity. The alarm bells are deafening, and the evidence is irrefutable*".

125.

Guterres is reported as noting that the internationally agreed threshold of 1.5 degrees above pre-industrial levels of global heating was perilously close, and that we are at imminent risk of hitting this threshold in the near term. Guterres is indicated as advising that the only way to prevent exceeding this threshold, is by urgently stepping up our efforts, and pursuing the most ambitious path. Guterres is reported as stating that solutions are clear: "*Inclusive and green economies, prosperity, cleaner air and better health are possible for all, if we respond to this crisis with solidarity and courage*". Ahead of the COP26 climate conference in Glasgow in November 2021, Guterres stated that all nations needed to join the net zero emissions coalition, and reinforce their promises on slowing down and reversing global heating "*with credible, concrete, and enhanced Nationally Determined Contributions (NDCs)*" that lay out detailed steps.

126.

In April 2022, Guterres tweeted that "*[c]limate activists are sometimes depicted as dangerous radicals. But the truly dangerous radicals are the countries that are increasing the production of fossil fuels. Investing in new fossil fuels infrastructure is moral and economic madness*".⁸⁷ Addressing graduate students in May 2022, Guterres expressed the view that Investing in fossil fuels is now "*a dead end - economically and environmentally. No amount of greenwashing or spin can change that. So, we must put them on notice: Accountability is coming for those who liquidate our future.*"⁸⁸

⁸⁶ <https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/>

⁸⁷ <https://twitter.com/antonioguterres/status/1511294073474367488?lang=en>

⁸⁸ <https://news.un.org/en/story/2022/05/1118932>

127.

The 26th Conference of the Parties of the UNFCCC (COP26) was held in Glasgow in the last quarter of 2021. Recognition of the climate 'crisis', as well as the urgent need to increase effort and to accelerate action to address climate change (including by developing nations), are reflected in the outcome of COP26 and recorded in the Glasgow Climate Pact. The Glasgow Climate Pact (among other things):

- Expresses alarm and utmost concern that human activities have caused around 1.1°C of global warming to date and that impacts are already being felt in every region;
- Reaffirms the long-term global goal to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
- Recognizes that the impacts of climate change will be much lower at the temperature increase of 1.5°C compared with 2°C and resolves to pursue efforts to limit the temperature increase to 1.5°C;
- Recognizes that limiting global warming to 1.5°C requires rapid, deep and sustained reductions in global GHG emissions, including reducing global carbon dioxide emissions by 45 per cent by 2030 relative to the 2010 level and to net zero around mid-century as well as deep reductions in other GHGs;
- Also recognizes that this requires accelerated action in this critical decade, on the basis of the best available scientific knowledge and equity, reflecting common but differentiated responsibilities and respective capabilities and in the context of sustainable development and efforts to eradicate poverty;
- Invites Parties to consider further actions to reduce by 2030 non-carbon dioxide GHG emissions, including methane (which has been identified as a driver of climate change and the main polluting emission from natural gas);
- Calls upon Parties to accelerate the development, deployment and dissemination of technologies, and the adoption of policies, to transition towards low-emission energy systems, including by rapidly scaling up the deployment of clean power generation and energy efficiency measures, including accelerating efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies, while providing

- targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for support towards a just transition;
- Emphasizes the importance of protecting, conserving and restoring nature and ecosystems, including forests and other terrestrial and marine ecosystems, to achieve the long-term global goal of the Convention by acting as sinks and reservoirs of GHGs and protecting biodiversity, while ensuring social and environmental safeguards.

128.

The climate 'crisis' is also recognised by the International Energy Agency (IEA), of which South Africa is an IEA associated country. During or about July 2021, the IEA published its *Net Zero by 2050 – A Roadmap for the Global Energy Sector* report. In the foreword to this report, the Executive Director of the IEA states (among other things) as follows:

We are approaching a decisive moment for international efforts to tackle the climate crisis – a great challenge of our times. The number of countries that have pledged to reach net-zero emissions by mid-century or soon after continues to grow, but so do global greenhouse gas emissions. This gap between rhetoric and action needs to close if we are to have a fighting chance of reaching net zero by 2050 and limiting the rise in global temperatures to 1.5 °C.

Doing so requires nothing short of a total transformation of the energy systems that underpin our economies...

Despite the current gap between rhetoric and reality on emissions, our Roadmap shows that there are still pathways to reach net zero by 2050. The one on which we focus is – in our analysis – the most technically feasible, cost-effective and socially acceptable. Even so, that pathway remains narrow and extremely challenging, requiring all stakeholders – governments, businesses, investors and citizens – to take action this year and every year after so that the goal does not slip out of reach.

This report sets out clear milestones – more than 400 in total, spanning all sectors and technologies – for what needs to happen, and when, to transform the global economy from one dominated by fossil fuels into one powered predominantly by renewable energy like solar and wind. Our pathway requires vast amounts of investment, innovation, skilful policy design and implementation, technology deployment, infrastructure building, international co-operation and efforts across many other areas.

Since the IEA's founding in 1974, one of its core missions has been to promote secure and affordable energy supplies to foster economic growth. This has remained a key concern of our Roadmap, drawing on special analysis carried out with the International Monetary Fund and the International Institute for Applied Systems Analysis. It shows that the enormous challenge of transforming our energy systems is also a huge opportunity for

our economies, with the potential to create millions of new jobs and boost economic growth.

Another guiding principle of the Roadmap is that clean energy transitions must be fair and inclusive, leaving nobody behind. We have to ensure that developing economies receive the financing and technological know-how they need to continue building their energy systems to meet the needs of their expanding populations and economies in a sustainable way. It is a moral imperative to bring electricity to the hundreds of millions of people who currently re deprived of access to it, the majority in of them in Africa...

129.

On fossil fuels used in energy production, the report states that:

There is no need for investment in new fossil fuel supply in our net zero pathway.

Beyond projects already committed as of 2021, there are no new oil and gas fields approved for development in our pathway, and no new coal mines or mine extensions are required.

130.

When natural gas is burned for energy, it releases carbon dioxide into the atmosphere. More importantly, the extraction, processing, transport and use of natural gas cause significant amounts of methane to be released into the atmosphere too. *According to the United Nations, methane is a 84-86 times more potent greenhouse gas than carbon dioxide over a 20-year period, and 28-34 times more potent over 100-year period.*⁸⁹ More research is also showing that methane often leaks during the production, transport and use of natural gas. Therefore, its contribution to climate change is significantly unaccounted for.⁹⁰ Drones, laser absorption spectroscopy, and satellites, among other new methane monitoring technologies, have improved the identification and quantification of emissions across the gas lifecycle, leading researchers to conclude that national governments have almost universally underestimated these emissions.⁹¹

⁸⁹ International Energy Agency, Global Methane Tracker 2022- Overview, <https://www.iea.org/reports/global-methane-tracker-2022/overview>. See also International Energy Agency, Global Energy Review: CO2 Emissions in 2021,(2022), <https://iea.blob.core.windows.net/assets/c3086240-732b-4f6a-89d7db01be018f5e/GlobalEnergyReviewCO2Emissionsin2021.pdf>.

