IN THE HIGH COURT OF SOUTH AFRICA
EASTERN CAPE DIVISION, GRAHAMSTOWN

CASE No: 3491/2021

In the matter between

SUSTAINING THE WILD COAST NPC	First Applicant
MASHONA WETU DLAMINI	Second Applicant
DWESA-CWEBE COMMUNAL PROPERTY ASSOCIATION	Third Applicant
NTSINDISO NONGCAVU	Fourth Applicant
SAZISE MAXWELL PEKAYO	Fifth Applicant
CAMERON THORPE	Sixth Applicant
ALL RISE ATTORNEYS FOR CLIMATE AND THE ENVIRONMENT NPC	Seventh Applicant
and	
MINISTER OF MINERAL RESOURCES AND ENERGY	First Respondent
THE MINISTER OF ENVIRONMENT, FORESTRY AND FISHERIES	Second Respondent
SHELL EXPLORATION AND PRODUCTION SOUTH AFRICA BV	Third Respondent
IMPACT AFRICA LIMITED	Fourth Respondent
BG INTERNATIONAL LIMITED	Fifth Respondent

ANSWERING AFFIDAVIT IN URGENT APPLICATION

I, the undersigned

HLONIPHIZWE MTOLO

do hereby make oath and say:

1. I am the Country Chair of Shell Downstream (Pty) Ltd., a wholly owned subsidiary of Royal Dutch Shell PLC. I am duly authorised to depose to this affidavit on behalf of the Third, Fourth and Fifth Respondents, as appears from the attached powers of attorney

2. The facts contained herein fall within my personal knowledge except where otherwise stated or indicated by the context and are both true and correct.

3. At the outset, I record that the Fifth Respondent is the Shell entity which owns the project and which is affected by the relief sought. The Third Respondent has nothing to do with the project. It was mistakenly listed as the project proponent in the Notice of 29 October 2021. In the remainder of this affidavit, I refer to the Fifth Respondent as "*Shell*".

PART A: INTRODUCTION

4. This affidavit is filed in response to the urgent application brought by the Applicants to interdict Shell from conducting a seismic survey. The unsigned application was first sent to the Respondents on 2 December 2021, by email. The application was thereafter materially supplemented – by the Applicants filing a further *192 pages* of affidavits and new specialist evidence – on the evening of 7 December 2021. The Respondents were

afforded a period of just over two days to file their answering affidavits by 10 December 2021 – an unreasonable and highly prejudicial timeframe.

5. The timeframe provided was also in direct conflict with the direction of Govindjee AJ on 2 December 2021, which provided that "*the Applicants are to ensure that the respondents are given adequate time to file answering affidavits*". The timeline unilaterally dictated by the Applicants was far from "adequate" and would also have had the effect that the Respondents were required to file their heads of argument before seeing the Applicants' Replying Affidavit, again prejudicing the Respondents in the conduct of their case.

6. Following a case management meeting on 9 December 2021, a directive was issued directing Shell to file its answering affidavit by 13h00 on Tuesday 14 December 2021, and heads of argument delivered simultaneously at 16h00 on Thursday 16 December 2021, prior to the hearing of the application on 17 December 2021. This affidavit is filed in compliance with that directive. Shell is indebted to the presiding Judge for granting it an extension to file its answering affidavit three and a half calendar days and one and a half business days after the deadline imposed by the Applicants. The fact remains, however, that Shell has not had an adequate opportunity to interrogate and respond to the evidence, especially the new supplementary evidence filed on 7 December 2021, adduced by the Applicants. Shell has done its best to provide as comprehensive a response as possible in the circumstances but persists in arguing that the timetable applicable to the determination of this application is not conducive to the fair determination of the relevant issues. As indicated by the presiding Judge in the case management meeting, this issue will be argued in the context of Shell's arguments on urgency at the hearing of this matter. It is also addressed briefly again below.

7. At the outset, it is necessary for me to refer to the EMPr that Shell obtained in relation to the project. The Applicants have not annexed it to their papers, so I annex it to this affidavit

as annexure "**HM1**". It is a lengthy and comprehensive document, setting out the consultative process followed, the expert evidence that informed the granting of the EMPr as well as the detailed mitigation measures required to be undertaken by Shell. Because there are various aspects of it which Shell intends to mention in argument, I request that its contents be read as if incorporated herein. I note that the EMPr was prepared in terms of regulation 52 of the Regulations made under the MPRDA (which has since been repealed), which required the EMPr to include:

"(a) a description of the environment likely to be affected by the proposed prospecting or mining operation;

(b) an assessment of the potential impacts of the proposed prospecting or mining operation on the environment, socio-economic conditions and cultural heritage, if any;

(c) a summary of the assessment of the significance of the potential impacts, and the proposed mitigation and management measures to minimise adverse impacts and benefits;

(d) financial provision which must include-

(i) the determination of the quantum of the financial provision contemplated in regulation 54; and

(ii) details of the method providing for the financial provision contemplated in regulation 53;

(e) planned monitoring and performance assessment of the environmental management plan;

(f) closure and environmental objectives;

(g) a record of the public participation undertaken and the results thereof; and

(h) an undertaking by the applicant regarding the execution of the environmental management plan."

Structure of the affidavit

8. In what follows, and in the time available, I set out Shell's opposition to the application as follows:

8.1. In Part B, I set out who Shell is, and the nature of the Seismic Survey that it is currently conducting. I deal upfront with the allegations of harm, and demonstrate that the seismic survey and its timing is supported by expert evidence, including onerous mitigation measures that Shell has undertaken and will undertake, and that the survey will be constantly independently monitored by experts on board the vessel.

8.2. In Part C, I deal with the question of issue estoppel, and the fact that the very same issues which arise before this Court have been dealt with and a judgment issued by Govindjee AJ. The Applicants in this application record that they were aware of that application while it was pending before this Court, but they elected not to join it.

8.3. Part D concerns urgency. Shell disputes the urgency of this application and contends that the manner in which it has been brought – including the belated filing of hundreds of pages of additional affidavits and 'specialist evidence' – constitutes an abuse.

8.4. In Parts E and F, I summarise Shell's response to the main thrust of the Applicants' case, which appears to have two legs:

8.4.1. first, the Applicants assert that Shell ought, in addition to the approval for its Environmental Management Programme ("*EMPr*") which it obtained in relation to the seismic survey, *also* to have obtained a separate environmental authorisation ("*EA*"), and that the current EMPr has become "*outdated*" and therefore a new

authorisation is required. Although this is primarily a matter for legal argument and will be addressed as such, I address it briefly below;

8.4.2. secondly, the Applicants assert that their communities, who they say stand to be affected by the seismic survey, were not consulted. I set out in detail the consultation process that was followed to demonstrate that there was meaningful consultation and meaningful opportunities for all interested parties to participate in the EMPr approval process. I show that the allegations of "no consultation" are insupportable on the facts.

8.5. In Part G, I draw these submissions together and demonstrate that the Applicants have failed to meet the requirements of an interim interdict. As part of that discussion, extensive reference is made to academic work. I do not wish to expand the length of the papers in this matter even further by annexing all of the studies to this affidavit, especially since the deponents to the various supporting affidavits of the Applicants have access to them. I do, however, annex as "**HM2**" a list of all of the studies mentioned below, for convenience.

8.6. Finally, I deal *ad seriatim* with the Founding Affidavit.

PART B: SHELL AND THE SEISMIC SURVEY

9. At various points in the Founding Affidavit, the Applicants resort to disparaging Shell and other "*multi-nationals*". The comments made are generalised, defamatory and unjustified. It is accordingly necessary, upfront, to set out the nature of Shell's business and the purpose of the current seismic survey.

Shell

10. The iconic seashell which identifies Shell business operations across South Africa and the world is one of the world's most recognised symbols – an identity which has defined the company since the late 19th century. An integrated energy company, Shell is one of the largest corporates in the world and is considered a pioneer in the development of new technologies and processes in an energy-hungry world.

11. Shell has been in South Africa since 1902. It is one of the largest international energy companies in the country with a wide national footprint of around 600 service stations in addition to its nation-wide depots which power a number of sectors and customers.

12. Shell directly employs more than 500 people in South Africa and more than 10 000 people indirectly at service stations, joint venture facilities and through our supply and distribution network.

13. A number of businesses make up Shell's downstream operations. Collectively, they turn crude oil into a range of refined products that are moved and marketed around the country for domestic, industrial and transport use. These businesses include:

    13.1. Manufacturing;

    13.2. Supply and Distribution;

    13.3. Retail;

    13.4. Aviation;

    13.5. Marine;

    13.6. Bitumen; and

13.7. Commercial Fuels and Lubricants.

14. Shell believes that transformation is the force that will unlock a brighter future for our nation. A future where prosperity is possible for all citizens. Shell understands that in order for an economy to grow it has to integrate all of its citizens in a meaningful way. Shell is, and has always been, truly committed to supporting sustainable progress. Shell believes that its transformation initiatives must go beyond just its internal operations and into our country's communities. It is only in this way that all South Africans will be able to envisage a thriving future, not only for themselves but for their children's children.

15. At Shell we can proudly say that we go far beyond what is expected of us by industry charters and the sector. This is evidenced by having achieved a Level-1 Broad Based Black Economic Empowerment status for the 5th consecutive year.

16. As society transitions to net zero emissions, Shell recognises the need to provide the energy the world needs today. South Africa is currently highly reliant on energy imports for some of its energy needs. Should commercially viable resources be found offshore, this could significantly contribute to South Africa's energy security and government's economic development programmes, whilst supporting local employment. Furthermore, South Africa is presently heavily reliant on imports and coal for electricity generation. If South Africa can find domestic offshore gas, this could play a key part in diversifying South Africa's energy portfolio. Gas is also a strategic bridge to low carbon emission targets and has a key role to play in South Africa's just energy transition.

17. Shell's target is to become a net-zero emissions energy business by 2050, in step with society's progress in achieving the goal of the UN Paris Agreement on climate change. With this target, Shell will contribute to a net-zero world, where society stops adding to the total

amount of greenhouse gases (GHGs) in the atmosphere. This supports the more ambitious goal to tackle climate change laid out in the Paris Agreement: to limit the rise in average global temperature to 1.5° Celsius. Becoming a net-zero emissions energy business means that Shell is reducing emissions from its operations, and from the fuels and other energy products it sells to its customers. It also means capturing and storing any remaining emissions using technology or balancing them with offsets. In order for Shell to provide the energy the world needs today, we must ensure that we have a strong project funnel and resilient future development opportunities as we transition to net zero carbon emission target.

18. It is for this reason, and in line with these commitments, that Shell is embarking on the seismic survey in order to determine whether or not there are energy reserves off the coast. The results of this survey are currently unknown – they may reveal the potential existence of such reserves or not. Should they do so, and should Shell wish to explore those reserves further, an entirely new and additional set of prospecting authorisations would be required to be obtained under the relevant petroleum legislation (Mineral Petroleum and Resources Development Act 28 of 2002 ("MPRDA")) and under the National Environmental Management Act 107 of 1998 ("NEMA"). But that is not the focus of this application. This application concerns only the very first preliminary step – the imaging of the stratigraphy below the sea floor to determine whether there potentially might be energy reserves.

The seismic survey

19. When one reads the Founding Affidavit, one gets the impression that the seismic survey that is being conducted by Shell is an unprecedented environmental catastrophe, unsupported by expert evidence and with constant sound 'blasts' resulting in certain harm

to sea life. Indeed, this appears to be the deliberate impression that the Applicants are trying to create, both before this court and in the media.

20. The impression is, regrettably, misleading and based on incorrect facts and fearmongering half-truths. In this section, I explain first what a seismic survey is, and then highlight four features of the planned seismic surveys: (i) that the survey is standard practice conducted in South Africa and around the world; (ii) that the Applicant has either misunderstood or misrepresented how the survey is conducted; (iii) that the survey and its timing is supported by expert evidence, including stringent mitigation measures that Shell has undertaken and will undertake; and (iv) that the survey will be constantly independently monitored by experts on board the vessel.

What is a seismic survey and why is it being conducted here?

21. A seismic survey is a study in which seismic waves generated through compressed air are used to image layers of rock below the seafloor in search of geological structures to determine the potential presence of naturally occurring hydrocarbons (i.e. oil and gas).

22. During a survey, the seismic vessel (in this case the Amazon Warrior) discharges pressurized air from its airgun arrays to generate sound waves that are directed downwards towards the seabed. These waves are reflected from geological layers below the sea floor and recorded by multiple receivers (or hydrophones). These hydrophones are towed behind the seismic vessel by multiple streamers which are 6 kilometres long. Analyses of the returned signals allow for interpretation of sub-sea geological formations and structures. The vessel sails off the coastline, between 20 and 80 km from shore.

23. The seismic survey will not have significant detrimental environmental impacts, despite what is stated by the Applicants. Numerous seismic surveys have already been conducted

safely offshore South Africa without adverse impacts to the environment as detailed further below. Seismic sound is not an "*explosion*" but rather a collapsing air bubble that emits a low-frequency sound that travels through the subsurface to a target depth. The main energy is the air bubble collapsing. The energy emitted from the collapsing air bubble is directed downwards into the seabed rather than outwards.

24. PGS Geophysical has conducted two previous MultiClient 2D seismic survey in this area in 2013 / 2014 and 2018. The results of these surveys indicate that there *might* be hydrocarbons under the seabed. For this reason, Shell has elected to conduct a further 3D seismic survey in a targeted area. Importantly, the authorisation to conduct this survey does not allow Shell to undertake any activities relating to exploration drilling: it is simply a survey to image the subsurface.

25. The total survey area size is 6011 square kms and the survey will take approximately 110 - 140 days depending on weather, currents and sea conditions. The total acquisition line length (sail lines) is about 7700 km. Approximately 50% of the time the vessel will not be acquiring seismic data due to standby for weather conditions, positioning the vessels and line turns. During that time the sound source is off. The vessel is continuously moving.

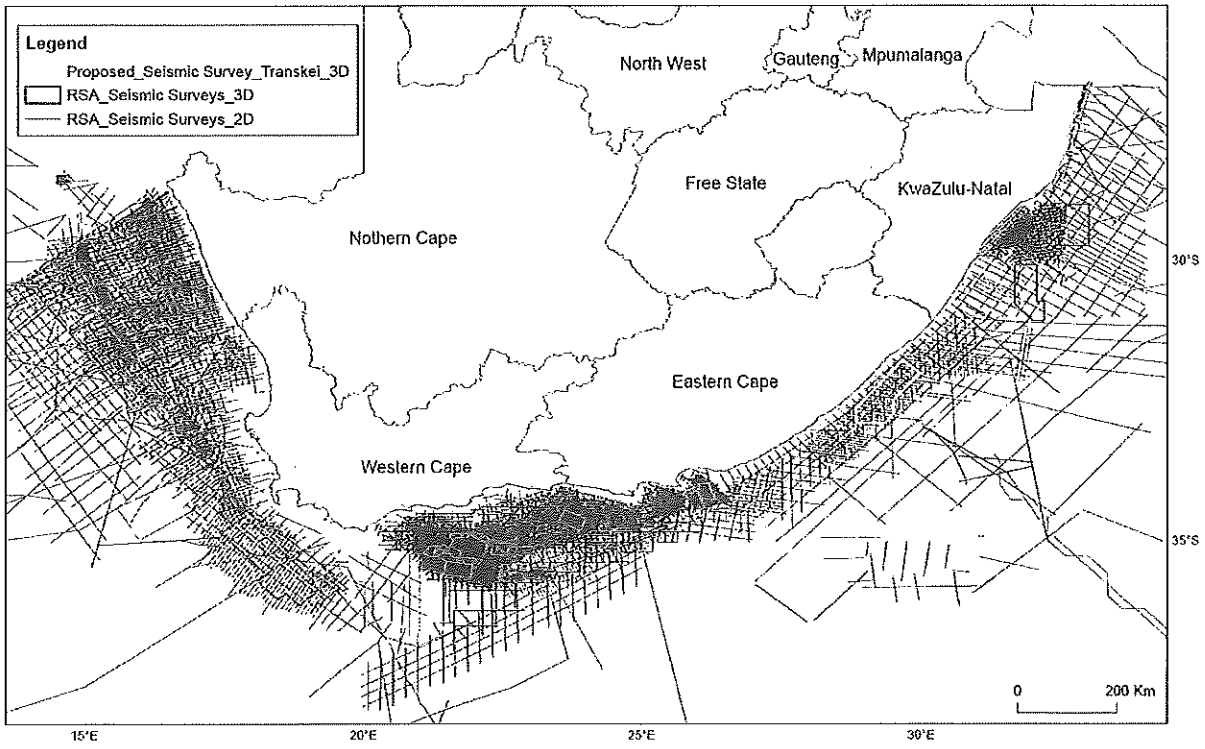
Seismic surveys in South Africa and around the world

26. The suggestion that the seismic survey is an unprecedented environmental disaster is simply false.

27. After more than 50 years of worldwide seismic surveys and more than 15 years of extensive peer-reviewed scientific research, there remains no evidence that sound from properly mitigated seismic surveys has had any biologically significant impact on any marine populations in areas in which surveys have been conducted. Seismic surveys are conducted

world-wide and provide the only means of detailed imaging of the subsurface. To date, there is no research globally showing that serious harm, injury, death or stranding of marine mammals has occurred from exposure to sound from seismic surveys when the appropriate mitigation measures are implemented. As I demonstrate further below, despite the hundreds of pages of specialist evidence that the Applicants have placed before this Court, this fact remains uncontroverted.

28. Moreover, seismic surveys of this nature are standard practice. I annex marked "**HM3**" a copy of a map obtained from the Petroleum Association of South Africa ("PASA"), which depicts seismic data which has been collected off the South African coast. The blue lines are all 2-dimensional "*2D*" surveys conducted off the coast, and the red shapes are all three-dimensional "*3D*" surveys that have already been conducted.



29. There have been at least *thirty-five* (35) 3D surveys conducted offshore of *South Africa* and numerous 2D seismic surveys, including 11290km of 2D seismic data obtained in the area

covered by the Exploration Right (ie ER 252) which is the subject of this application. To date, there is no research globally showing that serious injury, death or strandings of marine mammals has occurred from exposure to sound from seismic surveys when the appropriate mitigation measures are implemented. In the last 5 years there have been 11 seismic surveys acquired offshore South Africa of which 3 started acquisition in December.