⁹⁰ South Africa is likely among those that are underreporting because the Technical Guidelines for GHG reporting uses outdated emission factors from the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines

⁹¹ Jonathan Mingle, Methane Detectives: Can a Wave of New Technology Slash Natural Gas Leaks?, YALE E360, (2019), <https://e360.yale.edu/features/methanedetectives-can-a-wave-of-new-technology-slash-natural-gas-leaks>.

131.

If 3,000 megawatts of new gas-to-power plants were built to meet South Africa's 2019 Integrated Resource Plan for Electricity, and the plants were fuelled by imported LNG, the annual emissions from this fuel use would be more than 2.5 million tonnes of CO₂e (carbon dioxide equivalent) if the plants ran at 75% capacity. This is the equivalent of driving over half a million gasoline-powered vehicles for a year.⁹² For gas or any other fossil fuel, a life-cycle analysis is therefore necessary to quantify the total amounts of GHG emissions (predominantly carbon dioxide and methane) that result from every step in the energy production process: from extracting the fossil fuel at the well or mine to burning it at a power plant or other facility. This is therefore important because all these processes are linked and should not be viewed in isolation.

132.

(iii) South Africa's international climate change commitments

South Africa is a Party to the United Nations Framework Convention on Climate Change (UNFCCC), which enjoins State Parties to take precautionary measures to anticipate, prevent or minimize the causes of climate change (Article 3.3).

133.

South Africa, as a Party to the UNFCCC that ratified the Kyoto Protocol and adopted the Paris Agreement, has committed to '*working with others to ensure temperature increases are kept well below 2°C above pre-industrial levels, which could include a further revision of the temperature goal to below 1.5°C in light of emerging science*' by reducing GHG emissions. South Africa has also committed (among other things) to:

- Preparing, communicating and maintaining Nationally Determined Contributions (NDCs) that it intends to achieve reach global peaking of GHG emissions as soon as possible, and to undertake rapid reductions thereafter;⁹³ and

⁹² EPA, EPA equivalency calculator, <https://www.epa.gov/energy/greenhouse-gasequivalencies-calculator#results>

⁹³ Paris Agreement, Article 4.1 – 4.3.

- Striving to formulate and communicate long-term GHG emission development strategies.⁹⁴

134.

There have been various Conferences of the Parties and meetings since, with decisions related to Nationally Determined Contributions (NDCs) contained in decisions 4/CMA.1 and 18/CMA.1 and their annexes.

135.

South Africa revised its NDC in 2021:⁹⁵

Table 2 - South Africa's updated NDC mitigation targets

Year	Target	Corresponding period of implementation
2025	South Africa's annual GHG emissions will be in a range from 398-510 Mt CO ₂ -eq.	2021-2025
2030	South Africa's annual GHG emissions will be in a range from 350-420 Mt CO ₂ -eq.	2026-2030

136.

South Africa's energy sector is estimated at contributing about 84% percent to the country's overall GHG emissions (including Carbon Dioxide and Methane).⁹⁶

137.

In February 2020, South Africa submitted to the UNFCCC its first long-term low GHG emission development strategy titled *South Africa's Low Emission Development Strategy 2050*. It is

⁹⁴ Paris Agreement, Article 4.19

⁹⁵ Available online at:

https://www.dffe.gov.za/sites/default/files/reports/draftnationallydeterminedcontributions_2021updated.pdf#:~:text=South%20Africa%E2%80%99s%20intended%20nationally%20determined%20contribution%20%28INDC%29%28RSA%2C%20n.d.%29,Agreement.%20The%20INDC%20and%20first%20NDC%20are%20identical. This revised NDC is indicated as an enhancement and update of South Africa's NDC under the Paris Agreement, 'meeting its obligation under Article 4.9 to communicate NDC's every 5 years, and responding to requests in paragraphs 23 to 25 of decision 1/CP.21'. South Africa's second (next) NDC is intended to be communicated in 2025.

⁹⁶ <https://www.climatelinks.org/resources/greenhouse-gas-emissions-factsheet-south-africa>

indicated in the executive summary of this strategy that South Africa, as one of the top 20 global GHG emitters and with a high dependency on fossil fuels, will need to make substantial emission cuts to contribute its fair share to global GHG emission reductions.⁹⁷

138.

The draft EIR does not provide any indication (or estimation) of how future GHG emissions (resulting from future exploitation of oil and gas that may be discovered through the exploration drilling project) would impact on South Africa's ability to achieve its updated GHG emissions targets (as set out in South Africa's revised NDC). This is particularly relevant given that the emissions targets for the 2026-2030 period are lower than the targets for the 2021-2025 period, while offshore oil and gas developments could take at least a decade to reach the production stage. This could result in offshore oil and gas investments (as well as associated gas infrastructure developments) in the future becoming unneeded 'stranded assets' and a burden on future generations. There is also a risk that in the future tariffs will be levied on various goods exported by fossil-fuel dependent countries – the European Union is reported to be gradually phasing in its Border Adjustment Mechanism as part of the EU's Green Deal.⁹⁸

139.

(iv) Gas as a transition fuel

Chapter 5 of the draft EIR also seeks to make the case for the use of liquefied natural gas (LNG) as a transition fuel. In addition to its potential use in peaking plants (in place of diesel currently used), reference is made to the IRP2019, highlighting that while the capacity allocations see a significant increase in renewables and a decrease in hydrocarbons (coal, oil and gas), *'the IRP2019 acknowledges that gas-to-power technologies are required to provide the flexibility required to complement renewable energy in the "just transition" to a net-zero and climate resilient society'*.⁹⁹ The draft EIR acknowledges that South Africa has developed a promising renewable power programme, 'which has been very successful', but points to grid

⁹⁷ South Africa's Low Emission Development Strategy 2050, pviii.

⁹⁸ See for example *Just Energy Transitions and Natural Gas in Africa: Balancing Climate Action and Structural Transformation*, The African Climate Foundation, August 2022, at p14. Available online at: <https://africanclimatefoundation.org/wp-content/uploads/2022/10/ACF-GAS-REPORT-V7.indd-final-1.pdf>

⁹⁹ TEEPSA567 draft EIR, p65.

constraints in high yield wind and solar areas restraining further development in the Northern and Western Cape, and recycling the outdated argument that *'[i]n any event, renewables capacity inherently expose the system to weather risk (lack of wind and or sun), further current battery technology is unproven at very large-scale for protracted periods. There is, therefore, a potential role for natural gas fired power generation at least as a transition fuel'*.¹⁰⁰

140.

Reference is also made to DMRE policy relating to accelerating exploration of local resources, while in the short-term pursuing gas import options.

141.