30. To my knowledge the latest offshore South Africa 3D seismic was acquired in 2020 by Total. The Total survey followed a similar procedure to the Shell survey inasmuch as soft-start procedures, Marine Mammal Observers (MMO) and Passive Acoustic Monitoring (PAM) were successfully applied with no recorded negative impact on marine life. During the total duration of this survey, 57 separate sightings of cetaceans and turtles were recorded via MMO and PAM, comprising 44 sightings of odontocete cetaceans, 11 mysticete cetaceans and two turtle sighting (loggerhead and green). Of the marine mammal sightings, the airguns were operational during 28 of the sightings. There were, however, only four occurrences of marine mammals entering the 500 m mitigation zone when airguns where active. (It should be noted that Shell is using an 800m mitigation zone, as opposed to the 500m zone which is standard around the world. I address that again below.) Survey shutdowns were implemented on all four of these occasions.

31. As of 2020, there have been about 325 seismic surveys conducted *globally* without any reports of death or irreversible harm to marine life.

32. Against this backdrop, the attempt to paint the seismic survey to be conducted by Shell as extreme or unprecedented is misleading and false.

Timing

33. The survey began on 8 December 2021 and is scheduled to run for approximately four to five months until March/April. As I set out further below, the expert evidence is that commencing now is the most appropriate step to take, from an environmental perspective, to prevent interference with whales during June to November. In other words, the window now selected, with the mitigation measures adopted, is the safest window in which to conduct the survey.

34. In particular, the EMPr makes clear that the survey may be conducted in December, as long as passive acoustic monitoring is in place in December. Shell has demonstrated that it will in fact use (and is using) passive acoustic monitoring for the duration of the survey (i.e., not just in December), 24 hours a day.

Mitigation measures and Monitoring

35. The seismic survey is being conducted according to international standards, including additional mitigation measures specific for the area and is being constantly monitored by independent Marine Mammal Observers, who visually inspect for marine life, and Passive Acoustic Monitoring ("PAM) specialists who listen for marine mammals.

36. Shell has reduced the sound source output to the lowest practically possible. This reduction in sound output is observed to be one of the lowest utilised at these water depths in South Africa for seismic surveys.

37. Qualified independent Marine Mammal Observers (MMO) and PAM Operators will be on board the seismic vessel to observe and record responses of marine fauna to the seismic survey. They will request the delay of start-up or temporary termination of the seismic survey or adjusting of seismic acquisition, as appropriate.

38. A dedicated MMO and PAM pre-shoot watch of at least 60 minutes will be implemented to ensure there are no diving seabirds, turtles, seals or cetaceans within 800 m of the seismic source. It should also be noted that Shell has committed to a 60-minute period (typically applied to protect deep-diving species such as sperm whales and beaked whales), not just 30 minutes as recommended in the EMPr.

39. All initiation of airgun firing must be carried out as "soft-starts" of at least 20 minutes' duration. This is where the sound source is turned on at low power and gradually and systematically increased until full power to allow animals to move out of the area and avoid injury.

40. The survey will be suspended if cetaceans enter the 800 m mitigation zone or if there are mortality or injuries as a direct result of the survey.

41. No seismic activities will be undertaken within any declared Marine Protected Areas. A 5km buffer zone will be maintained around MPAs which exceeds the current standard in South Africa of a 2km buffer zone around MPAs.

42. Against this background, I turn now to deal with the issues raised in this application.

PART C: THE ISSUES HAVE ALREADY BEEN DETERMINED IN THE JUDGMENT OF GOVINDJEE AJ

43. This is the second urgent interdict application that has been brought in relation to the seismic survey that Shell is currently conducting.

44. The first application was brought by four entities (Border Deep Sea Angling Association, Kei Mouth Ski Boat Club, Natural Justice and Greenpeace Environmental Organisation) and argued in this Court before his Lordship Acting Justice Govindjee on 1 December 2021

("*BDSA Application*"). The relief sought in the BDSA application was to all intents and purposes identical to that which is sought in this application, namely an interim interdict preventing Shell from conducting the survey. However, unlike the BDSA Application, which sought interim relief pending a review of the relevant authorisations which permit Shell to undertake the Survey, the present application seeks essentially the same interdictory relief in Part A and Part B of the notice of motion.

45. Govindjee AJ dismissed the BDSA Application in a judgment handed down on 3 December 2021. A copy of this judgment is annexed marked "**HM4**". In analysing the traditional interdict requirements, Govindjee AJ *accepted* that the application was urgent; and *accepted* that the applicants had demonstrated a *prima facie* right in respect of the review to be launched in due course. However, Govindjee AJ did not accept that the applicants had demonstrated irreparable harm, because there was no reason to believe "*that the detailed mitigation strategy (emanating from a 600 page EMPr) is inadequate or to gainsay that Shell will implement the promised range of mitigation measures and do so properly. Indeed, Shell is obliged to do so in terms of the EMPr to ensure that its activities remain in the low-risk band*".[1] Govindjee AJ furthermore held that the balance of convenience favoured Shell.

46. These issues – the question of the *prima facie* right; irreparable harm and the balance of convenience – are the very same issues that are facing this Court in the current interdict application. They have already been determined by Govindjee AJ as not justifying an interdict in relation to the Seismic Survey, which was launched *before* the Survey commenced. Now that Shell has commenced the survey (and without any negative effects

[1] Judgment of Govindjee AJ, para 35.

being recorded to date) the balance of convenience swings even more strongly in Shell's favour.

47. On this ground alone, and on the basis that the issues before this Court have been determined just over a week ago, the application falls to be dismissed. This will be addressed further in argument.

URGENCY

48. The manner in which this application has been brought is abusive.

49. The Applicants assert that they only became aware of the seismic survey when they received the SLR Notice on 29 October 2021. Even on the Applicants' *own* version, then, they delayed for a full month before launching this application on 2 December 2021, filing extensive supplementary papers and new "specialist evidence" six days later, and unilaterally giving the Respondents only 2 days to respond thereto.

50. Moreover, the Applicants were aware of the BDSA application, which was launched *before* the survey commenced, but elected to hold back on their application – seemingly to get a second bite at the cherry. Their explanation for not joining the BDSA application is patently unacceptable. They give two reasons. First, that some of the supporting affidavits were not ready. Secondly, they were not satisfied with the relief sought by the BDSA applicants. The first explanation is contradicted by their conduct of this matter – they showed no reluctance to file voluminous supplementary evidence six days after launching. If they were willing to do that in this application, they could have sought to intervene in the BDSA application and supplemented their papers thereafter. The second explanation is bad because in substance the BDSA application sought the same interim order as sought in the present application. The difference between the two applications is apparent in Part B of the present Applicants'

notice of motion and the fact that, in the BDSA application, the applicants sought interim relief pending a review to be filed in due course. However, the present Applicants could simply have sought to intervene seeking precisely the same relief as they seek now. I am advised that it happens all the time in our courts that parties seek to intervene in litigation in which they claim to have a direct and substantial interest but seek relief on different terms.

51. What is particularly telling about this particular matter is that, in order to obtain the set down of this matter, the Applicants filed a certificate of urgency in which it was stated: "If the rule nisi is granted, we propose that this application be heard on the return date of that matter and the timetable for pleadings in this matter to be adjusted accordingly." In other words, the Applicants in the present matter indicated that, if the BDSA applicants successful obtained interim relief, they would have been more than happy for their application to be heard together with the BDSA application on the return day. This belies the reliance on the second explanation for the decision not to join the BDSA application.

52. Therefore, the inference is inescapable that the Applicants deliberately adopted a strategy designed to force the same issues to be ventilated again, to the great prejudice of Shell and to the Court.

No case for urgency made out on the papers

53. I am advised that Rule 6(12) of the Uniform Rules of Court sets out the basis on which a litigant is entitled to approach the court for urgent relief. In such circumstances, the litigant has to show good cause why the time frames should be abridged and why the applicant cannot be afforded substantial redress at a hearing in due course. The applicant is required to set forth explicitly the circumstances which are alleged to render the matter urgent.

54. I am also advised that the case for urgency has to be made out separately in the founding affidavit. The founding affidavit must address, *inter alia*, three requirements for accelerating the hearing of a matter in order to enable the court to excise its judicial discretion. The applicant in its founding affidavit must deal with:

54.1. the prejudice that it will suffer or may suffer by having to wait to for a hearing in the ordinary cause;

54.2. the prejudice that other litigants might suffer if the application were given preference;

54.3. the prejudice that the respondents might suffer by the abridgement of the prescribed times and the early hearing.

55. The Applicants have failed to deal with these requirements properly or at all.

56. The Applicants' allegations of prejudice if the application is not heard on the self-elected date of 17 December 2021 are ill-founded. The survey is already underway. As I set out below, in the section on the balance of convenience, there is no evidence at all that there would be substantial irreversible damage if the survey is allowed to continue, and no reason why the application could not be heard on a more reasonable timeframe.

57. Paragraphs 155 and 156 of the Founding Affidavit contain bald allegations about how, once the 'blasting' starts, "damage will be irreversible" and that there are inadequate mitigation measures, and this is used to justify the urgency with which this application has been brought. I deal with the questions of prejudice and damage in detail below, but for present purposes I note the following:

57.1. Shell will not be operating in the environmentally sensitive whale migration window on the east coast of South Africa which runs from June to November. Shell is operating in the operational window for seismic surveys which runs from December to the end of May in this area.

57.2. Shell is adopting stringent mitigation measures for this survey, including a dedicated independent specialist team onboard who will monitor for the presence of marine animals and will suspend any survey noise output when a marine animal is found to enter the 800m 'mitigation zone' around the sound source. This is an increase of 300 m compared to all previously conducted seismic surveys in South Africa. Passive Acoustic Monitoring ("PAM") is a software system used for detecting the presence of marine mammals near seismic operations that allows operators to shut down the seismic source to prevent any marine mammal from entering the 800m mitigation zone and being over-exposed to the sound source. It is an effective mitigation tool used to listen for animals that cannot be visually seen at the ocean surface. Recent surveys have observed that PAM has recorded more marine mammal sightings than visual inspections. For this survey, Shell will be utilising PAM 24 hours a day for the entire duration of the survey. Furthermore, Shell is adopting shutdowns for this project which exceeds the JNCC international standard.

57.3. There will also be a "soft-start" procedure in place as per international standards. In a soft start up, the sound source is ramped up slowly from very low to full over a period of a minimum of 20 minutes, allowing marine wildlife to gradually move away from the sound source. This procedure may only commence if, for a period of at least 60 minutes, no marine animals are observed in the mitigation zone around the sound

sources of 800 m. A pre-watch of 60 minutes must always be conducted before the sound source is started.

57.4. Shell has also reduced the sound source output to the lowest practically possible. This reduction in sound output is observed to be one of the lowest utilised at these water depths in South Africa for seismic surveys.

57.5. An independent marine faunal specialist study was conducted for the assessment of the EMPr by a leading local offshore marine specialist in South Africa, specifically related to this area. From her assessment, the impact of seismic noise on a variety of environmental receptors along the Wild Coast was found to be of very low to low significance when adopting the mitigation measures.

58. In the premises, the allegation that there will be irreparable or irreversible prejudice should the application not be heard on 17 December 2021 is not supported by the facts.

59. The timing of the application (brought at the last minute over the holiday period) is prejudicial to Shell and the Court since it does not allow for an orderly exchange of affidavits and heads of argument.

60. The application should be dismissed alternatively struck from the roll on this ground alone.

PART E: THE THRUST OF THE CASE – THE EMPR / EA DEBATE

61. The primary thrust of the Applicants' case appears to be that Shell ought to have obtained an environmental authorisation ("*EA*") under NEMA *and* an EMPr authorisation under the MPRDA before commencing its seismic exploration. Indeed, at para 182 of the Founding

Affidavit, the Applicants define the narrow question before the Court as being: is an environmental authorisation required or not?

62. This is primarily a legal question, which will be fully addressed in argument, but for the convenience of the Court, I summarise Shell's position here. In short, Shell's position is that an additional EA was and is not required, and I demonstrate below that Shell has in fact gone above and beyond its minimum obligations to ensure compliance with the relevant regulatory framework. Thereafter, we show that the allegations that Shell has not justified its survey from an environmental perspective are simply factually unsustainable.

63. Since the question whether Shell required an environmental authorisation issued under NEMA engages the proper interpretation of NEMA and the MPRDA and since that is a legal matter not appropriately addressed in affidavits, I do not discuss Shell's legal contentions here. However, I do wish to note that the following is not clear from the Applicants' papers:

63.1. When do the Applicants contend an EA is or was required? Was it at the time Shell obtained the ER and the approved EMPr, is it now prior to the commencement of the seismic study, or was it at some point in between the two?

63.2. The Applicants do not indicate which listed activity or activities under NEMA are or were triggered such that an EA was required.

64. I am advised that these two deficiencies are fatal to the Applicants' case. Shell cannot respond meaningfully to the founding affidavit because these issues have not been pleaded properly. This will be addressed further in argument.

An EA <u>will</u> be necessary at exploration drilling and development / production stage

65. Many of the harms that the Applicants foreshadow, and the reasons why they contend that an EA ought to have been conducted, are not harms that are applicable at exploration stage. They could relate, rather, to the subsequent development and production phase. Whether there will even be such a subsequent phase is at present uncertain and is subject to further license applications processes. So too, many of the Applicants' criticisms of the EMPr are that it does not assess or consider the impacts associated with drilling activities. But drilling is not the activity requiring authorisation for this project nor is it included in the approved minimum work obligations during this exploration renewal period. Should Shell decide in due course to apply for the relevant authorisations to undertake exploration drilling, a separate EIA and environmental authorisation would need to be undertaken and sought for the activity.

66. Production activities are outside of the scope of this project and premature to consider at this stage given that Shell still needs to examine any potential prospects in the area. Even then exploratory drilling does not mean a commercially viable discovery would be made. The chance of success remains relatively low for an unexplored area such as this. For similar reasons, the criticism advanced by the Applicants that there has not been a proper assessment of climate change is misplaced. Shell does not concede that South African law requires an assessment of climate change during any of the licensing processes covered by the MPRDA – I am advised that the impact of climate change is a policy-laden matter, which is to be addressed by Cabinet as part of its formulation of energy policy. But, even if that is wrong, it simply cannot be relevant or necessary to the exercise of an exploration right to determine the impact of the use of hydrocarbons on climate change. The current seismic acquisition process – i.e., the process for imaging geological formations and structures beneath the seabed to evaluate the presence of hydrocarbons – is too far removed

from any climate-change implications for it to be necessary for a climate impact assessment to be conducted.

PART F: CONSULTATION AND THE COMMUNITIES

67. The second focus of the Applicants' case is the allegation that the communities who are represented by the Applicants in these proceedings were not consulted (or not properly consulted) in relation to the planned seismic survey, and that the approval process was not lawfully conducted.

68. In this section of the affidavit, I set out in detail the process followed to demonstrate that Shell has not only followed, but exceeded, the requirements for public participation of *all* relevant stakeholders in relation to the seismic survey.

The approval process

The granting of the authorisation

69. In order to conduct the Seismic Survey, the operator at the time (Impact Africa) was required to undertake an EMPr, which involved a significant public consultation process. This process was undertaken in 2013 under the MPRDA, with the Department of Mineral Resources and Energy ("DMRE") and the PASA as the competent authority.

70. The consultation process followed was in accordance with the requirements contained within the MPRDA, the MPRDA Regulations GN 527 of 2004, and the generic EMPr guideline and template documents. The process itself, including the process of consultation, was conducted by a reputable and independent Environmental Assessment Practitioner (EAP).

71. The following activities were undertaken as part of the consultation:

71.1. First, a draft stakeholder database was developed through stakeholder analysis and using previous studies in the area. Potential Interested and Affected Parties (I&APs) were identified through analysis of potential stakeholders and based on stakeholders engaged in previous similar studies in the area. A listing of I&APs was created for use in the consultation programmes. The list included government authorities (local and regional), Non-Governmental Organisations (NGO), Community-Based Organisations (CBO) and industry groups (including the fishing industry) and communities. The list was further expanded through feedback and suggestions received following consultation and disclosure activities. A full list of I&APs identified is provided in Appendix B-3 to the EMPr.

71.2. Thereafter, a Background Information Document (BID) was compiled and distributed to all identified and potential I&APs. The BID was prepared providing an overview of the proposed exploration activities and locations. The information was provided in a non-technical format. The BID also provided instruction for submitting comments and input for consideration in the EMPr process.

71.3. Advertisements were placed on Friday 22 March 2013 in The Times, Die Burger (Eastern Cape), The Herald and The Daily Dispatch newspapers, notifying the public about the proposed project and providing details of the consultation process and information on how members of the public could provide input into the EMPr process and inviting their comment.

71.4. A period of 21 calendar days (22 March 2013 to 12 April 2013) was allowed for I&APs to submit issues or concerns for consideration in the compilation of the draft EMPr. This period also allowed for members of the public to register as I&APs and/or submit issues or concerns. Further I&APs were identified through this process.

M.M.

71.5. All issues raised were compiled into a short Comments and Responses Report that formed part of the draft EMPr. The draft EMPr was made available to I&APs for a period of 30 calendar days (24 May – 24 June) on the project website. Notification was sent directly to all I&APs.

71.6. During the comment period, a series of face-to-face engagements were conducted including (i) group meetings (in an open house format) and (ii) focused group meetings (in a standard meeting format) as part of the stakeholder engagement process.

72. All I&APs on the stakeholder database were notified of and invited to the group meetings. Three group meetings were held, one each in Port Elizabeth (3 June 2013), East London (4 June 2013) and Port St Johns (5 June 2013). In addition, two focused group meetings were held with:

72.1. Provincial Environmental Authorities (Eastern Cape Parks and Tourism Agency and Department of Economic Development, Environmental Affairs and Tourism) in East London (4 June 2013); and

72.2. two traditional monarchs (Thembuland and Western Pondoland) and their senior advisors were met in Mthatha, as well as Richard Stephenson who was mandated to represent the Transkei Kingdoms regarding this project.

Stephenson's authority

73. In their papers, the Applicants challenge Stephenson's authority to represent the Transkei Kingdoms. There is no merit to this challenge.