While the draft EIR sets out various government policies in support of the use of gas as a transitional fuel (and for further offshore oil and gas exploration), importantly the report concedes that *'[t]he use of fossil fuels is, however, not aligned with other national and international agreements, laws, policies and plans, which identify the need to reduce the reliance on fossil fuels and for the global community, including South Africa, to reduce its GHG emissions and meet international law obligations and commitments.'*¹⁰¹

142.

Notwithstanding the DMRE's policy relating to accelerating exploration of local resources, while in the short-term pursuing gas import options, the Green Connection submits that the competent authority is not bound by such policy and must independently apply its mind to the need and desirability of the proposed project. Rigid adherence to policy in making an administrative decision fetters the decision-maker's discretion, in violation of basic principles of just administrative action (it is a fundamental rule of administrative law that the decision-maker vested with a discretionary power may not fetter its discretion by rigid adherence to a pre-determined policy). What is required of an administrator is that he or she is independently satisfied that the policy is appropriate to the circumstances of the particular

¹⁰⁰ Ibid, p66.

¹⁰¹ SIA, p84.

case. The decision-maker cannot elevate principles or policies into rules that are considered to be binding with the result that no discretion is exercised at all. While policies in keeping with the empowering legislation may be used to assist decision making, they may not inevitably determine the outcome of the decision, lest they “preclude the person exercising the discretion from bringing his mind to bear in a real sense on the particular circumstances of each and every individual case coming up for decision.”¹⁰²

143.

Chapter 5 of the draft EIR also includes a section referring to the "*Just Transition and Climate Pathways Study*" (NBI, 2021) in support of the contention that that a lack of gas supply ‘poses a risk to the decarbonisation ambitions of key sectors of the South African economy, which will rely on gas as a transition fuel or low carbon feedstock’.¹⁰³

144.

However, as was pointed out by the Green Connection in its comment on the draft Scoping Report, recent independent studies challenge the view that fossil gas is necessary for electricity generation and as a transition fuel.

145.

The International Institute for Sustainable Development’s (IISD) *Gas Pressure: Exploring the case for gas-fired power in South Africa* (March 2022) report points out that while there used to be a rational view that fossil gas would be necessary either during a transition to low-carbon energy or as part of the long-term energy mix for electricity production:

....revolutions first in renewable energy costs and then in battery storage costs have upended this view. Analysis of the South African electricity system shows that gas supply is not technically necessary until at least 2035, if ever. In the last few years, either the risks associated with gas have increased, or the understanding of existing risks has increased. Consequently, South Africa may see significant negative outcomes from developing a large gas-to-power system now... the trend toward decarbonization, coupled with cost reductions for renewable energy and storage, creates risks for gas investment. Investment in gas can reasonably be expected to

¹⁰² Richardson v Administrator, Transvaal 1957 (1) SA 521 (T) at 530.

¹⁰³ Ibid, at p78.

lead to higher costs for consumers, just transition challenges for workers, and losses for investors.¹⁰⁴

The ISSD report highlights some of the risks associated with gas-to-power investment in South Africa. These risks include significant contributions to climate change (as a consequence of CO₂ and methane emissions when gas is burned), increasing international pressure to move away from gas due to climate impacts, financial risks linked with gas-to-power, the risk of reduced security of affordable gas supply, the risk of stranded assets, and the risk of creating an additional just transition burden (future gas workers and communities face a repeat of the transition hardships currently faced by the coal sector).¹⁰⁵

146.

Meridian Economics' *'Hot Air about Gas – An Economic Analysis of the Scope and Role for Gas-Fired Power Generation in South Africa'* (June 2022) report points out that while South Africa's large-scale use of gas appears to be central to current energy policy direction in South Africa, *'this rests on a 2012 vision which pre-dates dramatic reductions in renewable energy costs and carbon emissions space'*.¹⁰⁶ The report goes on to state that independent analysis of the power sector across multiple recent studies shows that South Africa's power needs can be met both now and in the future with very little use of gas, and that there is *'no evidence to support the large-scale gas envisaged in the GMP; this is uneconomical even before carbon emissions are considered'*.¹⁰⁷ Meridian point out that *'the assumption that gas-fired power generation would replace coal ignores the fact that other technology combinations are now better at replacing coal-fired power than gas, and it is against these technologies that gas-fired generation should actually be compared'*.¹⁰⁸ Meridian demonstrate that existing modelling provides no economic rationale for "big gas" in the power sector, and that *'the impact of using large volumes of gas to generate power will be borne by electricity consumers*

¹⁰⁴ ISSD report, piv. Available online at: <https://www.iisd.org/publications/report/south-africa-no-need-for-gas>

¹⁰⁵ ISSD report, pages 8 – 12.

¹⁰⁶ Meridian report, page ii. Available online at: <https://meridianeconomics.co.za/wp-content/uploads/2022/06/Hot-Air-About-Gas.pdf>

¹⁰⁷ Ibid.

¹⁰⁸ Ibid, p1.

*and will essentially be a subsidy provided by power consumers to otherwise unviable gas use in other sectors’.*¹⁰⁹

147.

The Vital Ambition Report¹¹⁰ by Meridian Economics in collaboration with the Council for Scientific and Industrial Research (“CSIR”) Energy Centre (“Vital Ambition Report”) states that gas to power is only justified in the South African energy mix in so far as it is required for low-utilisation flexible capacity (peaker plants) for balancing the system during peak power demand. The report confirms that no investments in gas infrastructure for energy production and generation is needed now or in the near future.¹¹¹ Furthermore the 2019 IRP will likely need to be updated in the foreseeable future to align with South Africa’s 2021 Nationally Determined Contribution under the Paris Agreement and to keep pace with quickly evolving science and significant reductions in price for solar and wind energy. However, even the 2019 IRP, which is rooted in an outdated and scientifically and economically unsound understanding of the necessity for any gas in the energy mix¹¹², only projects the collective contribution of gas and diesel to the 2030 energy mix to be 1.3% combined.¹¹³

148.

According to a recent report prepared by Robert W. Howarth titled "Methane emissions and climate warming risk from hydraulic fracturing and shale gas development: implications for policy"¹¹⁴ the climate impacts of gas are greater than those of coal per unit of energy produced when evaluated over a 20-year timeframe, the period most relevant for climate change if humans are to avoid catastrophic run-away warming. Though gas emits less carbon

¹⁰⁹ Ibid, p37.

¹¹⁰ Meridian Economics, 2020. A Vital Ambition: Determining the Cost of Additional CO2 Emission Mitigation in the South African Electricity System. See at <https://meridianeconomics.co.za/wp-content/uploads/2020/07/Ambition.pdf>

¹¹¹ Gas and peaking resources contribute just 1.1% of total electricity generation in 2025, and 2.4% by 2035 according to the same Meridian report.

¹¹² Meridian Economics, Hot Air About Gas: An Economic Analysis of the Scope and Role for Gas-Fired Power Generation in South Africa (2022), pages 2-3, <https://meridianeconomics.co.za/wp-content/uploads/2022/06/Hot-Air-About-Gas.pdf>

¹¹³ 2019 Integrated Resource Plan, page 42.

¹¹⁴ Robert W Howarth. 2015. Methane emissions and climate warming risk from hydraulic fracturing and shale gas development: implications for policy” Energy and Emissions Control Technologies at pages 47-50. See https://www.research.howarthlab.org/publications/f_EECT-61539-perspectives-on-air-emissions-of-methane-and-climatic-warmin_100815_27470.pdf

dioxide per unit energy than coal, its upstream GHG emissions are more problematic for the climate, as it leaks and vents potent methane throughout its lifecycle; researchers have been able to better detect emissions across the lifecycle of gas ever more accurately thanks to new methodologies and technologies (particularly "top-down" measurements using satellite and aerial assessments).

149.

The use of fossil fuels must be phased out quickly due to the urgent need to address global warming. A recent study published in *Nature*, the world's leading multidisciplinary science journal, discovered that "by 2050, we find that nearly 60% of oil and fossil methane gas, and 90% of coal, must remain unextracted to stay within a 1.5 °C carbon budget." According to the study, "most regions must reach peak production now or within the next decade, making many operational and planned fossil fuel projects unviable."¹¹⁵ It is common practice that proposed exploration activities such as reconnaissance, only commence months and sometimes years after the need and desirability assessment is undertaken, with extraction and production only commencing years later.¹¹⁶ According to one study, the world's largest oil and gas fields took an average of 5.5 years from discovery to first production and 17 years to reach peak output.¹¹⁷ Chevron Corporation's (CVX) Gorgon natural gas development project off the coast of Australia took 30 years to complete, and another six years to begin producing liquefied natural gas.¹¹⁸ Therefore exploration projects whose objectives are to locate gas deposits for energy companies to exploit through the construction and production of fossil fuels, run the risk of creating risks for such infrastructure to become stranded assets which invariably impacts on the development potential of South Africa in achieving its climate goals. With no economic justification for large-scale gas use in power, such a strategy would result in assets that are stranded before their first kWh of power is generated. Given this, the

¹¹⁵ Welsby, D., Price, J., Pye, S. et al. Unextractable fossil fuels in a 1.5 °C world. *Nature* 597, 230–234 (2021). <https://doi.org/10.1038/s41586-021-03821-8>

¹¹⁶ While new wells in developed reservoirs can be drilled and brought online in a matter of months, production from new fields can take years due to complex permitting requirements and the construction of infrastructure such as pipelines and storage facilities

¹¹⁷ Henrik Wachtmeister, Mikael Höök, "Investment and production dynamics of conventional oil and unconventional tight oil: Implications for oil markets and climate strategies" *Energy and Climate Change*, Volume 1, 2020, 100010, ISSN 2666-2787, <https://doi.org/10.1016/j.egycc.2020.100010> (<https://www.sciencedirect.com/science/article/pii/S2666278720300106>)

¹¹⁸ <https://australia.chevron.com/-/media/australia/our-businesses/documents/Gorgon-Project-Milestones-Fact-Sheet.pdf>

proposed reconnaissance project in no way provides a remedy nor will address in the immediate future South Africa's current energy insecurity issues.

150.

Importantly, exploration drilling for oil and gas will not have any immediate impact on South Africa's energy security, as any oil and gas extracted would not belong to South Africa, but would invariably belong to the companies that extract for profit.¹¹⁹ Energy companies compete for access to petroleum rights granted by governments by either entering a concession agreement, meaning any discovered oil and gas are the property of the producers, or form part of a production-sharing agreement which favours the interest of the producers and ultimately diminishing the general interests of the broader South African Republic.

151.

The oil and gas that will be eventually extracted by oil and gas companies is ultimately exploited for profit. It is not used to generate a benefit that results in broad based security for energy production nor does it lead to the production of energy for South Africa and its citizens. If oil and gas found following a successful reconnaissance, and that are ultimately exploited, are not used to produce energy for South Africa, this invariably undermines the sole stated goal underpinning the need and desirability of this proposed reconnaissance project—its supposed contribution to energy security for South Africa—and provides no tangible benefit for South Africans.

152.

While the increased use of gas as a 'transitional fuel' is promoted by government and vested interest groups, the Green Connection is concerned that the increased use of gas (especially in electricity generation) will lead to increased emissions of climate warming GHGs, and methane (CH₄) in particular. While natural gas combustion is less carbon-intensive than that of coal, fugitive emissions arising from the production, transport, storage and use of natural gas have a much greater climate impact than CO₂. In particular, over a 20-year period (which is particularly relevant since the next 20 years are a critical window for addressing the climate

¹¹⁹ Stewart Glickman and Shang Yang Chuah, *Oil, Gas & Consumable Fuels Industry Surveys* (New York: CFRA, 2019)

crisis) methane emissions, which make up approximately 70-90% of natural gas emissions, are projected to be 82.5 times as impactful as those of CO₂.¹²⁰ The desirability of using gas as a 'transitional' fuel is also questionable having regard to volatile international gas prices, as well as the potential risk of Carbon Border Taxes being introduced in the future. This risk will impose restrictions on the export of products with a high carbon footprint, putting South Africa's economy at greater risk of developing gas to power rather than clean renewable alternatives. This invariably diminishes the need and desirability for promoting new gas development projects, as the negative climate impacts and financial risks undermine the potential for gas to represent a viable solution for South Africa's ambitions to address development whilst respecting universal and regional climate change obligations.

153.

The fundamental outcome of the need and desirability assessment should not be centred on the determination of whether gas technology will ensure security of supply for electricity. Instead, due to the climate crisis, this assessment should be centred on whether South Africa needs, or should rely on, gas to provide security of supply of electricity and whether alternative technologies could meet the same supply objectives with less harm and risk. Renewable energy and/or storage can replace gas to provide reliable and cost-effective generating capacity while greatly reducing the environmental and health risks associated with gas.¹²¹

154.

The call for gas as part of the energy mix set forth in the 2019 IRP does not excuse the decision-maker from taking climate change impacts into account, including as part of the need and desirability assessment. The case for need and desirability must address climate impacts and cannot simply rest on the 2019 IRP as evidence of need or desirability as relied upon by the EAP in the BAR. In the judgment of the High Court in *Earthlife Africa*,¹²² the court

¹²⁰ See the IPCC's 6th Assessment Report (AR6), Working Group 1, Chapter 6 *The Earth's Energy Budget, Climate Feedbacks and Climate Sensitivity*, Table 7.15 at p1017. Available online at: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter07.pdf

¹²¹ See, e.g., Union of Concerned Scientists, *Turning Down the Gas in California* (13 July 2018), https://www.ucsusa.org/resources/turningdown-gas-california?_ga=2.79265367.2135392956.1587590973-34786515.1587590973#ucs-report-downloads

¹²² *Earthlife Johannesburg and Another v. Minister of Energy and Others* 2017 2 All SA 519 (GP)

expressed that with respect to a decision maker's reliance on the IRP when rendering a decision on an application for environmental authorisation, the following is important to acknowledge:

- (a) "Policy instruments developed by the Department of Energy cannot alter the requirements of environmental legislation for relevant climate change factors to be considered".¹²³
- (b) Establishing the need and desirability of a proposed project, is a key objective of each stage of scoping and impact assessment and must account for South Africa's 2021 NDC under the Paris Agreement. The EAP must therefore provide a broad and robust analysis of multiple alternative literature on renewable energy resources and make a justifiable and reasonable case for a project's need and desirability having considered the available literature, without relying solely on the 2019 IRP and other policy documents. This invariably assists the decision maker to prioritise the granting of the best decision which will prioritize the integrity of the environment, and the social welfare, health and safety aspects of the socio-economic environment for present and future generations.