74. I accordingly set out in some detail the correspondence between the EAP and Stephenson, which sets out Stephenson's mandate, and the supporting resolutions and powers of attorney authorising Stephenson so to act:

74.1. On 22 April 2013 Stephenson informed the EAP that he is mandated and acts on behalf of:

74.1.1. Eastern Pondoland – the late King Justice Mpondombini Sigcau (he informs that a trust will be registered upon the election of a successor);

74.1.2. Western Pondoland – King Ndamase Mangaliso Ndamase (Stephenson was the trustee for the Western Pondoland Trust); and

74.1.3. Xhosaland – King Zwelonke Sigcau (he informs us that whilst the trust is still being established, he has a power of attorney from the King to represent his Kingdom in relation to matters affecting the Kingdom).

74.2. I annex marked "**HM5**" a copy of Stephenson's email of 22 April 2013. In it, Stephenson confirmed that it was "*in this capacity and [on] behalf of these affected Kingdoms [Eastern Pondoland, Western Pondoland and Xhosaland] that I hereby register as an Interested and Affected Party...*". The email was signed "*Richard Stephenson, Royal Representative to Pondoland and Xhosaland*".

75. On 6 May 2013, Stephenson again confirmed his mandate, attaching the letter and resolution confirming his appointment as trustee for the Western Pondoland Trust and the power of attorney from King Zwelonke Sigcau (Xhosaland). In addition, Stephenson informed the EAP that:

75.1. In relation to Eastern Pondoland, he had received a oral mandate from Princess Wesizwe Sigcau (he states that written mandate will follow after the mourning period);

75.2. He had a power of attorney from King Dalindyebo (AbaThembu Kingdom). Notably this Kingdom was not included in the email of 22 April 2013; and

75.3. He had a power of attorney from Kind Zwelonke Sigcau from AmaXhosa Kingdom.

76. I annex marked "**HM6**" in this regard:

76.1. The resolution dated 18 April 2013 signed by the King of Western Pondoland, the Inkosi and Inkosana of Western Pondoland authorising Stephenson, in his capacity as Managing Trustee of the Western Pondoland Trust, to act "*on behalf of the people, being the interest and affected parties in terms of section 10 of the Act, and on behalf of His Royal Highness King Ndamase Mangaliso Ndamase, in his capacity as the duly enthroned King of Western Pondoland,*" in relation to the application;

76.2. I also annex marked "**HM7**" a copy of the Power of Attorney issued in favour of Stephenson by His Royal Highness King Zwelonke Sigcau, authorising Stephenson to act on behalf of the "*duly enthroned king of Xhosaland*" and on "*behalf of the people of my Kingdom*" in relation to the application.

77. Two traditional monarchs (Thembuland and Western Pondoland) and their senior advisors were met in Mthatha, as well as Richard Stephenson who was mandated to represent four of the Transkei Kingdoms.

78. As recorded by the EAP, the Royal Monarchs Council was subsequently formed representing the following Kingdoms:

    78.1. Thembuland- King Zwelibanzi Dalindyebo;

    78.2. Western Pondoland – King Mangaliso Ndamase; and

    78.3. Xhosaland – King Zwelonke Sigcau.

79. All comments received on the EMPr were compiled and documented in the Comments and Responses report which is included in the final EMPr for consideration by the authority.

80. As per the Public Consultation Process set out above, whilst specific monarchs were consulted, personally and through their mandated representatives, persons who are part of monarchies (i.e. "*subjects")* were not precluded from registering as I&APs pursuant to the newspaper advertisements nor where they precluded from attending the group meetings held as part the public consultation process.

81. In the 2013 process, the EAP placed advertisements in various newspapers notifying the public about the proposed project and providing details of the consultation process and information on how members of the public could provide input to the EMPr and inviting their comment. It is therefore incorrect to state that it was "*assumed that the Kings speak for their subjects*" as alleged at paragraph 54 of the Founding Affidavit.

82. I referred above to the formation of the Royal Monarchs Council. Pursuant to the formation of that council, the Kingdoms duly submitted representations in response to the Background Information Document (BID).

Approval of the EMPr

83. Pursuant to the consultation process, PASA recommended the approval of the EMPr in 2013, and this was approved by the Deputy Director-General in the DMRE on 17 April 2014.

84. In 2013 and 2018, PGS Geophysical conducted a 2D MultiClient seismic survey in the same area, as a precursor to the 3D survey which is the subject of this application.

The 2020 audit

85. In 2020, ExxonMobil (the operator at the time) commissioned an EMPr compliance audit by an independent specialist (ERM) in terms of regulation 54(A)(2) of EIA regulations (2014).

86. The object of the 2020 audit was to confirm whether the EMPr requirements are still sufficient and valid for the project to be taken forward.

87. There is a condition contained in the Petroleum Agency's Record of Decision (RoD) to the EMPr, which states that *"[o]ngoing consultation with I&APs and other stakeholders must be undertaken before commencement, during and at completion of planned activities by means of appropriate notices*."

88. The 2020 EMPr Audit was not a commencement of a planned activity. The above notwithstanding, the EAP sent the notification of the results of the 2020 Audit to all I&APs and stakeholders who registered during the 2013 process. I&APs were provided with an opportunity for consultation on the outcome of the 2020 EMPr Audit by means of a 30 day commenting period.

Conclusion on the consultation process

89. In sum, then, it is simply incorrect for the Applicants to state that they were not provided with an opportunity to make submissions or object to the granting of the authorisation, or that they were not aware of the proposed activities.

PART G: INTERDICT REQUIREMENTS NOT MET

90. Against this background, it is submitted that there is no basis for this Court to interdict Shell's activities.

91. I am advised that, in urgent interlocutory applications of this nature, a Court's decision invariably relates to harm and the balance of convenience, and I address these issues now.

No irreparable harm

92. Shell respectfully notes the great importance that the sea plays to local communities' livelihoods, not only to sustain their livelihoods through customary fishing practices but also the important role that the sea plays in communities' cultural and spiritual expressions.

93. That said, based on the overarching science and precedent of historical seismic campaigns taking place in the same area, Shell is certain that the seismic survey will not have an impact on the local communities' livelihoods in terms of their ability to fish and practise their cultural customs along the shoreline. I say so for the following reasons:

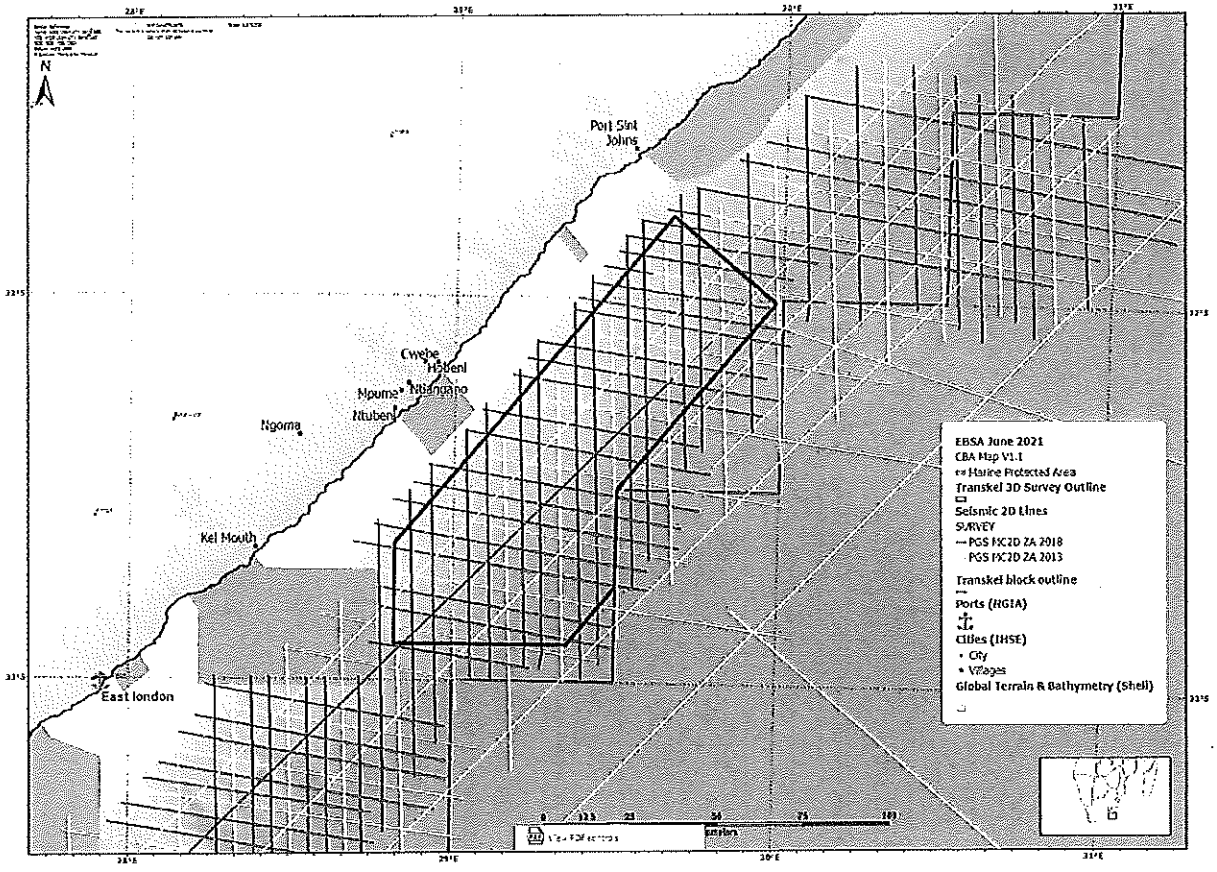
94. **First**, the survey is being conducted too far away from where the communities fish and enjoy the ocean to be detrimental to their interests at all. The distance between the closest survey line and shoreline is approximately 20 km. The closest survey line is located at minimum 7.5 km from the Dwesa Cwebe MPA, which is designated for providing important habitat for several fish species, as well as being an important feedstock for customary

fishing of the local communities. Considering the below predicted disturbance distances and maximum distance of the survey from the coastal fishing areas and the MPA, it is unlikely that the level of underwater sound will reach the boundary of the MPA or even further nearshore fishing areas above thresholds of any physiological or behavioural significance for fish, eggs and larvae.

95. The nearest point the seismic vessel will come to the coastal area with shallow water fishing is approximately 20 km. At distances of 20 km away a noise level of a maximum of 130 dB is expected. This level is marginally above the ambient oceanic noise levels and is comfortably below the limit for low level disturbance of marine life. As such, the noise of the seismic survey will not impact people nor shallow water fishing in any way. I annex a copy of the Kongsberg Report unto "Underwater Noise Propagation Modelling and Estimate of Impact Zones for Seismic Operations in the Moray Firth" marked "**HM8**".

96. In the past, two separate 2D surveys have been acquired over the area in question. Both surveys were conducted by PGS Geophysical starting in 2013 (December-May) and 2018 (January-May). Both surveys were completed without harm to the environment or reported impact to the adjacent communities. The 2D lines of the 2018 survey were acquired in the N-S and NE-SW direction. These lines reach up to 15 km from the shoreline and, even though the 2D data stops 15km from shore, the vessel still had to make a line turn at the end which would have come even closer to the shoreline. For both surveys no harm to the environment or communities was reported or seen. The current 3D survey will start acquiring 20km from the shoreline, 5 km more outboard than the 2018 2D survey and a 5km buffer zone is implemented from any MPA. Moreover, the sailing direction is NE-SW so the line turns will not get closer to the shoreline. I refer in this regard to the map annexed marked "**HM9**" – the first map depicts the location of the two PGS 2D surveys conducted

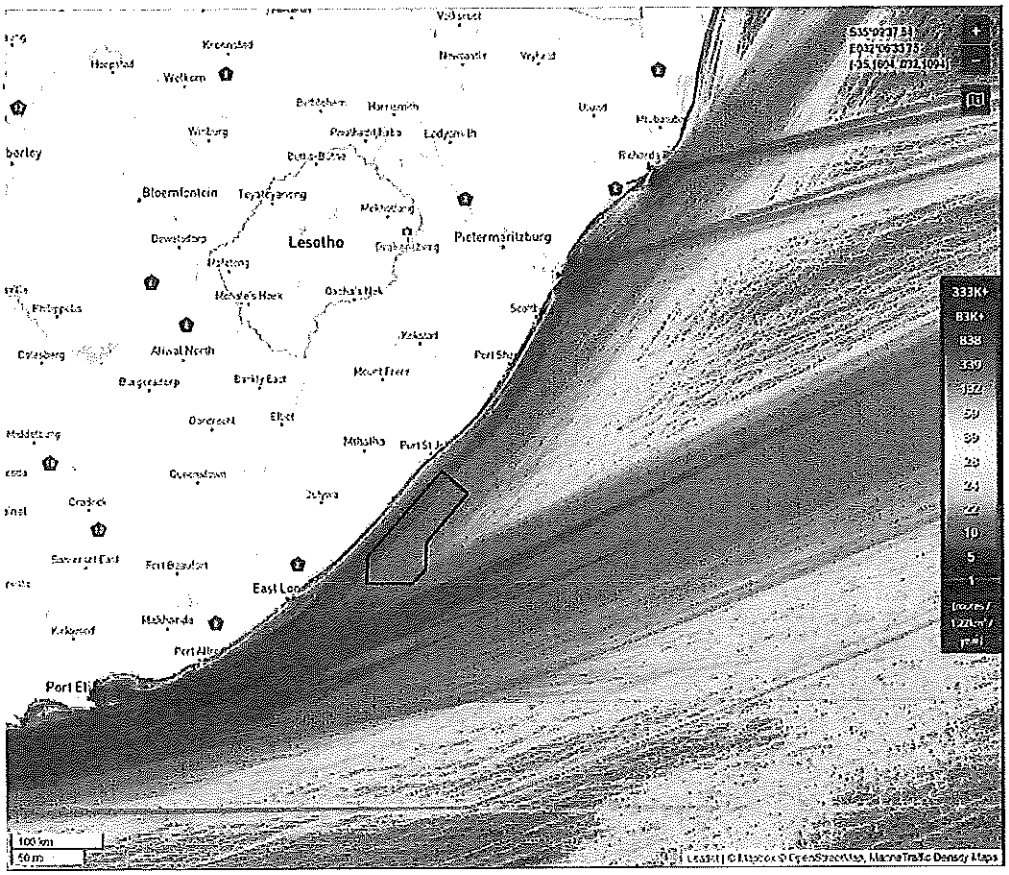
in 2018 (in blue) and 2013 (in yellow). MPAs are indicated in green. We should note here that for the yellow lines that go into the green MPA - Amathole extension – this MPA had not been extended further out at the time PGS acquired the data. In other words, at the time when PSG acquired the data, it was not in an MPA.



97. **The second reason** that Shell can be confident that the survey will not have the effects contended for is that the area in question is already a highly dense marine traffic area that has not been reported to have any effect on small scale fishers catch rates.

98. I include below a density map from marinetraffic.com showing the main shipping lanes used in 2020. As can be seen, the area of the 3D survey is located in an area of high marine

traffic, and even further inboard of the survey, ships sail regularly. These vessels generate significant sound to the environment.



99. **Thirdly**, the scientific evidence indicates that there will not be the effect on fish which is contended for. Based on a number of seismic impact assessment studies in UK, Australia, South Africa, and the Gulf of Guinea, predicted distances for a potential injury impact to fish have been reported as limited to within 200 m from a source for a comparable airgun array.

100. The thresholds assume that a fish remains stationary within the impact zone, which is an unlikely event, as fish will display avoidance behaviour from the seismic vessel. Similarly, fish disturbance from seismic activities has been predicted within 5 km from the

source. In other words, fish are unlikely to allow themselves to come anywhere close enough to the airgun array to be harmed.

101. The vessel in active seismic production will maintain a minimum distance of 5 km to any MPA and its nearest point to shore will be about 20 km. Although fish will avoid the seismic vessel as it travels along its sail-lines, they will return to the immediate area within a short period. A number of studies have been performed to assess behavioural impacts of seismic to fish. The findings of the studies indicate that adult fish generally exhibit avoidance behaviour, resulting in movement into deeper waters or temporary displacement from the immediate seismic vessel area. The extent of this displacement is however considered to fall within the normal geographic range of the species, with recovery of pre-seismic catch levels demonstrated generally within hours or days after the end of the seismic operations (Engås et al., 1996; Engås & Løkkeborg, 2002; Løkkeborg et al., 2010; Peña et al. 2013; (Slabbekoorn, 2010).