155.

(v) *Ecological and Economic Risk of a Major Oil Spill*

Catastrophic oil spills could occur as a result of an uncontrolled wellhead blowout related to offshore oil and gas exploration and/or production drilling. Oceans play a critical role in regulating the climate and mitigating global warming by absorbing carbon dioxide. Oil spills pose a significant threat to functioning marine ecosystems, to living organisms in South Africa's coastal waters,¹²⁴ and to communities that depend upon the oceans for their

¹²³ See above at para 97.

¹²⁴ In terms of the National Environmental Management: Integrated Coastal Management Act 24 of 2008 (NEM:ICMA), the '**interests of the whole community**' is defined as meaning the collective interests of the community determined by:

- (a) prioritising the collective interests in coastal public property of all persons living in the Republic over the interests of a particular group or sector of society;
- (b) adopting a long-term perspective that takes into account the interests of future generations in inheriting coastal public property and a coastal environment characterised by healthy and productive ecosystems and economic activities that are ecologically and socially sustainable; and
- (c) taking into account the interests of other living organisms that are dependent on the coastal environment.

livelihoods. Small-scale fishers and fishing-dependent communities are particularly vulnerable to the negative impacts of a large uncontrolled oil spill which could (among other things) lead to a depletion in the fish stocks upon which the livelihoods of these small-scale fishers and fishing communities depend.

156.

The Green Connection submits that it is not in the interests of the whole community (from and intra- and inter-generational perspective, as well as having regard to potential impacts on living organisms in South Africa's coastal waters¹²⁵) to expose our oceans and coasts to the increased risk of a potentially catastrophic major oil spill during exploration drilling, or during subsequent production operations.

157.

(vi) Synthesis

The Green Connection submits that, for the reasons set out above, and having regard to the need to effectively address the climate change crisis and achieve the rapid, deep and sustained reductions in GHG emissions that are required to limit global warming to 1.5°C (including accelerated action in this decade to reduce global carbon dioxide emissions by 45 per cent by 2030 relative to the 2010 level and to net zero around mid-century), further exploration for oil and gas is not needed, nor is it desirable. It follows that the proposed exploration drilling is also not needed or desirable, and environmental authorisation should be refused due to the unacceptable likely risks of harm that will arise from activities that contribute towards exacerbating the climate crisis and thereby significantly reducing resilience against impacts to human health and the environment more broadly, as well as the inordinately high costs involved in gas power generation for energy.

¹²⁵ In terms of the National Environmental Management: Integrated Coastal Management Act 24 of 2008 (NEM:ICMA), the 'interests of the whole community' is defined as meaning the collective interests of the community determined by:

- (d) **prioritising the collective interests in coastal public property of all persons living in the Republic over the interests of a particular group or sector of society;**
- (e) **adopting a long-term perspective that takes into account the interests of future generations in inheriting coastal public property and a coastal environment characterised by healthy and productive ecosystems and economic activities that are ecologically and socially sustainable;** and
- (f) **taking into account the interests of other living organisms that are dependent on the coastal environment.** (emphasis added)

158.

D. ALTERNATIVES

(i) Location Alternatives

With regard to the proposed exploratory well drill-site locations, the draft EIR indicates that as TEEPSA is *'the holder and operator of Block 5/6/7, drilling will be limited to the Block 5/6/7 licence area. TEEPSA is, however, proposing to limit the well drilling to an area of interest within the Block'*.¹²⁶

159.

Given that a major oil spill (such as from an uncontrolled wellhead blowout) have been assessed to have VERY HIGH impacts both before (and in some instances) after mitigation, and having regard to the relative close proximity of the License Block to Cape Town and surrounds, the Green Connection submits that location alternatives (alternative License Blocks) should have been considered. The draft EIR ought to have factored into its assessment of alternative locations whether coastal public property, the coastal protection zone or coastal access land will be affected, and if so, the extent to which the proposed development or activity is consistent with the purpose for establishing and protecting those areas.¹²⁷ In doing so, the EAP would have actively considered alternative options which would factored in the appropriateness of exploration drilling and whether such activities would be consistent with the purpose of establishing protective zones within those areas.

160.

(ii) The No-Go Alternative

The draft EIR indicates that the no-go alternative:

...represents the option not to proceed with the proposed exploration well drilling activities. This would leave the project area of influence in its current state (refer to the baseline description in Chapter 7), except for ongoing natural variations and changes caused by other human activities (e.g., fishing, commercial shipping, etc.). It thus

¹²⁶ Draft EIR, Ch 6 p124, Ch 12 p548.

¹²⁷ Section 63 of the ICMA.

represents the current status quo against which all potential project-related impacts will be assessed. Opting for the No-Go alternative means that none of the impacts anticipated from normal exploration drilling operations would occur. Additionally, the No-Go alternative would preclude the risks associated with accidental drilling-related events.¹²⁸
(underlining added)

161.

The draft EIR goes on to state that:

...the South African Government and international policy both promote the use of natural gas in the energy mix in the pathway to net-zero emissions by 2050, i.e. gas is needed in the just transition. At present, and in the proximate future (and therefore also in the 'No Go' option), this gas will have to be imported. Despite there potentially being local reserves that could be used instead of imports. The government has a continuing view that any existing oil or gas resources should be developed... The presence and activity of TEEPSA, and other oil and gas exploration operators, in South African territory is as a result of this policy.

The No-Go alternative (which here assumes no future oil and gas exploration and production in South Africa) means that any domestic oil and gas resources that might occur in the area of interest cannot be identified and South Africa will not be able to optimise the use of its own domestic oil and gas resources, should they exist.¹²⁹

162.

The draft EIR to summarise what it considers selecting the no-go alternative would mean to South Africa, primarily raising issues relating to the purported benefits of gas in the South African energy mix and power generation in particular (see Chapter 5, section 9.5 of the draft EIR for details).

163.

The draft EIR concludes its discussion of the implications of the no-go alternative by stating as follows:

The No-Go alternative would prevent South Africa from identifying domestic gas that could offer an energy supply that could be competitively priced, produce relatively low carbon dispatchable power (lower carbon emissions than coal, oil or oil-fired generation) without the inherent weather risk of solar or wind generation (in the absence of utility

¹²⁸ Chapter 9, p418.

¹²⁹ Ibid.

scale batteries) and reduce South Africa's exposure to the highly volatile international oil and gas markets (fluctuating price). Further to this, using a domestic resource would have a lower carbon footprint than importing from abroad and should not be seen to be in conflict with reaching carbon neutrality by 2050.¹³⁰

164.

The Green Connection submits that the assessment of the no-go alternative fails to provide a balanced consideration of the no-go alternative, and in particular fails to set out the negative implications of potential future oil and gas development and attendant economic and social costs that will or may result. This would necessarily include the economic and social costs of GHG emissions that would result from future oil and gas development (including extraction, production and use), as well as the social and economic costs that would result from a major oil spill arising from an uncontrolled wellhead blow-out (during both exploration and subsequent production phases).

165.

The Green Connection is also of the view that the a proper assessment of the No-Go alternative should have identified and assessed the potential ecological and socio-economic benefits of the no-go option for small-scale fishers and fishing dependent communities. The assessment should also necessarily have included a consideration of alternative means to generate energy and provide sustainable feedstocks for associated industrial applications, including renewable energy alternatives that do not pose a significant inter-generational ecological and socio-economic risk.

166.

E. BLOWOUT CONTINGENCY PLAN (BOCP) AND OIL SPILL CONTINGENCY PLAN (OSCP)

It is noted that TEEPSA have put up a framework OSCP as part of the 'additional information' provided on its website. It is noted further that the EAP argues that there is no specific requirement to include the BOSP and OSCP in the EIA document set, stating that these will be

¹³⁰ Chapter 9, p420.

site-specific and are internal documents.

167.

In its comments on the draft Scoping Report, the Green Connection pointed out that it was indicated that *'[a]lthough the probability of a well blow-out is extremely low, it is a worst-case scenario that provides the greatest environmental risk during drilling operations.'*¹³¹ The draft Scoping Report stated further that TEEPSA will have a BOCP in place that sets out its detailed response plan and intervention strategy. The draft Scoping Report also indicated in relation to an uncontrolled wellhead blow-out that *'[a] key response to such unplanned events, is a well-specific Oil Spill Contingency Plan (OSCP) that is driven by well-specific oil spill modelling, intensive pre-planning and appropriate preparation',*¹³² and that the *'[t]he ESMP will specify commitments on the approach to and key components of an OSCP. Framework documents for OSCP and Blow-Out Contingency Plan (BOCP), which give an indication of the typical content, will be included in the ESMP'*.¹³³

168.

The Green Connection submitted further that the final Scoping Report should have clearly indicated that an OSCP and BOSCP would be included in the draft EIA report document set, and that (among other things) these plans should deal with specific equipment that will be available (including any offshore drilling equipment should a relief well need to be drilled), as well as the logistics informing actual response time etc. (such as – but not limited to – transport or shipping requirements for both the Saldanha Bay and Aberdeen capping stack mobilisation scenarios, implications of attempting to install a capping stack at a deep sea location in potentially adverse and challenging weather conditions, implications of having to drill a relief well should capping fail, and associated time requirements for all scenarios).

169.

The Green Connection stands by its submissions that a failure to make these plans available

¹³¹ DSR, section 6.4.4.2.4, page 81.

¹³² DSR, section 9.2.2.4, page 280.

¹³³ Ibid.

for comment by I&APs during the EIA process is procedurally unfair, and will result in any decision on authorisation being unlawful and vulnerable to being set aside on appeal and/or judicial review. Notwithstanding the above, in the absence of site-specific BOCPs and OSCPs being made available for public comment during the EIA process, it is submitted that in the event that the exploration drilling is authorised (which authorisation the Green Connection does not support), the Record of Decision should include a condition specifying that such 'internal' documents must be made publicly available for comment.

170.

F. PUBLIC PARTICIPATION

The applicant's public consultation process is set out in Chapter 4 of the draft EIR. It is noted that for the impact assessment phase, public participation steps are indicated as having included a workshop with the South African United Fishing Front on 'meaningful consultation at a grass roots level' and distribution of the draft EISIA report for a period of 44 days. It is indicated further that (among other things) the availability of the draft ESIA report and notice of public meetings would be published in adverts in various local and regional newspapers (in English, Afrikaans and isiXhosa), that notices providing the same information would be placed at various locations in the direct area of influence, that radio announcements (also in English, Afrikaans and isiXhosa) would be made etc.

171.

While these steps are noted, the Green Connection records that it remains concerned regarding the public participation process given the volume of (highly technical) information contained in the draft EIR report and Appendices (notwithstanding the non-technical summary), the number offshore oil and gas authorisation processes that are being undertaken over the same period, as well as the number of public meetings relating to these various applications (which target the same group of I&APs, many of whom are small-scale fishers that are often unable to attend these scheduled public meetings due to the need to go to sea to fish). In recent months, these applications have included the Searcher seismic survey Basic Assessment application (deadline for comment 13 October 2022), the TGS seismic survey Basis Assessment application (deadline for comment 25 November 2022), the

TEEPSA 567 exploration drilling EIA (deadline for comment 7 December 2022), the TEEPSA DWOB exploration drilling EIA (deadline for comment extended to 14 December 2022), and the TEEPSA Block 11B/12B production EIA (deadline for comment 3 February 2022). While not relating to offshore oil and gas exploration, many of the targeted I&APs also have an interest in the Karpowership EIA (deadline for comment 13 December 2022).

172.

The Green Connection points out that section 2(4)(f) of NEMA requires that the participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.

173.

Having regard to the issues raised above, the Green Connection is of the view that even the 44 day commenting period provided was insufficient for I&APs (and small-scale fishers and fishing dependent communities in particular) to have a reasonable opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation.

174.

G. ROLE OF PASA IN NEMA EIA PROCESS

In its comments on the draft Scoping Report, the Green Connection noted that key steps in the Scoping Phase included:

- A pre-application meeting held with the Petroleum Agency of South Africa (PASA) on 19 May 2021 *‘to inform them of TEEPSA’s proposed project and application for Environmental Authorisation, as well as to obtain agreement on the ESIA process’*.¹³⁴ A

¹³⁴ DSR, page v.

follow-up meeting was held with PASA on 21 February 2022; and

- Compiling an Application Form for Environmental Authorisation and DFFE National Screening Tool and submitting it to PASA.

175.

The draft Scoping Report indicated further that completion of the Scoping Phase would include the *'[s]ubmission of the final Scoping Report to PASA for consideration and review. PASA will then make a recommendation on the acceptance or rejection of the report to DMRE, who will make the final decision'*.¹³⁵ With regard to the Impact Assessment Phase, the draft Scoping Report indicated that the *'final ESIA Report will be submitted to PASA for consideration and review'*,¹³⁶ whereafter PASA would provide a recommendation to the DMRE on whether or not to grant an environmental authorisation.