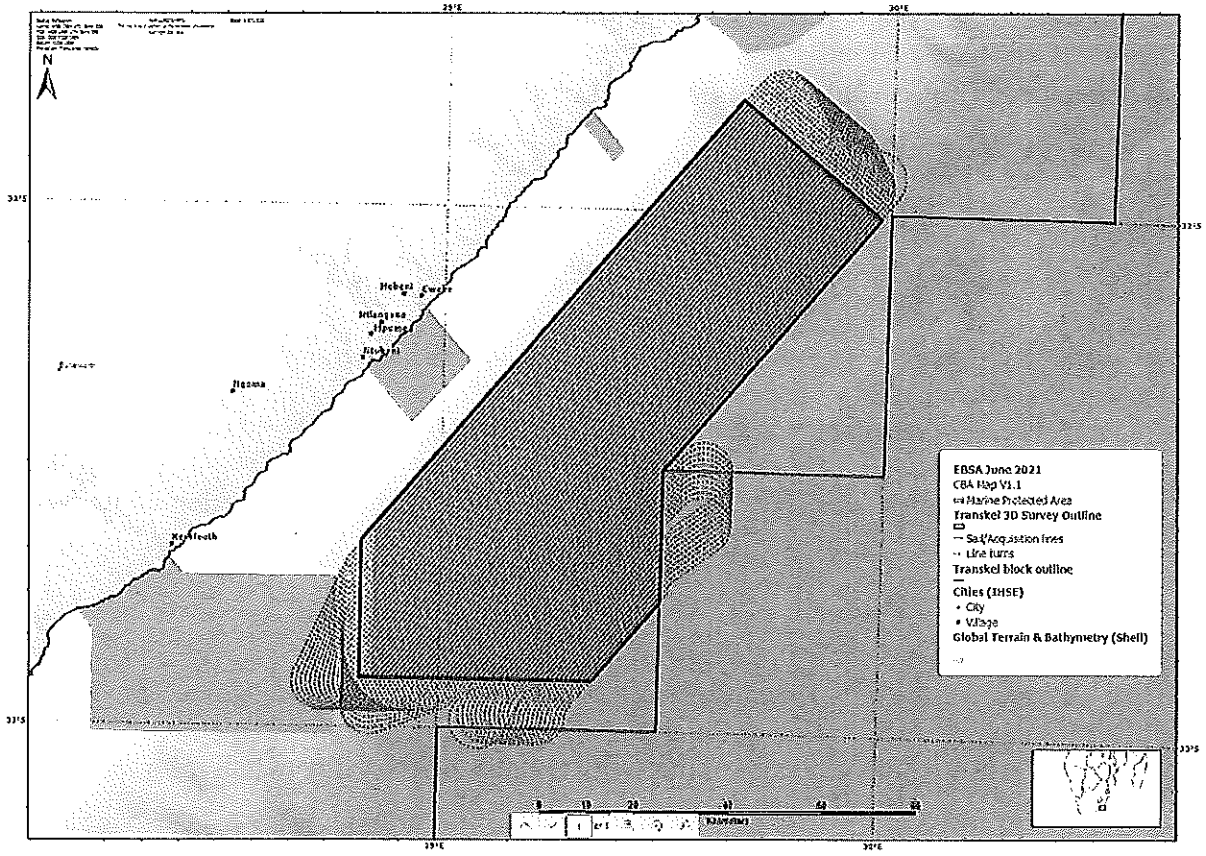
102. Compressed air sources used in seismic surveys do not produce the ultrasonic shock wave that explosives produce and that are the source of barotrauma or "blast" injuries in animals exposed to explosives (e.g., Ketten et al., 1993). The term "blast" is inappropriately applied to airguns, especially because the air emerges at only a fraction of the speed of sound.[2]

103. Popper et al. (2014) reviewed the effects of seismic vessel noise on fish. They noted that there is no direct evidence of mortality or potential mortality to fish from seismic vessel

[2] [Ref: Sound and Marine Seismic Surveys. Robert C. Gisiner. Acoustics Today | Winter 2016. volume 12, issue 4]

noise or other continuous noise sources. It was concluded that the likelihood of seismic vessel noise causing mortality or injury to fish was low, even for fish in close proximity to vessels. The sound from seismic vessels may cause minor disturbance to fish. However, if fish are disturbed by sound, evidence suggests they will return to an area once the activity causing the disturbance has ceased (Slabbekoorn, 2010).

104. Moreover, the vessel is continuously moving offshore from the coastline (see map of survey vessel area and line turns in blue) and will not be stationary and potentially displacing fish through avoidance in a specific area for an extended period of time. The seismic survey will commence with its closest aquistion line over 20km from the shoreline and keep moving further out to distances of over 80km.



105. **Fourthly,** the Applicants raise the spectre of an "oil spill" as being potentially devastating to the environment. But this is not a relevant concern at the seismic survey stage.

106. **Fifthly,** at various points (such as paragraph 77 of the Founding Affidavit) the Applicants express a concern that the survey is just the first step towards the industrialisation of the Wild Coast, and that the Government is imposing development on them.

107. Once again, this perceived threat falls outside of the scope of a seismic survey, which only serves to image the subsurface. The seismic survey will commence with its closest acquisition line over 20km from the shoreline and keep moving further out to distances of over 80km. The seismic vessel is not visible from the shoreline, nor will it have any impact on ecotourism activities.

108. In the event that the seismic data shows potential prospective areas, a new exploration drilling environmental authorisation, and Environmental Impact Assessment (EIA) study must be applied for and undertaken. This includes undertaking oil spill modelling ahead of any authorisation provided. Similarly for a potential development case, after the drilling campaign, a production environmental authorisation and new EIA study and consultation must be undertaken.

109. **Sixthly**, in paragraph 9 of the Founding Affidavit, it is alleged that Shell intends to blast the sea "*every ten seconds for five months with air gun bursts of between 220 and 250 decibels – louder than a jet plane taking off – that will be heard underwater more than 100 kilometres away*". This is simply incorrect for the following reasons:

109.1. Shell will not be surveying continuously for 24 hours per day for four to five months. The total "acquisition time" (i.e. the time that the vessel will be in the area) is approximately 110 – 140 days. It is necessary to give a range of time, rather than a precise number of days, because of weather windows and downtime resulting from inhospitable weather. It is anticipated that the vessel will be acquiring data for approximately 50% of the acquisition time, and that around 50% of the time, the vessel will be on "standby" for weather conditions, positioning the vessels and line turns. During that time the air guns are off. The vessel is continuously moving.

109.2. The Applicants attempt (incorrectly) to compare sound in the air to sound in the water. However, the two are not comparable and do not correlate – i.e., they are not received in the same way. The reference pressure in air differs from that in water. Confusion also arises because there is a different scientific convention for measuring sounds in water and air. Scientists have arbitrarily agreed to use the intensity of a sound wave with a pressure of 1 microPascal (μPa) as the reference intensity for underwater sound. In air, scientists have agreed to use the intensity of a sound wave with the higher pressure of 20 μPa as the reference intensity. Scientists selected this value because sounds in air at a frequency of 1000 Hz and with a pressure of 20 μPa can just barely be heard by most people.

109.3. Therefore, a 150 dB sound in water is not the same as a 150 dB sound in air and it is incorrect to directly compare underwater sound level to that of a jet plane, a jackhammer, fireworks and gunshots. As an example, a jet engine in the air is 140 dB, however the sound a blue whale makes in the ocean is 165 dB. As a comparison, a supertanker traversing the ocean is approximately 190 dB in the ocean, which only correlates to 128 dB in the air.

109.4. It is incorrect and misleading for the applicants to assume that underwater noise will be heard, "100s of kms away". Sound gets weaker as it moves away from the source. As one can tell, the closer you are to the source of the sound, the louder the sound is. However, sound waves lose energy and the sound gets weaker as it moves away from a source. Some of the sound energy is absorbed by seawater, and by reflections off the sea-surface and seabed. That means that the sound level expected immediately next to the airgun array will lose its energy as it moves away and will not be the same level at a further distance.

110. Not all sounds are audible by all. Humans and different animals hear sound differently. People can hear sounds at frequencies from about 20 Hz to 20,000 Hz, though we hear sounds best from 1,000 Hz to 5,000 Hz, where human speech is centred. Similarly, marine organisms differ in their hearing abilities. To determine whether or not sound of a specific frequency can be detected at a given level, it is necessary to know the sensitivity to the frequencies that the animal can hear, which are called functional hearing groups. The functional hearing groups are taken into account when potential for impact or disturbance is assessed. To assess whether there is a likelihood of an injury or disturbance to marine mammals, scientists have developed and agreed a set of sound exposure thresholds, with the latest published by Southall et al (2019).

111. Models of the sound field near the source are well developed and are practical for good predictions of the impulse sound field out to a kilometre. A number of environmental impact assessment studies carried out for seismic surveys with similar total airgun volume (1900-3200 cu.in) (UK, Argentina, Mauritania, Australia) generally predicted potential injury thresholds for marine mammals primarily within 500 m from the sound source. From the start of the survey, Shell has adopted an 800m exclusion zone around the sound source.

112. What scientists assess with regards to disturbance is 1.) any physiological harm (injury) to animals and 2.) biologically significant effects in terms of population size, reproductive success rates and ability of survival for cow/calf pairs.

113. Seismic surveys in both of these instances have been shown not to cause any physiological harm and or any biological significant effect when the appropriate mitigation measures are adopted. There is evidence that whales change their behaviour in response to the sound source, at a distance of between 5 to 10 km from the source [based on Jasco and CGG modelling and 160 dB threshold]. But this simply means that they avoid the source (ie, change their behaviour by moving away) and this does not cause any physiological harm.

114. **Seventhly**, the specific harms alleged are unsupported:

114.1. The threat to divers (referred to in paragraph 97 of the Founding Affidavit) is non-existent for diving activities in near shore waters. Recreational diving activities take place in water depths to a maximum of 30-40 meters, which is a maximum of 5 km from shore and more than 15 km from the boundary of the survey. Additional tourism and diving companies have been added to the IAP list and were informed about the seismic survey in October 2021. These are:

114.1.2. Morgan Bay Tourism

114.1.3. Buffalo City Tourism

114.1.4. Pollock's Sports Shop, East London

114.1.5. Pro Dive, Port Elizabeth and Port St Johns

114.1.6. African Dive Adventures

114.1.7. Southern Cross Cruises, East London

114.1.8. Big Salt Angling Tours

114.1.9. Great Kei Adventures.

114.2. At paragraphs 99 to 102 of the Founding Affidavit, the Applicants allege harm to plankton.

114.2.1. Potential impacts of seismic pulses on plankton include physiological injury or mortality. Because of the importance of plankton (specifically zooplankton and ichthyoplankton) to commercial fisheries, numerous studies have been undertaken experimentally exposing the eggs and larvae of various zooplankton and ichthyoplankton species to airgun sources (Kostyuchenko 1971; Dalen & Knutsen 1987; Holliday et al. 1987; Booman et al. 1992; Kosheleva 1992; Matishov 1992; McCauley 1994; Booman et al. 1996, Popper et al. 2005; reviewed in Carroll et al. 2017; McCauley et al. 2017; Richardson et al. 2017).

114.2.2. These studies generally identified that for a large seismic array, mortalities and physiological injuries occurred at very close range (<10 m) only. For example, Phytoplankton are not known to be affected by seismic surveys and are unlikely to show any significant effects of exposure to airgun impulses outside of a 1 m distance (Kosheleva 1992; McCauley 1994). Increased mortality rates for fish eggs have been proven out to ~5 m distance from the airguns. A mortality rate of 40-50% was recorded for yolk sac larvae (particularly for turbot) at a distance of 2-3 m (Booman et al. 1996), although mortality figures for yolk sac

larvae of anchovies at the same distances were lower (Holliday et al. 1987). Yolk sac larvae of cod experienced significant eye injuries (retinal stratification) at a distance of 1 m from an air gun array (Matishov 1992), and Booman et al. (1996) report damage to brain cells and lateral line organs at <2 m distance from an airgun array. Increased mortality rates (10-20%) at later stages (larvae, post-larvae and fry) were proven for several species at distances of 1-2 m.

114.2.3. More recently, however, McCauley et al. (2017) demonstrated significant declines in zooplankton abundance within a maximum range of 1.2 km of the airguns passage and suggested that seismic surveys may result in significant and unacknowledged impacts on ocean ecosystem function and productivity. However, a follow-up publication by Richardson et al. (2017) queried the robustness of the McCauley et al. (2017) study on the grounds of insufficient sample size. A more recent study by Fields et al. (Fields, et al., 2019) reported that a significantly higher immediate mortality of the copepod *Calanus finmarchicus* was recorded at distances of 5 m or less from airguns compared to controls, and an increased mortality did not exceed 30% at any distance from airgun. In addition, no effects on escape response nor important changes in genes were detected.

114.2.4. Richardson et al. (2017) estimated that while zooplankton populations declined 22% within the vessel's survey area, biomass recovery occurred within 3 days following survey completion and any effects on zooplankton by seismic noise would endure in the very short term only. The authors stressed that impacts in areas of dynamic ocean circulation (as in the proposed Shell survey area due to the Agulhas Current) are likely to be even less.

114.2.5. Consequently, Dalen et al. (1996) concluded that seismic-created mortality is so low that it can be considered to have an inconsequential impact on recruitment to the populations. Furthermore, due to the rate at which airguns are discharged, and the fact that the vessel is continuously moving, in addition to the fast moving Agulhas Current, it is highly unlikely that eggs and larvae will be repeatedly exposed to sound waves (Dalen & Mæsted 2008).

114.2.6. In assessing the potential impact on plankton, the independent marine faunal specialist considered, *inter alia*, the scientific literature and the location and timing of the proposed survey in relation to reef fish spawning grounds, which are important to small-scale fishermen, as well as that of commercially important fish species (e.g. anchovy, pilchard, round herring, chub mackerel, horse mackerel, geelbek, yellowtail, kob and Cape Stumpnose). The survey area, which is located more than 20 km from the coast at its closest point in water depths ranging between 700 and 3 100 m. Over 90% of the survey area is deeper than 1 000 m. This falls well beyond the spawning ground for various reef fish, which area reported to spawn on deep-water reefs on the inner continental shelf (>30 m) along the South and East Coast.

114.3. Based on the offshore location of the proposed survey area and the insignificant overlap with commercial spawning areas / egg drift, the impact is considered to be negligible.

114.4. At paragraph 103 of the Founding Affidavit, the Applicants refer to potential harm to invertebrates. Shell's response is as follows:

114.4.1. Rock lobster: Deep-water rock lobster occurs on rocky substrate in water depths ranging from 90 - 170 m, inshore and south of the seismic survey area. As the survey would be conducted in excess of 700 m water depth and offshore of the main habitat depth range, the received noise at the seabed would be within the far-field range, and outside of distances at which physiological injury of benthic invertebrates may occur.

114.4.2. Squid: Squid occurs extensively on the Agulhas Bank in waters >100 m out to the shelf edge (500 m depth contour), except along the eastern half of the South Coast where they also occur inshore, forming dense seasonal spawning aggregations at depths between 20 - 130 m. Thus, key squid fishing areas occur inshore and far south of the seismic survey area. As the proposed survey would be conducted in excess of 700 m depth the received noise at the seabed would be within the far-field range, and outside of distances at which physiological injury of these invertebrates might occur.

114.4.3. Based on the offshore location of the proposed survey area and associated water depths, the impact on invertebrates is considered to be negligible. As noted above, a key mitigation measure is the initiation of airgun firing as a "soft-start" of at least 20 minutes duration. This is where the sound source is turned on at low power and gradually and systematically increased to full power to allow animals to move out of the area and avoid injury.

114.5. In paras 104 to 105 of the founding affidavit, there are allegations relating to fish. The criticism appears to be that there is insufficient information on the possible impact on fish and that the EMPr is to be criticised for saying, on the one hand, that the

impact on fish from the "seismic blasts" is high, but the impact is negligible because of the short-term period of the blasts.

114.5.1. Research of seismic sounds on captive fish (as listed in the EMPr) provides an indication of the potential impacts on fish. Recent underwater noise modelling undertaken off the west and east coasts of South Africa, determines the zones of impact for permanent and temporary injury based on noise exposure thresholds. The results are supported by Popper et al. (2014) . The maximum horizontal threshold distance from a 3D seismic source to impact threshold levels leading to potential mortality or potential injury is 80 m for fish lacking swim bladders and 160 m for fish with swim bladders for the west coast study (SLR 2021a) and 120 m for fish lacking swim bladders and 240 m for fish with swim bladders for the east coast study (SLR 2021b). One also needs to understand such results in the context of natural field observations, where fish are not captive in cages and will swim away from the sound source as a behavioural response.

114.5.2. These studies also found that for general fish species, based on the noise exposure criteria provided by Popper et al. (2014), relatively high to moderate behavioural risks are expected at near to intermediate distances (tens to hundreds of meters) from the source location, and relatively low behavioural risks are expected for fish species at far field distances (thousands of meters) from the source location. This is supported by Santulli et al. (1999) and Hassel et al. (2004) who observed behavioural responses up to 5 km distance from the firing airgun array. Behavioural effects are generally short-term with duration of the effect being less than or equal to the duration of exposure, although these vary between

species and individuals, and are dependent on the properties of the received sound (McCauley et al. 2000).

114.5.3. Although the above studies provide evidence of possible injury or mortality in close proximity to airguns, given the high mobility of fish, the majority of fish species would avoid seismic noise at lower levels than where pathological injury or mortality would occur. Considering the implementation of the proposed mitigation, specifically "soft-starts", where the sound source is turned on at low power and gradually and systematically increased to until full power to allow animals to move out of the area and avoid injury, the impact on fish is considered negligible.

114.5.4. In terms of potential impact on small-scale fishermen / subsistence fishing, who fish mainly in the inshore areas (< 100 m water depth) closer to the coast, the impact is also considered to be negligible, as the survey area is located more than 20 km from the coast in water depths greater than 700 m; thus, the areas targeted by small-scale fishermen fall well beyond the anticipated zones of impact for injury or behaviour of fish.

114.6. Paragraphs 106 and 107 of the Founding Affidavit allege harm to dolphins and whales.

114.6.1. An important consideration when assessing the impacts of underwater noise on marine mammals is the mammals' behavioural response. However, there are no well-established or accepted thresholds for behavioural disturbance to marine mammals (Southall et al., 2007; Southall et al., 2019; NMFS, 2018). This is because behavioural disturbance can range greatly from low level minor

disturbance, such as changes in swimming behaviour and vocalisation, to higher levels of disturbance such as strong avoidance of an area for a specific time.

114.6.2. Only the lowest frequencies of the emitted sound have the capacity to travel over long distances. We all know that the drums of the marching band can be heard from a long distance whereas the flute can only be picked up from nearby. Hence only marine life with the capacity of detecting low frequency sound will potentially be disturbed at longer distances. As the ocean is full of noise sources that emit low frequency noises, both natural as well as man-made, not all of these sounds that are audible to this marine life will disturb them.

114.7. As I have explained above, what scientists assess with regards to disturbance is 1.) any physiological harm (injury) to animals and 2.) any biological significance of disturbance that could impact an animals' chronic health and acute vital rates that would lead to changes in terms of population size, reproductive success rates and ability of survival for cow/calf pairs.

114.7.1. Seismic surveys in both of these instances have shown not to cause any physiological harm (injury) and or any biological significant level of disturbance when the appropriate mitigation measures are employed.

114.7.2. Distance to behavioural disturbance thresholds based on avoidance has been estimated in various reviewed studies and has varied from 5 to 10 km [based on Jasco and CGG modelling and 160 dB threshold]. Migrating humpback cow-calf pairs migrate close to the coast, while non-calf groups may extend to at least 16 km offshore (Banks, 2013). Considering that the seismic area is at least 20 km from the coast, if there are any remaining cow-calf pairs passing by the area in the

southern migration in December (outside of the key migration period) they will be outside the potential behavioural disturbance threshold ranges (> 10 km from seismic source).