176.

The Green Connection pointed out that on 18 June 2004, the then Minister of Minerals and Energy designated¹³⁷ PASA to perform the functions set out in Chapter 6 of the Minerals & Petroleum Resources Development Act (MPRDA).¹³⁸ It was pointed out further that it was relevant to note that the Minister was exercising powers conferred in terms of section 70 of the MPRDA, and not NEMA. Section 71 of the MPRDA sets out the functions of PASA as the designated agency, which include (among other things) that the designated agency must:

review and make recommendations to the Minister with regard to the acceptance of environmental reports and the conditions of the environmental authorisations and amendments thereto.¹³⁹ (underlining added)

¹³⁵ Ibid.

¹³⁶ DSR, page vi.

¹³⁷ GN733 of 18 June 2004: *Designation of the Petroleum Agency South Africa (Proprietary) Limited for the purposes of the Petroleum Resources Development act, 2002 (Act No. 28 of 2002)*. Section 70 of the MPRDA provides that the Minister Mineral Resources may designate an organ of state or a wholly owned and controlled agency or company belonging to the State to perform the functions referred to in Chapter 6 of the MPRDA (Petroleum Exploration and Production).

¹³⁸ Act 28 of 2002 (as amended).

¹³⁹ Section 71(i).

177.

The MPRDA as the enabling statute thus mandates PASA to perform a very limited role relating to environmental matters, namely to review and make recommendations to the DMRE Minister with regard to:

- the acceptance of environmental reports; and
- the conditions of environmental authorisations and amendments thereto.

178.

In terms of the NEMA EIA Regulations Listing Notice 2 of 2014,¹⁴⁰ the Minister responsible for Mineral Resources is identified as the competent authority where the listed activity is or is directly related to (among other things) exploration of a petroleum resource. Section 42B of NEMA provides that the Minister responsible for Mineral Resources may in writing delegate a function entrusted to him/her in terms of the Act to the Director-General (DG) of the Department of Minerals and Energy; or any officer in the department of Minerals and Energy. The Green Connection pointed out that it was relevant to note that s42B of NEMA does not empower the Minister responsible for Mineral Resources to delegate a function to state-owned agencies or companies, such as PASA. Section 42B of NEMA also does not include a power to subdelegate.¹⁴¹

179.

Thus while PASA is empowered to receive applications (made under the MPRDA) for reconnaissance permits, technical co-operation permits, exploration rights and production rights in the prescribed manner,¹⁴² and to evaluate such applications and make recommendations to the Minister,¹⁴³ it is not empowered in NEMA environmental impact

¹⁴⁰ GNR.984 of 4 December 2014 (as amended).

¹⁴¹ Unlike s42(2)(d) of NEMA, which specifically provides that the Minister responsible for environmental matters may delegate a power or duty vested in him/her to the Director General, an MEC, the management authority of a protected area, or any organ of state (by agreement with that organ of state). In terms of s42(2)(a) this delegation must be in writing and may include the power to subdelegate.

¹⁴² Section 71(b).

¹⁴³ Section 71(c).

assessment (EIA) processes to, hold pre-application meetings with the applicant, agree the ESIA process, or to make recommendations on whether or not to grant environmental authorisation.

180.

The Green Connection submitted that the pre-application meeting held with PASA on 19 May 2021 *'to inform them of TEEPSA's proposed project and application for Environmental Authorisation, as well as to obtain agreement on the ESIA process'*, and the subsequent meeting with PASA on 21 February 2022, were functions that should have been performed by the competent authority.

181.

The Green Connection submitted further that the intended submission of the final ESIA Report to PASA *'for consideration and review'* and for PASA to thereafter provide a recommendation to the DMRE on whether or not to grant an environmental authorisation, was also not authorised by the empowering provisions of NEMA. And while PASA is empowered under a separate statutory scheme (namely the MPRDA) to review and make recommendations with regard to the acceptance of environmental reports and the conditions of environmental authorisations, PASA is not empowered under the MPRDA to perform the functions of the competent authority in accepting the final ESIA Report or to make recommendations to the DMRE on whether or not to grant an environmental authorisation.

182.

The Green Connection stated that this was particularly concerning given that the MPRDA imposes a mandatory obligation on PASA to promote offshore exploration for the production of petroleum,¹⁴⁴ and it was submitted that by allowing PASA to perform functions that should be undertaken by it as the competent authority, the DMRE was unlawfully abdicating its responsibilities in the EIA process. It is also misconstruing the statutory functions of the DMRE

¹⁴⁴ MPRDA, section 71(a).

as the competent authority in NEMA EIA processes, and the functions to be performed by PASA under the MPRDA (a material error of law).

183.

The Green Connection submitted further that in order for the EIA process to be lawful and procedurally fair, PASA should strictly limit its role in the EIA process to functions mandated under section 71(i) of the MPRDA.

184.

The Green Connection stands by these submissions.

185.

H. CONCERN OVER INDEPENDENCE OF EAP AND FISHERIES SPECIALIST

In its comments on the draft Scoping Report, the Green Connections noted with concern that the environmental assessment practitioner (EAP) (SLR Consulting) for the ESIA, as well as the fisheries specialist (Capricorn Marine Environmental) appointed by SLR to conduct the Fisheries Impact Assessment in the ESIA,¹⁴⁵ have both previously provided consulting services to the applicant (TEEPSA) in relation to Block 5/6/7.

186.

By way of example, it was pointed out that the *CB203D-01 3D Seismic Survey in Block 5/6/7 (ER12/3/224): Survey Close Out Report* by SLR dated June 2020 indicated that:

- SLR was appointed in an 'environmental management and quality control role for the duration of the seismic survey'¹⁴⁶ and to undertake 'environmental compliance',¹⁴⁷ and that SLR's services to TEEPSA included: compilation of the close-out report on behalf of

¹⁴⁵ DSR, p25.

¹⁴⁶ *CB203D-01 3D Seismic Survey in Block 5/6/7 (ER12/3/224): Survey Close Out Report* by SLR dated June 2020, pages i and 1.

¹⁴⁷ *Ibid*, page 10.

- TEEPSA (including a close-out audit and performance assessment);¹⁴⁸ compilation of a legal register prior to the commencement of the seismic survey;¹⁴⁹ compilation of a Communications Plan on behalf of the Operator prior to the commencement of the seismic survey;¹⁵⁰ conducting environmental awareness training for all the seismic vessel crew members;¹⁵¹ distributing a Notice to Mariners on behalf of the Operator to all I&APs on the project database;¹⁵² submitting an Environmental Notification to PASA on behalf of the Operator;¹⁵³ and distributing an end of survey notification to I&APs.¹⁵⁴
- Capricorn Marine Environmental (aka CapMarine) ‘*was appointed to provide on-board independent Marine Mammals Observer (MMO), Passive Acoustic Monitoring (PAM) and Fisheries Liaison Officer (FLO) services for the duration of the survey*’¹⁵⁵, and that CapMarine produced a close-out report summarising their onboard activities.

187.

As was noted in its comments on the draft Scoping Report, the EIA Regulations stipulate that an EAP and a specialist must be independent.¹⁵⁶ The EIA Regulations define independent as follows:

“**independent**”, in relation to an EAP, a specialist or the person responsible for the preparation of an environmental audit report, means:

- (a) that such EAP, specialist or person has no business, financial, personal or other interest in the activity or application in respect of which that EAP, specialist or person is appointed in terms of these Regulations; or
- (b) that there are no circumstances that may compromise the objectivity of that EAP, specialist or person in performing such work;

excluding:

¹⁴⁸ Ibid, page 2.

¹⁴⁹ Ibid p12.

¹⁵⁰ Ibid, page 15.

¹⁵¹ Ibid, page 16.

¹⁵² Ibid, page 20.

¹⁵³ Ibid, p19.

¹⁵⁴ Ibid, p57.

¹⁵⁵ Ibid, pages iv-v.

¹⁵⁶ NEMA EIA Regulations, r13(1)(a).

- (i) normal remuneration for a specialist permanently employed by the EAP; or
- (ii) fair remuneration for work performed in connection with that activity, application or environmental audit;

(underlining added)

188.

The Green Connection recorded its concern that SLR's and CapMarine's prior involvement as consultants for TEEPSA in the Block 5/6/7 3D seismic survey may compromise the objectivity of both SLR (as the EAP) and CapMarine (as the fisheries specialist) in the current exploration EIA for Block 5/6/7. Having regard to the services provided during the 3D seismic survey, the Green Connection is further concerned that SLR and CapMarine have prior and ongoing business and/or financial interests in TEEPSA's offshore oil and gas exploration project.

189.

In its responses to the Green Connections comments, SLR responded by disputing that it or CapMarine have any business or financial interest in TEEPSA's offshore gas exploration other than fair payment for consulting services rendered as part of the ESIA process.

190.

The Green Connection notes SLR's response, but remains concerned that SLR's and CapMarine's prior involvement as consultants for TEEPSA in the Block 5/6/7 3D seismic survey may compromise the objectivity of both SLR (as the EAP) and CapMarine (as the fisheries specialist) in the current exploration EIA for Block 5/6/7. The Green Connection also remains concerned, having regard to the services provided during the 3D seismic survey, that SLR and CapMarine have prior and ongoing business and/or financial interests in TEEPSA's offshore oil and gas exploration project, and are likely in the future have additional business and/or financial interests (for example by providing Marine Mammal Observers, or undertaking other oil and gas exploration and production EIAs). The Green Connection is concerned that such interests make it difficult for a consultant to, for example, recommend against the authorisation of a project as doing so could potentially prejudice prospects of securing future contracts.

191.

I. OTHER COMMENTS**(i) Avoid Drilling during Austral Winter**

It is noted that the draft ESMP indicates *'All efforts to be made to avoid scheduling drilling operations during the periods when the likelihood of shoreline oiling for a blow-out is highest (namely the Austral Winter). In the case of exploration will drilled in a sequence covering this period, response needs to be enhanced'*.¹⁵⁷ This contradicts statements made in the draft EIR which indicate that *'TEEPSA's strategy for future drilling is that drilling can be undertaken throughout the year (i.e. not limited to a specific seasonal window period).'*¹⁵⁸ In the event that the competent authority decides to authorise the exploration drilling project (which authorisation the Green Connection does not agree with), it is submitted that the record of decision should include a specific condition prohibiting the drilling and testing of any exploration well during the Austral Winter.

192.

(ii) Avoid key migration seasons

In the event that the competent authority decides to authorise the exploration drilling project (which authorisation the Green Connection does not agree with), the Green Connection submits that the record of decision should restrict exploration drilling activities to periods that avoid key migration, breeding and spawning periods of marine species that have been identified as being vulnerable to the negative impacts of a major oil spill (wellhead blowout).

193.

(iii) Assessment of impact of oil leak from abandoned well

It is noted that the Closure Planning Framework (Decommissioning Plan) by WSP indicates that:

The leakage of hydrocarbons from an abandoned well can be initiated through a compromised well barrier either by degradation overtime or natural seepage, or both. For

¹⁵⁷ Draft EIR, Ch11 p503.

¹⁵⁸ Draft EIR, Ch 6, p91.

the proposed activities up to five wells may be drilled, but only those which encounter hydrocarbon bearing formations could potentially leak. Although a leak from an abandoned well is unlikely, it could result in the release of considerable quantities oil or gas. The quantities released are, however, likely to be less than in the case of a well blow-out.¹⁵⁹ (underlining added)

194.

With regard to post-well abandonment monitoring, the report indicates that:

Generally, monitoring of sealed wells is required only if there is a demonstrable risk of a significant adverse effect on the environment (European Commission, 2022) which would be indicated by monitoring during the operational phase, or in the event that the well is targeted for recommissioning during future production activities. As such, TEEPSA currently do not anticipate the requirement for ongoing monitoring of the well once the seal performance standard requirements have been met.

Monitoring gauges to monitor pressure and temperature through wireless communication with frequencies between the transmitter and the receiver in the 12.75 to 21.25 kHz range may be installed on wells where TEEPSA will return in the future for appraisal / production purposes.¹⁶⁰ (underlining added)

195.

As far as can be determined by the Green Connection, the potential significance of environmental impacts of leakage of hydrocarbons from an abandoned well (which could result in the release of considerable quantities oil or gas) has not been assessed in the draft EIR. In addition, the draft EIR does not appear to require TEEPSA to monitor the sealed well in circumstances where there is a demonstrable risk of a significant adverse effect on the environment, or in the event that the well is targeted for recommissioning during future production activities) – it simply indicates in the specialist report that TEEPSA ‘may’ install pressure and temperature monitoring gauges on wells where it may return in the future for appraisal / production purposes.

196.

Without an assessment of the significance of a potential oil leak from any abandoned wells, it is not possible for the decision-maker to evaluate whether or not there is ‘a demonstrable

¹⁵⁹ App 10, p36.

¹⁶⁰ Ibid, p37.

risk of a significant adverse effect on the environment' (including the climate change impacts if leaking methane gas). Accordingly, the Green Connection submits that any authorisation granted in the absence of such an assessment would be fatally flawed. The Green Connection submits further that in the event that the exploration well drilling application is authorised (which authorisation the Green Connection does not agree with), the ESMP should stipulate that TEEPSA will be required to monitor all abandoned wells (unless it can be demonstrated that there there is no risk of a significant impact on the environment from the well in question) for leakage (which requirement should also be made a condition of the authorisation).

197.

J. CONCLUSION

The Green Connection submits that for the reasons set out above, TEEPSA's application for environmental authorisation to conduct exploration drilling in petroleum license Blocks 5/6/7 located off the South West Coast of South Africa should be refused.