114.8. In order to mitigate any potential impact on cetaceans a number of proven measures will be implemented during the survey, including:

114.8.1. Avoidance of the key whale migration period on the east coast of South Africa between June to November.

114.8.2. Qualified independent Marine Mammal Observers (MMO) and Passive Acoustic Monitoring (PAM) Operators will be on board the seismic vessel to observe and record responses of marine fauna to the seismic survey. They will request the delay of start-up or temporary termination of the seismic survey or adjusting of seismic acquisition, as appropriate.

114.8.3. A dedicated MMO and PAM pre-shoot watch of at least 60 minutes will be implemented to ensure there are no diving seabirds, turtles, seals or cetaceans within 800 m of the seismic source. It should also be noted that Shell has committed to a 60-minute period (typically applied to protect deep-diving species such as sperm whales and beaked whales), not just 30 minutes as recommended in the EMPr.

114.8.4. All initiation of airgun firing must be carried out as "soft-starts" of at least 20 minutes duration. This is where the sound source is turned on at low power and gradually and systematically increased to until full power to allow animals to move out of the area and avoid injury.

114.8.5. The survey will be terminated if cetaceans enter the 800 m mitigation zone or if there is mortality or injuries as a direct result of the survey.

114.8.6. No seismic activities will be undertaken within any declared Marine Protected Areas. A 5km buffer zone will be maintained around MPAs.

114.8.7. These recommendations are in line with current JNCC international standards for seismic surveys to minimise impacts on marine fauna and, in some cases, exceed them. It should be noted that, despite the number of seismic surveys in the South African offshore over the past years, the number of Southern right and Humpback whales around the southern African coast have increased (Brandaõ et al. 2018; IWC 2012), suggesting that the surveys conducted over the past decades have not negatively influenced the distribution patterns or population numbers of these two migratory species.

115. **Finally**, under this section, I deal with the allegation that more is known now about the harm than was known when the EMPr was finalised and that there are "*numerous studies*" demonstrating harm since 2013.

116. This is not correct. There is over 15 years of peer reviewed research conducted globally that examines the impacts of seismic surveys to marine life and has guided government agencies around the world in permitting seismic surveys within their respective Exclusive Economic Zones (EEZs). This includes the E&P Sound and Marine Life Joint Industry Programme (JIP). The aim of this Programme is to improve understanding of the potential physical and behavioural effects of sound generated by oil and gas exploration and production on different forms of marine life. Working together with multi-national groups,

experts and NGOs, this JIP is the most extensive industry research Programme in this field, which has already committed US$ 31 million to research.

117. The JIP's research is divided into five categories – from understanding how sound travels underwater, to the possible effects of sound on marine fauna's physical and behavioural well-being, to how sound can be mitigated. Collaboration is one of the founding principles of the JIP. The JIP has deliberately engaged world-leading scientists to guide research and ensure that it conforms to the highest standards. The JIP is informed by an advisory board of experts and contracts with leading scientists to conduct research. Scientists must submit papers to scientific journals and release their data to the public.

118. When understanding the affects to marine animals and particularly whales who receive lower frequency sound in the environment, science looks at two predominant aspects when it comes to disturbance. The first is physiological harm (injury or death) and the second is behavioural changes / responses that may have a biologically significant effect in terms of population size, reproductive success rates and ability of survival for cow/calf pairs.

119. There is no scientific evidence reported to indicate that seismic surveys have a biologically significant effect to marine animal populations when appropriate mitigation measures are implemented. There have also been no documented cases of marine mammals or sea turtles being injured or killed by seismic surveys. In a Daily Maverick article by Rio Button published on 01 December 2021 (annexed here as "**HM10**"), Dr Elwen (one of the Applicants' experts) was interviewed in depth and is quoted as saying that "despite more than 40 years of seismic surveys there isn't a single study showing a clear link between seismic surveys and the stranding of an individual or multiple whales, dolphins or even fish." He went on to say that "the emotive images of dead whales stranded on beaches being shared on social media are highly misleading".

120. Impacts on marine life depend on the entire ecosystem and include animal health and life stage, pollution challenges (plastics and chemicals), health of the ecosystem and activity by location such as feeding, breeding, and migrating. A key mitigation applied for seismic surveys is working outside of the key environmentally sensitive window for migratory whales along the east coast which runs from June to November. Whale population increases are occurring post commercial whaling and ongoing industry operations in the same ocean areas have not prevented these increases in population sizes, demonstrating that whilst avoidance behaviour is a potential impact of seismic surveys, this has not had a biologically significant effect on marine mammal populations. Despite the number of seismic surveys in the South African offshore over the past years, the number of Southern right and Humpback whales around the southern African coast have increased (Brandaõ et al. 2018; IWC 2012), suggesting that the surveys conducted over the past decades have not negatively influenced the distribution patterns of these two migratory species.

121. As noted in independent marine fauna specialist study of the EMPr (page 580), impacts of seismic noise on baleen whales resulting in behavioural avoidance was considered very low to low significance with mitigation in place. Impacts of seismic surveys on baleen whales resulting in masking of sounds and communication was assessed as being of very low significance with mitigation in place. Impacts of seismic noise on toothed whales and dolphins resulting in behavioural avoidance was assessed as very low significance with mitigation in place and the impact of seismic surveys on toothed whales and dolphins resulting in masking of sounds and communication was assessed as overall very low significance with mitigation in place.

The balance of convenience

122. Weighed against the alleged harm that the Applicants assert, is the harm that will be occasioned should the interdict be granted. The harm to Shell, its JV partner (i.e., the 4th Respondent), and the broader South African public and economy will be significant as set out in this section.

123. Pursuant to Section 80(5) of the MPRDA, an exploration right is valid for the period specified in the right, which period may not exceed three years. In the case of Exploration Right reference 12/3/252 ("**ER 252**" or the "**Licence**"), it is specified as three years. Section 81(4) of the MPRDA further provides that an exploration right may be renewed for a maximum of three periods not exceeding two years each, each two-year period being a "Renewal Period". The terms of ER 252 contain provision for a fourth Renewal Period but this is conditional upon future legislation being introduced that would enable such fourth Renewal period in a manner applicable to this ER. Since no such legislation is currently enacted, this provision is disregarded for the purposes of this document. Consequently, following expiry of the Third Renewal Period, the JV must either relinquish the Licence or apply for a Production Right.

124. ER 252 is currently in the Second Renewal Period, which commenced on 11 August 2021 and shall expire, unless renewed, on 10 August 2023. The Joint Venture ("**JV**"), which refers to Shell and the Fourth Respondent, must apply to enter the (final) Third Renewal Period prior to the expiry of the Second Renewal Period. The Third Renewal Period will require the JV to offer a commitment to drill an exploration well, therefore committing to a substantial financial exposure, exceeding US$100 million (ZAR 1,5 billion).

125. The JV must be in a position to make a decision to apply for the Third Renewal Period at least six months prior to expiry of the Second Renewal Period, i.e., no later than the first quarter of 2023. This six-month period is required in order for the JV to make a

M.M

determination on renewal, and to enable each joint venture partner to secure the internal approvals required to commit to the renewal and the associated capital requirements.

126. In order for the JV to commit to the Third Renewal Period, it must have a degree of confidence in the prospectivity of the exploration area comprising ER 252 (the "**Block**"). The 3D Seismic programme has been designed to cover the areas of the Block that the JV considers to have the greatest prospectivity, based on two prior multiclient 2D seismic surveys acquired in this Block – the first in 2013 and the second in 2018. Whilst the 2D seismic data indicated the presence of a number of features of exploration interest ("**Leads**"), higher fidelity 3D seismic data is required to convert these to potential drillable prospects.

127. The acquisition of 3D seismic data is, therefore, imperative for exploration to progress on the licence. There are, however, limitations on when the 3D seismic acquisition programme can be undertaken:

127.1. Environmental permitting: The EMPr provides that seismic surveys must be avoided during the movement of migratory cetaceans (particularly baleen whales), being the period from June to November. The available seismic acquisition window is therefore between 01 December (subject to compliance with the requirement to use 24-hour passive acoustic monitoring) and 31 May - see Section 6, page 40 of the EMPr.

127.2. Weather: Wave height and wind speed dramatically increase after early April, presenting an additional Health and Safety risk for workboats and poor seismic data quality. Similar 3D seismic surveys acquired offshore South Africa, close to the licence area, during April have been left with data holes, which have required expensive re-acquisition during subsequent years.

127.3. **Acquisition time:** The survey started on 8 December and is estimated to take between 110 days and 140 days. Therefore, we would expect completion of the survey by the end of March 2022 at the earliest, but if the survey requires 140 days of acquisition time then the survey would be completed by the end of April 2022. Accordingly, any delay would push the acquisition into the bad weather window, compromising the ability to complete the acquisition and the quality of the data acquired.

127.4. **Processing and Interpretation:** Assuming the acquisition will be completed by April 2022, it is estimated that the JV will receive the fully processed data by December 2022, after which it must undertake its evaluation and interpretation. Subject to data quality, it will take the JV at least six months to evaluate and interpret the data and generate drillable prospects (if any) and make a recommendation on renewal. It is, therefore, estimated that, from first shot until advanced interpretation products are available, the JV will require approximately 18 months. In an exploration period of two years, this is a very tight timeline and will already require careful management of the evaluation and decision-making processes.

128. What the above discussion demonstrates is the following:

128.1. In order for the JV to commit the financial resources necessary for the Third Renewal Period, it will need to commence its decision-making process to apply for renewal approximately six months before the expiry of the right on 10 August 2023; ie, by the end of February 2023.

128.2. The timetable provided above demonstrates that, if the survey proceeds as scheduled, the JV will receive the data from the survey in December 2022. This

timetable will require the JV to evaluate the seismic data concurrently, and work through the decision-making process on the timetable identified above.

128.3. If the interim interdict is granted, it makes it practically impossible for the survey to be completed by May 2022, which is when the period in which seismic surveys cannot proceed begins.

128.4. The granting of the interdict will, therefore, make it inevitable that the right cannot be exploited and will make it impractical for the JV to apply for the renewal of the right because it will be impossible for it to make the capital commitments necessary to justify renewal without the data to support that decision.

129. If the 3D seismic programme is postponed or terminated, the JV will suffer the following consequences:

129.1. ***Breach of Contract:*** Under the terms of the Second Renewal Period for ER 252, the JV has a 'guaranteed work programme' contractual commitment to acquire, process and interpret the 3D seismic data, to undertake petroleum system modelling and reservoir studies, and to complete detailed geophysical and geological evaluation of prospectivity on the Block (including an assessment of exploration risks and potential volumes). If the 3D seismic acquisition programme cannot be completed, as currently planned, within the 2021 / 2022 seismic window and the JV is forced to delay the survey by twelve months until the 2022 / 2023 window, then the fully interpreted data will not be available until approximately mid-2024, i.e. *after the date of expiry of the Second Renewal Period.* In this case the JV will have failed to satisfy the guaranteed work programme under the ER and consequently it will be in breach of its contractual commitment to the Government.

129.2. ***Loss of Data / Data Quality:*** If the 3D seismic acquisition programme cannot be commenced and completed as currently envisaged (December 2021 to March/April 2022), but instead is delayed until later in the year, then the overall time available for acquisition will be significantly reduced with a greater proportion of acquisition taking place in the "bad weather" period (post April 2022). The total data acquired, and the quality of the data acquired will be substantially reduced, with a significant adverse effect on the ability of the JV to properly explore the area of interest. Historically, on the south coast of South Africa, the 'weather standby' (non-productive time) in April and May typically increases to 45%. As a result, a survey that is started after 1 January could not be completed before the end of the acquisition season (31 May). An additional, but no less significant, consideration in the event of survey suspension is that seismic acquisition during the adverse weather conditions of April and May has HSSE implications on the 75 offshore crew, where fatigue would increase the risks of personal injury. *Consequently, if the JV is instructed in December to postpone the survey pending further legal proceedings in 2022, then the JV will have no choice but to terminate the survey altogether.*

129.3. ***Loss of Licence:*** As illustrated above, if the JV is unable to acquire the data within the Second Renewal Period, it would not have the data or information required to make a commitment to drill an exploration well in the Third Renewal Period, therefore forcing it to relinquish the Licence.

129.4. ***Financial Cost:*** Termination of the seismic acquisition and processing contract would lead to an immediate cost to the JV of US$ 23 million (ZAR 350 million), comprising (i) Internal JV partner costs of US$ 3 million (ZAR 50 million) for planning

the seismic survey, and (ii) a contract termination fee of US$ 20 million (ZAR 300 million) payable to the seismic contractor.

129.5. ***Loss of Substantial Investment to Date:*** Since, as argued above, contract termination would prohibit the JV from fulfilling its contractual obligations to the Government, which would subsequently lead to a loss of the licence, then the JV would also need to write-off all the costs expended on the Block since Impact acquired the technical co-operation permit in 2012. This amounts to more than US$ 45 million (ZAR 700 million), including:

129.6. The purchase of 4,730 km of 2D seismic data over the Block, in 2013;

129.7. The purchase of 4,519km of 2D seismic data over the Block in 2018;

129.8. Processing / reprocessing of seismic data;

129.9. The purchase of an airborne gravity and magnetics survey covering 33,000 km^2;

129.10. Purchase of other data (e.g. well data and onshore geological data);

129.11. Payment of annual Licence fees to PASA;

129.12. Annual contributions to the Upstream Training Trust;

129.13. Geophysical and Geological interpretation;

129.14. Overheads and administration costs.

130. The aggregate JV expenditure that would be lost as a result of survey termination and subsequent loss of the licence (as detailed above) exceed ZAR 1 billion.

131. ***Loss of opportunity:*** Integration of the 2D seismic data over the Licence with regional geological data has indicated that the deep-water Natal Trough, containing the Licence, provides South Africa with a unique and highly prospective petroleum basin, which could contain multi billion barrels of recoverable hydrocarbon If the JV is prevented from further exploring the Block, it will no doubt result in its relinquishment. Should this happen, the potential economic loss to the JV and indeed South Africa would be in the billions of US Dollars.

The additional "expert evidence"

132. I have referred above to the extra evidence which the Applicants chose to file six days after launching this application. Shell's response to that evidence overlaps to some extent with some of the topics discussed above, most notably issues to do with the balance of convenience and irreparable harm. However, because of the pressure under which this affidavit has been prepared, it is more convenient for me to include a separate section in which Shell's response to the new "expert evidence" are provided below. The expert nature of the contentions set out below is confirmed by ERM, whose confirmatory affidavit is described below.

133. Before dealing with the expert evidence in more detail (as I do below), I wish to draw attention to a troubling development in this case, which happened on 9 December 2021. On that date, one of the Applicants' firms of attorneys (the Legal Resources Centre), wrote to the attorneys for the respondents. I annex the letter here as "**HM11**". In the letter, the Applicants referred to paragraph 12 of the supplementary affidavit which they filed as part of their introduction of the new evidence on 7 December 2021. In paragraph 12, the deponent (i.e. Mr Zukulu) summarises evidence provided by Dr Nowacek (discussed in more detail below). In purporting to summarise the conclusions of Dr Nowacek, Mr Zukulu

stated that Dr Nowacek was of the view that "the seismic survey may cause irreparable harm to species at both individual and population levels". The purpose of the letter of 9 December 2021 was to retract this statement. The retraction is entirely understandable – Dr Nowacek's conclusion at the end of his affidavit is that the "proposed mitigation measures are of unknown efficacy" which, although disputed by Shell, is a far cry from the words attributed to him in the supplementary affidavit – because Dr Nowacek did not express that view at all. But, with respect, it calls into question the reliability of the Applicants' evidence.

134. Another important issue which I need to address at the outset is the contention by the Applicants that the EMPr issued in 2013 is outdated because it fails to take account of research and an enhanced understanding of the science in the last eight years. What this fails to take into account is that a full audit of the EMPr was conducted in 2020 in terms of regulation 34 of the Environmental Impact Assessment Regulations, 2014 (as amended). The 2020 audit considered the proposed mitigation measures in the 2013 EMPr and assessed whether they remained fit for purpose. This assessment was done in the light of most recent and up-to-date evidence available at the time (i.e., up to 2020).

135. I now proceed to deal with the various pieces of expert evidence provided by the Applicants.

136. <u>The evidence of Dr Nowacek</u>:

136.1. The substance of many of Dr Nowacek's views have been addressed in the discussion above. I limit myself to a few additional comments.

136.2. Dr Nowacek's comments appear to be made purely based on the reviewed EMPr from 2013 only, without recognizing the further review of the EMPr undertaken in

2020, as well as the internal planning process for the geophysical survey that intrinsically applies an impact mitigation hierarchy that exceeds JNCC international standards and incorporates further environmental information.

136.3. For instance, Dr Nowacek does not appear to have taken into account (perhaps because he is unaware of it) of the 24-hour per day PAM which I have discussed above.

136.4. Regarding Dr Nowacek's concerns about whales:

136.4.1. One of the most frequently sighted species, southern right whale, is not present in the survey area during the survey window. The other (humpback whale) has a peak migration period between May and November.

136.4.2. In spring/summer, migrating humpback cow-calf pairs migrate close to the coast, while non-calf groups may extend to at least 16 km offshore (Banks, 2013). Considering that the seismic area is at least 20 km from the coast, if cow-calf pairs are passing by the area in the southern migration they, will likely be outside the potential behavioural disturbance threshold ranges (> 10 km from seismic source).

136.4.3. It should be noted here that Shell is adopting stringent mitigation measures, that are fit for purpose in the survey area and which exceed both the EMPr and JNCC international standards for seismic acquisition. The JNCC (Joint Nature Conservation Committee) is the UK government advisor on biodiversity and is responsible for nature conservation in the offshore marine environment of the UK Continental Shelf. This has also become the international standard adopted by many of jurisdictions conducting seismic surveys around the world. Firstly,

the JNCC does not call for shutdowns when the seismic source is being ramped up in a 'soft - start', or when the source is at its full operational power. The focus of JNCC's mitigation is around the pre-watch before the seismic source is started to make sure animals are not within the 500m mitigation zone. Therefore, shutdowns utilised in this survey are over and above the international standard. Shell implements 60-minute pre-watches which are in line with this international standard and which exceed the EMPr requirement. The 'soft-start' mitigation measure is both in line with the EMPr and the JNCC international standard. Shell is adopting an 800m (versus 500m) mitigation zone for pre-watches and shutdowns. This is the first ever implemented in South Africa, where the standard has been 500m, and exceeds both the EMPr requirements and the JNCC international standard. The adoption of Passive Acoustic Monitoring 24 hours a day by Shell for the entire duration of the survey, which also exceeds the JNCC international standard and EMPr requirement. These stringent mitigation measures will further minimize any potential impacts to endangered and other species.

136.5. Regarding the specific concern raised in relation to beaked whales:

136.5.1. Beaked whales are the least studied group of cetaceans. Several beaked whale species are known to occur off the shelf of south and east South Africa. However, there is almost no data available on the abundance, distribution or seasonality of beaked whales. Their presence in the area may fluctuate seasonally, but insufficient data exist to define this clearly. This is also supported by the South African National Biodiversity Institute's (SANBI) 2016 red list assessment that states, with the exception of the Southern Bottlenose Whale and Cuvier' beaked whales that are assessed as of Least Concern, beaked whales in the assessment

region are listed as Data Deficient (SANBI, 2021). With recorded dives of well over an hour to depths in excess of 2 km, beaked whales are amongst the most extreme divers of air breathing animals (Tyack PL, 2011). All the beaked whales that may be encountered in the survey areas are pelagic species that tend to occur in small groups of usually less than five individuals, although larger aggregations of some species are known (MacLeod & D'Amico 2006; Best 2007).

136.5.2. The long, deep dives of beaked whales make them difficult to detect visually, but utilising PAM 24 hours a day for the entire duration of the survey will increase the probability of detection, as animals are frequently echo-locating when on foraging dives (Zimmer, 2008). PAM system includes low-, mid- and high frequency spectrograms with various tonal detectors, whistle detectors, as well as click detectors covering the full frequency range of all species that could be encountered in the area, including beaked whales. In addition to being an effective mitigation measure for this species, the continuous use of Passive Acoustic Detection during the survey can also potentially add more data on these rarely seen beaked whales species.

136.6. Regarding penguins:

136.6.1. The closest African Penguin colonies to the seismic area are located on the Algoa Bay islands (St Croix Island, Jaheel Island, Bird Island, Seal Island, Stag Island and Brenton Rocks), over 200 km away from the seismic area. This species forage at sea with most birds found within 20 km of the coast. The majority of Algoa Bay penguins forage to the south and east of Cape Recife and therefore a significant distance away from the seismic survey area. A recent tracking study (Birdlife South Africa unpublished data) has shown that during their pre- and post-

moult periods (October to March) penguins forage in inshore areas between Cape Recife and the Robberg Peninsula, which is even further west from the seismic area. (Pulfrich, 2021).

136.6.2. Considering the distance between the planned survey area and the closest African penguins' colonies over 200 km as well as the fact that penguins are expected to be foraging closer to the inshore waters, any behavioural disturbance from the current seismic survey is likely to be negligible.

136.7. Dr Nowacek concludes that in his opinion, because the 2013 EMPr did not use acoustic modelling and relied upon eight-year-old, outdated information on the presence and abundance of animals in the seismic surveying area, and outdated science regarding acoustic impacts on marine species, the seismic survey will likely cause significant harm to marine animals, and the proposed mitigation measures will be ineffective. With respect, this fails to take account of the following:

136.7.1. It is important to separate the regulatory assessment document from the actual planned mitigation measures. Just because the environmental assessment did not include project-specific acoustic modelling, it does not mean that there will be significant risk. On the contrary, acoustic modelling which is conducted in some jurisdictions (e.g. the US) do not necessarily translate into specific mitigation measures being adopted.

136.7.2. What is important to note here is that acoustic modelling in the area has been considered, along with other acoustic models using similar sound source outputs to assess threshold exposure levels. Furthermore, it is incorrect of Dr Nowacek to assume that outdated science has informed the survey mitigation

strategy or that the mitigations themselves are ineffective. His opinion is not only incorrect but contrary to decades of research which has gone into programmes like the JIP and informed international standards like the JNCC. As explained above, Shell is exceeding this international standard and the EMPr requirements in this survey.

136.7.3. The critical elements of a robust mitigation and monitoring for marine seismic surveys were outlined in "Responsible Practices for Minimizing and Monitoring Environmental Impacts of Marine Seismic Surveys with an Emphasis on Marine Mammals" (Nowacek D.P., 2013) – ie, Dr Nowacek's own work. These were further reviewed in "An Overview of Potential Impacts of Hydrocarbon Exploration and Production on Marine Mammals and Associated Monitoring and Mitigation Measures" (Bröker, 2019).

136.7.4. In the course of the planning of this seismic survey, the project has taken numerous steps to avoid and minimize the impact of the proposed seismic programme on marine life. A number of key recommended mitigation and management measures outlined in Nowacek . 2013 were considered and adopted in this survey, as follows:

136.7.4.1. ***Seasonal restrictions:*** In line with the IUCN biodiversity impact hierarchy, one of the most impactful mitigation measures included in the mitigation plan to avoid the effects on several key species of marine mammals is the seasonality component. The survey is carried outside the environmentally sensitive whale migration window on the east coast of South Africa which runs from June to November.

136.7.4.2. ***Airgun specification, array size and configuration:*** Noise reduction at the source is one of the most effective approaches to reducing impacts (Nowacek D.P., 2013) and (Risch, 2020), and has been an important recommendation for reducing impacts of seismic activities. The total array volume used for this survey had been optimized to 2098 cu.in and can be considered one of the lowest airgun volumes used for such water depths (700-3500 m) in South Africa, translating into lower source levels. Based on a review of several published noise modelling and impact assessment reports, typical seismic sound source volumes for similar depths were in the range of 3000-4500 cu in.

136.7.4.3. ***Minimization of the survey area:*** Shell follows an internal process which defines the minimum technical scope to enable further exploration decisions. Through this process, the survey area has been carefully drawn as closely as possible around the subsurface targets that were identified on the previously acquired 2D data, reducing the survey area. No unnecessary or speculative seismic is acquired in this survey.

136.7.4.4. ***Orientation of the survey lines*** has been chosen to minimize the duration of the survey. This minimizes the total acoustic impact in a temporal sense.

136.7.4.5. ***Avoidance of sensitive areas:*** No seismic acquisition will take place in an MPA. The recommended buffered zone around MPAs is 2km, however Shell adopts a 5km buffer zone around any MPA whereby no seismic acquisition may be acquired.

136.7.4.6. ***Safety distances/mitigation zones*** are defined for the survey. Following a review of environmental impact assessments, underwater noise modelling findings in the area and using a precautionary approach, a mitigation and

exclusion zone has been extended to 800 m from the typically recommended 500 m zone to provide further protection to marine mammals, and in particular low frequency cetaceans

136.7.4.7. ***Operational measures:*** The survey program also employs recommended pre-survey observations, such as several days of visual and acoustic (PAM system) monitoring prior to survey commencement; visual and acoustic monitoring of the search area over a minimum of 60 minutes prior to initiating soft start, as well as throughout the seismic acquisition program 24 hours a day. Seismic acquisition gets suspended if marine mammals, turtles or diving birds are observed within the defined exclusion zone of 800m. Typically PAM is only applied in periods of darkness or period of low visibility, however for this survey it was decided to operate the PAM system throughout the survey. This set of mitigation measures meets, and exceeds, internally recognized standards for mitigation of seismic surveys (e.g. JNCC or IOGP/IAGC). As such Shell is of the belief that the risks to marine life are adequately managed.

136.7.4.8. ***Baseline information and impact assessment:*** An environmental assessment is an intrinsic part of project planning. A formal impact assessment document (Environmental Management Programme) was prepared in line with the national regulatory requirements and served to receive necessary regulatory approvals. Internally, however, environmental and social sensitivities of the area continued to be reviewed, and informed internal project execution planning, including mitigation measures.

136.7.5. As can be seen from the above, a number of recommendations from (Nowacek D.P., 2013) have been adopted in this survey programme.

137. The evidence of Drs Harris, Olbers and Wright:

137.1. Dr Jean Harris is the Executive Director of WILDOCEANS, Dr Kendyl Wright is employed as a Protected Area Scientist at WILDOCEANS, and Dr Jennifer Olbers is employed as a Senior Marine Scientist at WILDOCEANS. WILDOCEANS is an NGO that is vehemently against any oil and gas activity in South Africa. WILDOCEANS has played a major role in the protests which have been conducted against Shell's activity in South Africa. WILDOCEANS has also been an active role player in disseminating strong opposition to the proposed survey in print, broadcast and social media in South Africa, along with OceansnotOil and Greenpeace South Africa.

137.2. While Shell acknowledges the experience of these experts offshore, their opinion on this matter cannot be viewed as an objective scientific expert testimony. This is further confirmed through their reliance on peer reviewed published articles to provide their 'expert' testimony, which are primarily based on experimental studies using captive animals versus observational studies of wild animals. There is currently a disparity between results obtained in the field, in which biological responses can be difficult to detect in combination with natural environmental variability, and results obtained from the laboratory, in which exposure treatments or behavioural responses may be unrealistic (Carroll et al, 2017.).

137.3. Carroll et al, (2017) further note that, "the sound exposure scenarios in some cases are not realistic to those encountered by marine organisms during routine seismic operations. Indeed, there has been no evidence of reduced catch or abundance following seismic activities for invertebrates, and there is conflicting evidence for fish with catch

observed to increase, decrease or remain the same. While catch or local abundance may be the most relevant responses for fisheries species, they provide no information about the underlying biological cause of catch rate reduction". Slabbekoorn (2016) further confirms this by noting how laboratory studies on the direct effect of acoustic waves on organisms offer much more experimental control than field studies, while field studies incorporate more realistic sound exposure and propagation scenarios, as well as associated behavioural responses.

137.4. It should also be noted that neither Dr. Harris, Dr Wright nor Dr Olbers are cetacean or turtle experts that have undertaken dedicated work in these respective fields.

137.5. In short, it is Shell's contention that evidence of Drs Harris, Wright and Olbers does not advance the Applicants' case because:

137.5.1. Their association with WILDOCEANS calls into question their objectivity and their ability to give unbiased evidence.

137.5.2. Their reliance on laboratory studies on the effect of acoustic exposure to animals at short ranges is not representative of wild conditions.

137.5.3. They have not adequately taken into account the mitigations to be employed in this survey, which go beyond even what is required by the EMPr or JNCC International Standard

137.5.4. As a result, they draw misleading, biased and factually incorrect conclusions.

137.6. But, for the sake of completeness, I respond directly to the conclusions of Drs Harris, Wright and Olbers. The first issue which they raise is concern about the impact of the survey on turtle hatchlings:

137.6.1. Once hatchlings reach the sea, they are pelagic, moving primarily with ocean currents. Hatchlings are born on the beaches of iSimangaliso Wetland Park (550 kilometres away from the survey area) on the east coast of South Africa from late January through to March when the Agulhas Current is warmest. As noted in the EMPr, once hatchlings enter the sea they move southward in the Agulhas Current and are thought to remain in the southern Indian Ocean gyre for the first five years of their lives. There is an absence of turtles sized between 10-60 cm from the southern African East Coast, where the survey is located. Beach strandings of juvenile loggerhead and leatherback turtles along the South African coast suggest that juvenile turtles occur in the Agulhas Current between Algoa Bay and Mossel Bay (Hughes 1974) which is 230 and 635 kilometres away from the survey area respectively.

137.6.2. There are, furthermore, effective mitigation measures adopted for adult turtles. These include soft-start and shutdown procedures when a turtle enters the 800m exclusion zone. Dedicated Marine Mammal Observers are able to visually inspect the exclusion zone and shut down operations until turtles swim away. "Turtle-friendly' tail buoys are also fitted to tail buoys, with either exclusion or deflector 'turtle guards'.

137.6.3. Drs. Harris, Olbers and Wright are correct in saying that these mitigation measures do not cater specifically to turtle hatchlings (as opposed to adult turtles). The same can be said for all shipping and fishing activities in the area, which adopt

zero mitigation measures for hatchlings, or for turtles for that matter. However, there is a significant difference between seismic and shipping/fishing activity. Because of the nature of seismic surveys, and the biology of turtle hatchlings, there is, effectively, an in-built mitigation of harm to hatchlings. Let me elaborate:

137.6.3.1. Based on the anatomy of the sea turtle ear, which lacks an otolith-based accelerometer system, research suggests that sea turtles are sensitive to acoustic pressure, rather than acoustic intensity or particle motion (Piniak et al 2016; Fay and Popper, 1999; Sand and Karlsen, 2000; Piniak et al, 2012). This is confirmed by Bartol 2016 who notes that sea turtles do not have small hard structures (otoliths) floating on a bed of hair cells in their inner ears, and a mechanism for detection of the particle motion component of the sound field has not been found. The retention of air in the middle ear of these sea turtles suggests that they are able to detect sound pressure. This includes both post-hatchling and juvenile turtles, who are sensitive to sound pressure, not the particle motion portion of sound.

137.6.3.2. This factor is a key consideration for a turtle hatchling who is bobbing on the ocean surface, at the mercy of ocean currents and may come into the exclusion zone undetected. The sea-air interface is a near perfect reflector of seismic sound waves. The impedance contrast is so great that almost no energy is able to cross the boundary.

137.6.3.3. When sound waves are generated a few meters below the surface (the seismic source) and reflected back from the sea-air interface, an almost perfect pressure null is created in the near surface layer where turtle hatchlings will

be swimming. This means that turtle hatchlings will not be exposed to significant pressure increases at the water surface.

137.7. The other issue addressed by Drs Harris, Wright and Olbers is the impact of the survey on zooplankton. I have addressed this in detail in paragraph 114.2 above.

138. The evidence of Mr Burger:

138.1. Mr Burger is an ocean impact investment specialist. At the outset, I wish, with respect, to take issue with the impression that is created that Mr Burger was somehow involved in the preparation of the EMPr because of his involvement with ERM (the company contracted to prepare the EMPr). The correct position is that Mr Burger co-founded the African consultancy Ecobe, which was sold to ERM in 2003, and he stayed on for a year as MD for ERM Southern Africa. After that time Mr Burger was not employed by ERM. He therefore long-since had ceased to have an association with ERM by the time that the EMPr was prepared. I annex, to confirm this, a confirmatory affidavit of Elena Daniela Afrenie, which confirms this fact and also all of the expert evidence in this affidavit supplied by ERM.

138.2. Mr Burger says that the authors of the EMPr and the 2020 audit report are inadequately qualified as they appear to lack any professional marine science or marine environmental training. This is incorrect:

138.2.1. Mr Burger's allegations fail to distinguish between the experts who conducted the Environmental Management Programme (EMPr) process and the audit, and the experts who assessed the environmental impacts. The reports submitted in 2013 by the subject specialists are not criticised by Mr Burger. ERM

has extensive experience in the management and conduct of EMPrs and environmental audits, as explained below.

138.2.2. The authors of both the EMPr and 2020 audit were suitably qualified and experienced in terms of the requirements for reporting at the time of the EMPr and audit submissions, as shown below.

138.2.3. Regarding the 2020 EMPr Audit:

138.2.3.1. The purpose of the audit was to assess compliance of the exploration right, through a desktop review, and the environmental management programme (EMPr) in accordance with section 34 of environmental Impact Assessment Regulations, 2014 (the EIA Regulations).

138.2.3.2. An environmental audit in South Africa must be conducted by a registered Environmental Assessment Practitioner (EAP), under the National Environmental Management (NEMA). Section 14 of GN 843 Government Gazette 40154 published in 22 July 2016 states that "No person other than a registered environmental assessment practitioner, registered with a registration authority, may hold primary responsibility for the planning, management, coordination or review of environmental impact assessments and associated Environmental Management Programmes (EMPr's)." Mrs. Stephanie Gopaul, the ERM Employee who conducted the audit, is a registered EAP (registration Number 2020/2202).

138.2.3.3. The general requirements for EAPs and specialists are addressed in regulation 12 of the EIA Regulations.

138.2.3.4. ERM, in conducting the 2020 audit, complied with all of the requirements of regulation 12. Philip Johnson, who reviewed and signed off the 2020 EMPr audit, was a partner at ERM and experienced project manager, with over 15 years of experience in managing environmental projects for a range of clients. This included overseeing environmental assessments for oil & gas, mining chemical, manufacturing and commerce clients in Europe, Asia, Africa and the Middle East. Mr Johnson has completed environmental impact assessments, environmental audits, and compliance reporting in a range of culturally diverse and challenging environments.

138.2.4. Regarding the 2013 EMPr:

138.2.4.1. Environmental consequences and impacts were identified, investigated and assessed by suitably qualified and experienced specialists in the 2013 EMPr, including:

138.2.4.1.1. Marine fish and fishing activities by David Japp of CapFish;

138.2.4.1.2. Marine fauna by Dr Andrea Pulfrich of Pisces Environmental Services; and

138.2.4.1.3. Marine archaeology by Jonathan Sharfman of African Centre for Heritage Activities.

138.2.4.2. The curriculum vitae of the environmental assessment practitioners and the relevant specialists were attached in Part C of the EMPr.

138.2.4.3. The ERM personnel who drafted the EMPr are highly qualified and experienced environmental consultants, as evidenced by the following:

138.2.4.3.1. Henry Camp who was the partner in charge of this EMPr is an experienced environmental and social specialist with a career in sustainable development spanning over 30 years. Mr Camp's professional affiliations and registrations include membership of: the International Association for Impact Assessment; the Association for the Environmental Health and Sciences (AEHS); the American Chemical Society (ACS); and the Society of Environmental Toxicology and Chemistry (SETAC).

138.2.4.3.2. Claire Alborough is an experienced project manager and assessment practitioner with 10 years' experience working as a consultant managing multidisciplinary teams to help clients with Environmental and Social Impact Assessments, permitting requirements, environmental law, Environmental and Social Management Planning and Environmental and Social Due Diligence (ESDD) in numerous Sub-Saharan African Countries (including South Africa, Namibia, Nigeria, Ghana, Benin, Cameroon and others). She has extensive experience in aligning projects to the requirements of international financial institutions (e.g. IFC). Experience also in engagement processes with a range of community-level, NGO and government stakeholders.

138.2.4.3.3. Ms Alborough has extensive experience in the upstream oil & gas, power (thermal and renewable), and marine and telecommunications sectors. She has worked across Sub-Saharan Africa with a particular focus on South Africa. Her professional affiliations and registrations include: Member of the International Association for Impact Assessment; MPhil (Marine and Environmental Law), University of Cape Town (UCT), South Africa, 2006; Postgraduate Certificate in Project Management, Continuing Professional Development Programme, UCT, 2006; BSc Honours (Environmental Management), UCT, South Africa, 2004; and BSc (Environmental and Geographical Science and Oceanography), UCT, South Africa, 2003.

138.3. Another issue raised by Mr Burger is his criticism that the 2013 EMPr is out of date. He says that it is not industry best practice for consultants to stand behind an outdated EMPr, especially because of the advances in scientific knowledge regarding seismic surveys. In essence, his criticism is that the mitigation measures in the EMPr are outdated and inadequate. However, what Mr Burger has overlooked is the 2020 audit:

138.3.1. I have already explained the qualifications of the experts who conducted the 2020 audit.

138.3.2. A compliance review of the EMPr was conducted in 2020 and it was found that mitigation measures contained in the EMPr were sufficient. As noted above, the audit was conducted in terms of regulation 34 of the EIA Regulations.

138.3.3. The methodology used and conclusion arrived at in this audit report was accepted and approved by PASA.

138.4. Regarding Mr Burger's criticisms regarding plankton: these have been addressed above. It is simply wrong to say that the 2013 EMPr did not consider the position of plankton. This was addressed in detail in section 6.5.2 of the EMPr.

138.5. One of the issues addressed by Mr Burger is his criticism of the skills of the on-board observers and the contention that there is observation at night. These criticisms are, with respect, baseless:

138.5.1. The onboard observers are all competent and experienced marine mammal observers with a strong scientific background in marine mammal ecology and behavioural observations and all with academic credentials. The five onboard observers share a cumulative 1600 days at sea on board seismic vessels in South Africa and Namibia.

138.5.2. When it comes to their specific qualifications, they are, as follows:

138.5.2.1. MMO1: MSc Marine Biology (Rhodes University)

138.5.2.2. MMO2: MSc Marine Zoology (University of Pretoria)

138.5.2.3. PAM1: MTech Oceanography (Cape Peninsula University of Technology CPUT)

138.5.2.4. PAM2: BTech Marine Science (CPUT)

138.5.2.5. FLO: BTech Oceanography (CPUT).

138.5.3. In addition to the two MMOs, a 24 hrs/day PAM is implemented including two PAM operators. This covers observations during night-time operations. The statement that there are no effective mitigation measures at night-time is therefore incorrect.

138.5.4. The lead marine mammal observer is part of the operational team and attends all daily and weekly calls and she works closely with the Shell representative on-board of the seismic vessel. A daily environmental report is shared with a Shell team and SLR to check full compliance with the mitigation plan.

138.6. To demonstrate that the on-board observation in achieving its purpose, I refer to the actual data generated thus far:

138.6.1. The seismic vessel has been in the survey area since November 29. The Marine Mammal Observers onboard the vessel have done a visual watch for marine mammals, turtles, and birds during the day- time ever since.

138.6.2. The Passive Acoustic Monitoring system has been operational 24-hours a day since December 5, with exception of part of the day on December 6.

138.6.3. Below is an overview of all marine mammals observed by either MMO or PAM in survey area since November 29 to date.

Table: Marine mammal observation by MMO and PAM till date in survey area.

Date	MMO Observation	PAM Observation	Distance from vessel (m)
29 November	-	**n/a**	
30 November	-	**n/a**	
1 December	-	**n/a**	
2 December	-	**n/a**	

3 December	-	**n/a**	
4 December	-	**n/a**	
5 December	-	**Two unidentified Dolphins**	**N/a (source not deployed at time)**
6 December	-	-	-
7 December	-	-	-
8 December	-	**Unidentified Dolphin**	**2000**
9 December	-	**Unidentified Dolphin**	**1500**
10 December	**Striped Dolphin**		**920**
11 December	-	**Unidentified Dolphin**	**2000**
12 December	-	**Unidentified Dolphin**	**1500**

138.6.4. The table above demonstrates that:

138.6.4.1. MMO Observations started on 29th November and PAM Observations started in the survey area on 05th December. No shutdowns have thus far been required for any of the animals which have been observed because they were not within 800m mitigation/exclusion zone.

138.6.4.2. There have been no whales identified thus far in the last 14 days from November 29 until December 12.

138.7. The data above demonstrates that the system is working well and as it is intended to work.

139. <u>The evidence of Mr Russell</u>:

139.1. David Russell is a fisheries consultant based in Namibia.

139.2. Mr Russell notes that when Shell's seismic surveys commenced off the coast of Namibia, there was a "sudden drop in catches" that had a "devastating economic impact on the albacore tuna industry". Following this, Mr Russell notes Shell's engagement

with the tuna fishing sector to better design its seismic surveys to manage impacts. However:

139.2.1. Mr Russell's statement cannot be verified and is not substantiated by evidence (it should be noted, in passing, that Mr Russell is incorrect to say that Shell conducted a seismic survey in Namibia in 2012; the correct date was Q4 2014).

139.2.2. Tuna availability is variable and highly dependent on environmental conditions. There is no explicit supporting evidence that can show a direct relationship between seismic surveys and tuna availability. The tuna pole and line fishery in Namibia is dependent on inter-annual variability of the stock of south Atlantic albacore which is shared by Angola, Namibia, South Africa and Brazil. Data released by the International Commission for the Conservation of Atlantic Tunas (ICCAT) shows that albacore abundance in these areas has systematically declined and availability is variable.

139.2.3. The variability is most likely attributed to a combination of the following (Shomura et al 1995, Kuo-Wie Lan et al 2011, Lehodeya et al 2006 and Punt et al 1996):

139.2.3.1. Increasing fishing effort exacerbated by improved fish finding technology (vessel monitoring systems, use of sonar, sea surface temperature spatial mapping using satellite technology);

139.2.3.2. Environmental variability such as cold and warm water events e.g. Benguela El Niño events have been shown to result in a change in the vertical

distribution of tuna stocks within the water column, resulting in reduced catch rates;

139.2.3.3. Migration and feeding patterns that change abundance levels annually and linked to the environment;

139.2.3.4. Inconsistent or irregular catch reporting.

139.2.4. The point is that seismic surveys have not been demonstrated to be responsible for these effects. What can be said is that any anthropogenic impacts combined with environmental effects are likely to have a combined effect on fish availability. Tuna and tuna-like species have small or no swimbladders and very small otoliths (ear bones) and direct impacts from airguns causing mortality in such species have not been reported.

139.2.5. Mr Russell also says that the fisheries sector in Namibia appreciates the initiation and continuation of dialogue with Shell Oil Exploration Namibia, including Shell's sincere positive response to try and mitigate risks and potential impacts of seismic sound chasing the fish away. Mr Russell concludes by saying "we would consider it an unwise decision if South Africa relied on the apparently less accountable Environmental Management Programme of 2013 to guide its seismic activities".

139.2.6. Mr Russell's statement, seen overall, is practical and demonstrates a sensible approach in particular to Shell. From Mr Russel's statements it becomes clear that he has not been made aware of the EMPr audit, demonstrating that the mitigation measures proposed in 2013 were still up to date in 2020. This means that

Mr Russell has also not been informed of the additional implemented mitigation measures over and above the ones listed in the EMPr (2013) for the 2021 survey, such as 24 hrs PAM for the full duration of the survey, 5 km buffer zone around MPAs and a 60 minute pre-watch period and 800m mitigation zone for shutdowns. Lastly, it becomes clear from Mr Russell's comments that he has not been informed about the conducted focussed meetings with selected fishing vessel operators along the Wild Coast, potentially operational in the survey area, by CapMarine in 2021. All responses received indicate that no longline activities are scheduled (evidenced through Engagement response forms) in the survey area.

140. The evidence of Professor Bruton:

140.1. Professor Bruton is one of the world's leading experts on the extremely rare Coelacanths.

140.2. In his affidavit, Professor Bruton:

140.2.1. explains why Coelacanths have such iconic status;

140.2.2. articulates why it is almost certain, in his view, that there are Coelacanths in the seismic study area; and

140.2.3. notes the high risk to the Coelacanth population if even a small number are adversely impacted by the seismic survey.

140.3. Shell disputes this evidence for the reasons given below

140.4. A coelacanth discovery has not been made in the survey area. The only discovery on this part of the coastline was caught by a fisherman off the Chalumna River in East London in 1938. The discovery by SCUBA divers of a group of coelacanths in a submarine canyon off the Greater St Lucia Wetland Park (GSLWP)

World Heritage Site (approximately 550km from the survey area) in November 2000 (Venter et al. 2000), demonstrated that the coelacanths were not confined only to the Comoros Islands. They have been captured or sighted offshore Kenya, the Tanga region in Tanzania, Madagascar and Mozambique (Nyandwi 2006; Benno et al. 2006, Benno et al. 2006). In November 2019 a further sighting was reported by divers from 69 m depth in the Umzumbe River canyon near Pumula on the South Coast of KwaZulu-Natal (KZN).

140.5. Although the habitats in which these specimens were caught are ill-defined, simple bathymetric surveys have suggested that the bottom profile in the Tanga region consists of a series of 10–15m-high terraces between 70–140 m depth (Benno et al. 2006) whereas in the south, submarine depressions interpreted as canyons have been observed at depths of 400 m (Nyandwi 2010). In Madagascar the estimated depth of capture ranged from 60 m to 500 m (Cooke et al. 2021).

140.6. From the pioneering studies in the Comoros, it was predicted that coelacanths have a narrow habitat-tolerance range, namely:

140.6.1. They require caves and overhangs in steep drop-offs in which to shelter,

140.6.2. They are sensitive to temperatures above 21°C,

140.6.3. Being slow swimmers (~5 cm/s), they avoid strong currents,

140.6.4. They require water with a high oxygen concentration, and

140.6.5. They emerge from their cave shelters at night to hunt, typically in deeper water.

140.7. Since then, several studies and surveys as part of the African Coelacanth Ecosystem Project (ACEP) revealed that coelacanths:

140.7.1. appear to be more widely distributed than originally thought,

140.7.2. are more tolerant of variations in temperature, oxygen, light and depth than initially perceived,

140.7.3. exhibit a broader tolerance range of different structural habitats than concluded from Comoran data, and on the East African coast appear to favour submarine canyons, but

140.7.4. are not necessarily present where these conditions are met, suggesting that the population size in the GSWLP may be lower than formerly predicted.

140.8. Multibeam bathymetric surveys undertaken off the northern KwaZulu-Natal coastline identified a total of 23 submarine canyons, including six mature-phase (large, steep-sided features breaching the continental shelf), 17 youthful-phase (smaller, deep water features occurring near the continental margin) and numerous incipient (shallow linear depressions on the seafloor) canyons that run approximately perpendicular to the shore (Ramsay & Miller 2006). The canyon heads breach the relatively narrow (2-4 km) shelf at depths of 90-120 m, and their thalwegs (bottoms) have depths of several hundred metres. The formation of caves and overhangs below the steep canyon edge (~100 m depth) and along the canyon walls down to 160 m (Ramsay & Miller 2006) are thought to provide optimal coelacanth habitats. In contrast, canyons occurring in close proximity to active subaqueous dune fields (e.g. Durban, Tugela and Goodlad Canyons) are thought to be suboptimal habitats for coelacanths, as excessive sediment movement is expected to result in slumping along unstable canyon margins and destruction of their preferred cave habitats.

140.9. Green et al. (2006) used pre-existing bathymetric data sets and geo-referenced charts to identify further potential canyons on the southeast African continental shelf and slope. They concluded that further coelacanth habitats could be expected on the continental shelf off the Port Shepstone–Port St Johns (north of the survey) stretch of coastline (at that time the expected southernmost limit to coelacanth distribution). These areas are characterised by a high density of submarine canyons, and based on the regional geological setting, good cave development in the canyon heads is expected.

140.10. Although submersible dives conducted off the Eastern Cape coast near East London and Port Elizabeth in 1991 revealed that canyon habitats there were suboptimal with only small overhangs and no deep caves, more suitable habitats have since been found in the Chalumna Canyon off Kayser's Beach, ~35 km southwest of East London (Fraser et al. 2020) and ~ 90 km to the southwest of the southern point of the survey area. This canyon is located near the site of the first coelacanth captured in 1938.

140.11. The coelacanths sighted off Sodwana were confined to the narrow belt (90–140 m depth) in the canyons where caves, overhangs or broken boulder areas offering shelter were abundant (Hissmann et al. 2006; Roberts et al. 2006). Coelacanths occurred singularly or in groups of up to seven individuals in the caves, and although they showed site fidelity, they appear to use several different caves within their home range.

140.12. The survey area is located in one of the strongest current in the world, the Agulhas Current. On the eastern half of the South Coast, the Agulhas Current flows along the shelf break at speeds of up to 3 m/sec, diverging inshore of the shelf break south of Still Bay (34° 28'S, 21° 26'E) before realigning to the shelf break off Cape Agulhas (Heydorn & Tinley 1980). Current velocities, however, decrease with depth, but also exhibit horizontal velocity gradients along the shelf edge. The vertical velocity structure observed along the slope ranged from 20-80 cm/s in the 100-140 m depth

zone at which coelacanths occur (Roberts et al. 2006). These calm seabed conditions would enable the coelacanths, which are sluggish fish, to migrate easily within and between canyons. Current velocities measured in coelacanth habitats in the Comoros (Hissmann et al. 2000) ranged from 4.9 cm/s at ~160 m to 3.1 cm/s at 270 m. The steep cliffs of the canyons provide shelter from the strong currents.

140.13. The normal temperature range for coelacanths in the Comoros, South Africa and Indonesia is 15-20°C. The upper threshold limit for coelacanths is thought to be 22–23°C (Fricke et al. 1991), although fish have been sighted resting in caves at a temperature above 24°C. The optimum temperature for oxygen uptake in coelacanths is 15°C (Hughes & Itazawa 1972), with higher temperatures resulting in respiratory distress. The Sodwana coelacanths would thus be expected to occur at depths beyond 200 m, but as there appear to be fewer adequate shelters beyond 140 m, their occurrence within caves in the 90-140 m depth range may be due to a necessity to remain quiescent in order to keep metabolic rate and oxygen consumption low (Roberts et al. 2006).

140.14. There are a number of prominent canyon features breaching the relatively narrow continental shelf between Port Elizabeth and Durban. Although most of the canyon heads are located at ~400 m depth with the thalwegs ending at ~3,000 m to 3,500 m, the canyon heads of those that traverse Shell's 3D survey area are located in ~ 200 m depth (Sink et al. 2018) (Figure 1). The shallowest water depth in the seismic area is ~700 m with the canyon incisions starting ~1000 m of water depth (Figure 2 and 4). <u>These depths are thus well beyond those at which coelacanths have been reported.</u>

140.15. The edges of the canyons observed from available 2D seismic Multi-client data have a dip of maximum 35 degrees at the steepest edge seen but in general they are no steeper than 15-20 degrees (Figure 3 and 4). Highly laminated sedimentary deposits most likely mud, clay, shales or some sands can be observed. Typical velocities of

seismic waves traveling though water is around 1500 m/s. This gradually increases with depth unless a very different density rock unit occurs. As can been seen from the 2D seismic velocities there is no sudden change below the seabed, most likely indicating unconsolidated sediments. As can be observed from figure 4, these are not very steep sided canyons prone to have overhangs or caves and would not provide shelter from the strong currents and sediment movements.

140.16. The Wild Coast Canyons therefore differ significantly in morphology from those in KwaZulu-Natal, where coelacanths have been reported. Firstly, the canyon heads lack the amphitheatre-shaped head morphology seen off Sodwana. Secondly, they are located at far greater depth than the Sodwana canyons, and finally, they show no significant tributary branches.

140.17. Figure 5 below shows a typical temperature gradient (thermocline) for ocean waters (The Ocean & Temperature ~ MarineBio Conservation Society). There is currently no data available on temperature or dissolved oxygen on, or beyond the shelf edge in the survey area. It is likely, however, that the temperature and dissolved oxygen in the canyons at depths of >700 m are likely to be <10°C, with dissolved oxygen concentrations of <3.4 ml/l. Although the oxygen concentrations would be suitable for coelacanths, the declining water temperatures beyond 700 m depths are well below the known tolerance for coelacanths (15°C). Together with the fact that suitable food sources are likely to be limited at those depths, this suggests that the Wild Coast Canyons that traverse the 3D survey area are unlikely to offer suitable habitat for coelacanths.

140.18. Furthermore, coelacanths have an oil-filled gas bladder, which together with the lipid-filled body provides buoyancy and enables the animal to undertake considerable vertical movement in the water column. The lack of an air-filled swim-bladder and

sinuses suggests that coelacanths, like sharks and large pelagic species, may be less sensitive to anthropogenic sounds.

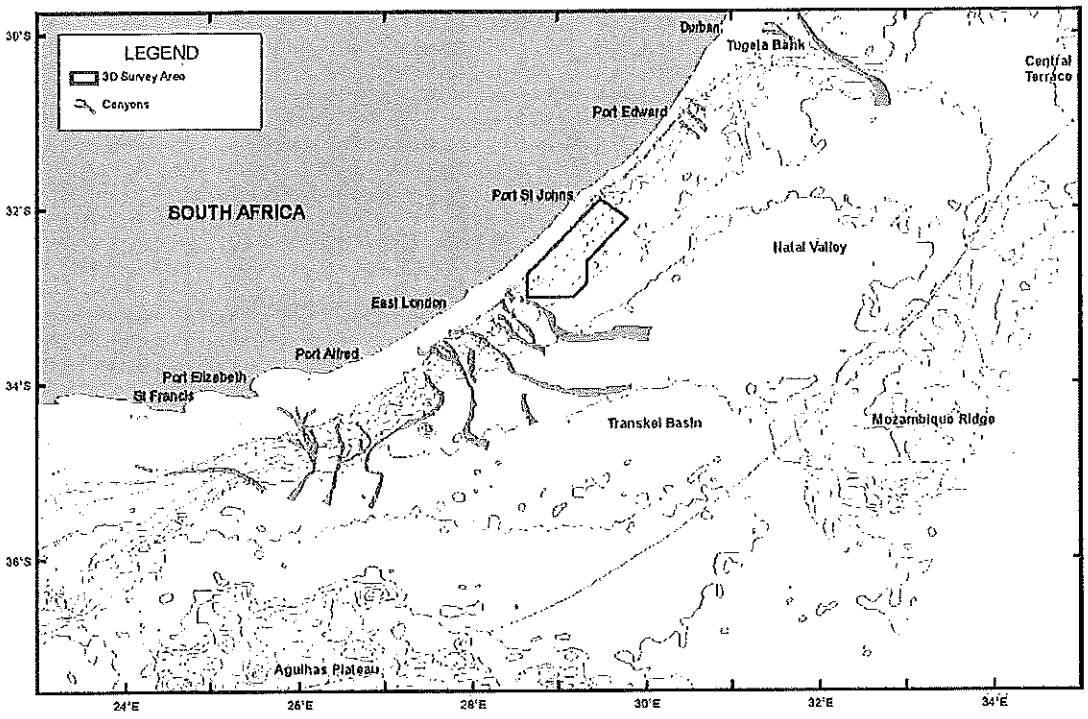


Figure 1: The 3D Survey Area (red polygon) off the Southeast coast of South Africa. Bathymetry, bathymetric features and submarine canyons and feeder-valleys (blue shading) (Sink et al. 2012) are also shown.

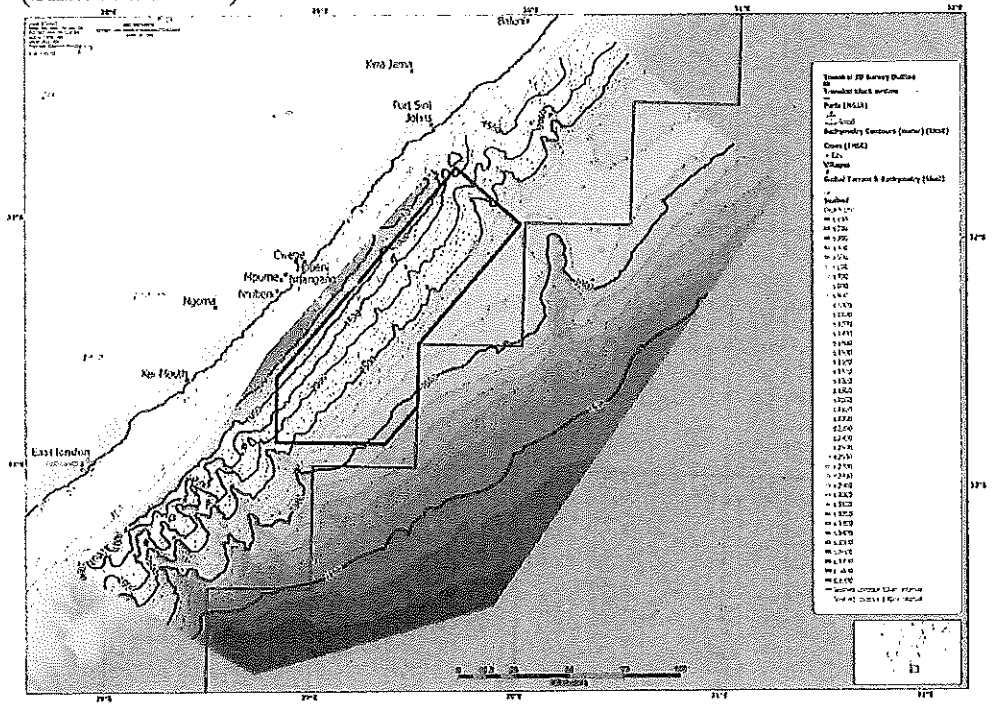


Figure 2: Detailed bathymetry of the 3D Survey Area (black polygon) showing locations of prominent canyons to the southwest and northeast of the survey area but limited canyons within the survey area. The bathymetry is generated from the interpretation of the seabed from a Multi-

Client 2D seismic dataset. The spacing between the original 2D seismic lines is 5km. The interpretation is gridded to generate the bathymetry map.

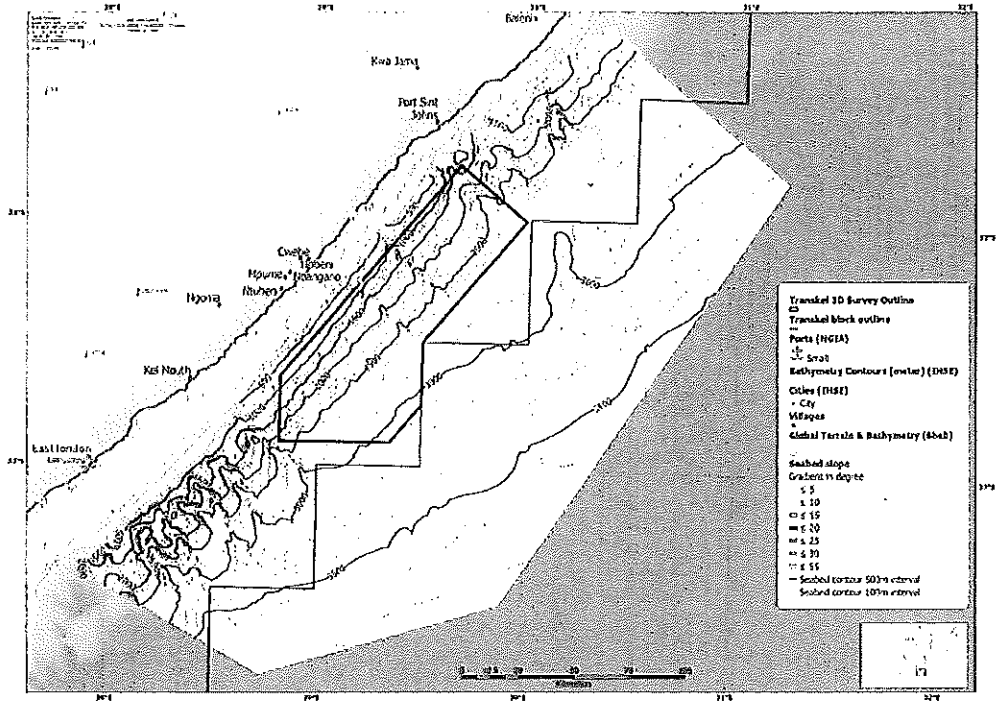


Figure 3: Bathymetry of the 3D Survey Area (black polygon) showing gradient of the canyons within the project area. The slope gradient is derived from the bathymetry map in Figure 2.

M.M

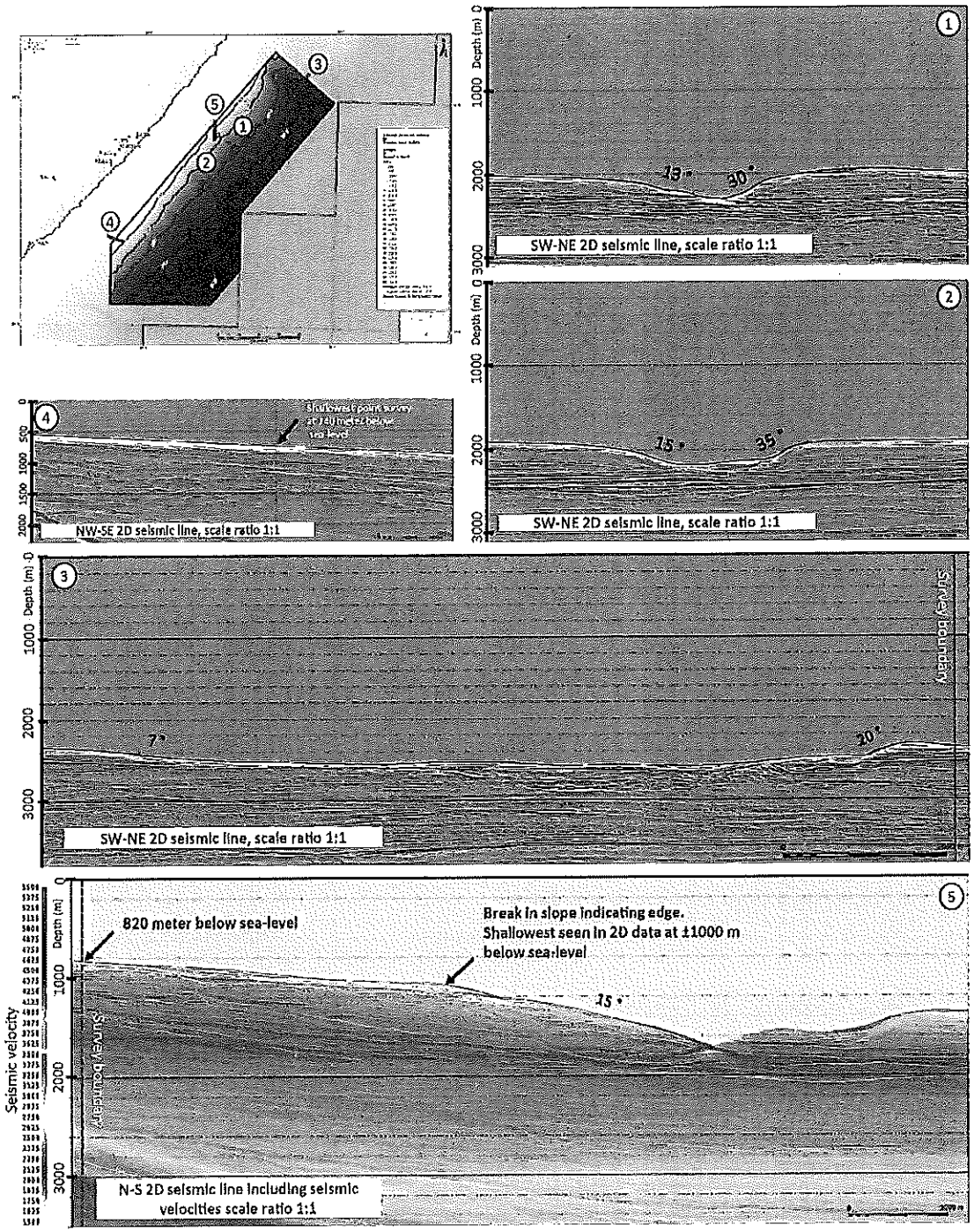
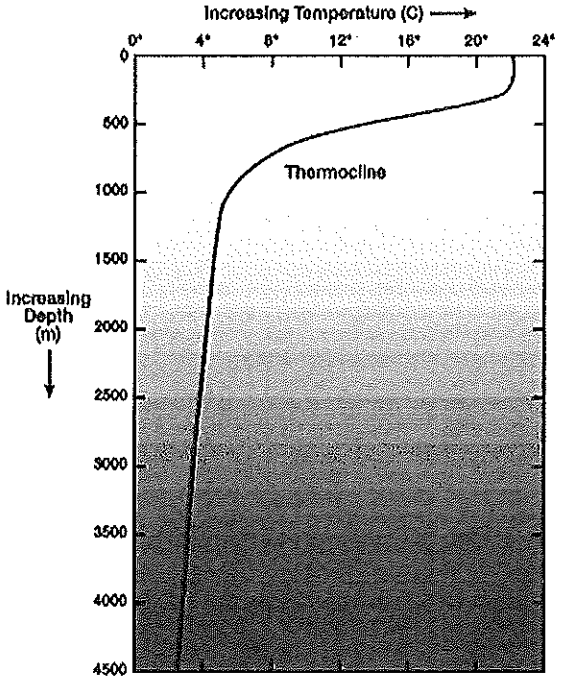


Figure showing 2D seismic data in depth (meter). Location of the 2D is indicated in the top left figure. The horizontal : vertical scale ratio is 1:1. The picture on the bottom right provides the location of the available 2D seismic data set. The black outline show the 3D survey boundary.

Figure 4: See description in figure.



140.19. Figure 5: Typical temperature gradient (thermocline) for ocean waters (The Ocean & Temperature ~ MarineBio Conservation Society). It can be observed that at a water depth of 700 metres, the typical temperature is around 8 degrees Celsius. This depends on the surface temperature but the temperatures at 700 metres are not expected to be higher than 10 degrees Celsius.

141. <u>The evidence of Dr Winkler</u>:

141.1. Dr Winkler is an inshore fisheries expert with expertise in fish behaviour and life-history assessment.

141.2. The bulk of his evidence has already been addressed above in the discussion of the potential impact of the survey on fish. I avoid a repetition of that discussion here.

141.3. I wish only to note that there have been no conclusive studies on the effects of seismic surveys on fish availability i.e. no demonstration of direct cause and effect. Catch Rate information is available through the scientific working groups at the

Department of Environment, Fisheries and Forestry (DEFF) for all the main commercial stocks and DEFF produce a useful annual State of Stocks report. In recent years there have also been some studies on the impacts of seismic surveys on plankton (mostly zooplankton), which have been discussed above. While there is a very localised impact (within meters of the airguns), extrapolation of these impacts to the broader ecosystem is tenuous and needs to consider scale (such as to the broader ecosystem) as well as seasonal and local effects as might be expected with seasonal upwelling events.

Conclusion

142. In summary, Shell asserts that it is acting lawfully, responsibly and ethically in conducting the survey in a manner that will cause no adverse harm to marine life, and that there is no basis to interdict it.

143. The Applicants have failed to establish any harm, let alone imminent irreparable harm, that will occur should the interdict not be granted.

144. The Vessel is currently on site conducting seismic operations. Therefore, to grant an interdict at this late stage would cause serious and irreparable harm to the interests of Shell and its partners.

145. All of this could have been avoided had the Applicants acted timeously to challenge the authorisation of the EMPr. So even if the Applicants had prospects of success in Part B of their application, which is denied, the balance of convenience <u>still</u> favours the respondents because of the undue delay on the part of the Applicants. Shell has, for a considerable length of time, acted under the understanding that it held valid authorisations which are valid and has been confirmed by both the DMRE and the DEFF. To wait until the day of the

commencement of the seismic survey to launch this application is simply unacceptable in this context.

146. Moreover, there are broader interests at stake in this application. South Africa is currently highly reliant on energy imports for some of its energy needs. Should commercially viable resources be found offshore, this could significantly contribute to South Africa's energy security and government's economic development programmes, whilst supporting local content development. If Shell is able to find domestic offshore gas, this could play a key part in diversifying South Africa's energy portfolio, presently heavily reliant on imports and coal for electricity generation. Gas is also a strategic bridge to low carbon emission targets.

147. For all of these reasons, the balance favours *not* granting the relief at this juncture.

148. I now turn to address the Founding Affidavit *ad seriatim*. Any allegation not specifically addressed should be taken to be denied.

AD PARAGRAPH RESPONSE

Ad paras 1-7

149. Shell notes the contents of these paragraphs.

Ad para 8

150. Shell notes the provisions of section 24 of the Constitution.

Ad paras 9-11

151. Shell denies the provisions of these paragraphs, and in particular the bold and exaggerated allegations of the Applicants regarding the conduct of the survey, using emotive language such as "*blast our seas*". This phrase, and other phrases repeated

throughout the affidavit, are incorrect and are a misleading characterisation of the activities being conducted by the Respondents. I have explained above that underwater decibels cannot be compared to land decibels.

152. Shell asserts, for the reasons set out above, that it has complied with all the statutory and regulatory requirements in relation to the survey.

Ad para 12

153. Shell denies the contents of this paragraph.

154. The allegation that the right was granted "*without any meaningful community involvement*" is simply false. I have dealt above with the extensive EMPr consultation process and the consultation which took place prior to the granting of the right upon which Shell relies.

Ad para 13

155. Shell denies the contents of this paragraph.

156. The allegation that the survey is "*literally criminal*" is defamatory and incorrect. I refer to what has been stated above regarding the lawfulness of Shell's conduct. As explained, this will be addressed more fully in argument.

Ad paras 14-31

157. Shell notes the contents of these paragraphs.

158. Paragraph 21 of the Founding Affidavit makes it clear that the Seventh Applicant was only incorporated in 2019 and thus after the EMPr consultative process had concluded and after the EMPr was approved.

Ad paras 32-34

159. I deny the contents of these paragraphs, and specifically deny that the EMPr does not deal with the communities on the Wild Coast, or their heritage.

159.1. The EMPr at page 103 (para 3.6.4) provides the EAP's assessment on subsistence fishers;

159.2. the EAP's assessment of heritage is contained in the EMPr pages 8 and 117;

159.3. The EMPr consultation process has been summarised above. Pursuant to this process, no one was precluded from registering as an I&AP pursuant to the newspaper advertisements nor was anyone precluded from attending any one of the three group meetings held in an open house format as part the public consultation process.

160. I have dealt with Mr Stephenson's mandate above and do not repeat those submissions here.

Ad para 35-51

161. I note the contents of these paragraphs.

Ad para 52

162. I deny the contents of this paragraph. The impact of the *Thabametsi* judgment is a matter for legal argument. For present purposes, it is sufficient to note that, in the *Thabametsi* case, the climate change impacts of the construction of a proposed coal-fired power station had not been considered nor had such information been placed before the competent authority. There are no climate change impacts to assess for a seismic vessel any more than there would be for a fishing or commercial vessel. Whilst outside of the scope of this project, a climate change impact assessment associated with short-term exploration

drilling activities is not comparable to a climate change impact assessment of a coal-fired power station. In the event of the latter the assessment in essence entails assessment of the GHG emissions over the lifetime of the project namely, construction, operation and decommissioning activities associated with the coal-fired power station.

163. The allegation that a climate change impact assessment must be conducted before the seismic surveys is incorrect: if any climate change impact assessment is to be conducted (and for the reasons given above, this is denied) the proper time for such assessment (should it ultimately be required) is before any extraction occurs, which is uncertain and which may or may not happen following the results of such surveys.

Ad para 53

164. I note the contents of this paragraph.

Ad para 54

165. I deny the content of this paragraph. The EMPr consultation process and the authority of Mr Stephenson is summarised above. No one was precluded from registering as an I&AP pursuant to the newspaper advertisements nor was anyone precluded from attending any one of the three group meetings held in an "*open house*" format as part the public consultation process.

Ad para 55

166. I refer to what I have said in paragraph 74 above.

167. I note the confirmatory affidavit of Princess Wezizwe Feziwe Sigcau which has been annexed to the founding papers. It is impossible for me (or for this Court, frankly) to resolve a dispute of fact which entails a detailed narrative of events which took place in 2013 (as

explained above) and a single-sentence denial of an element of that narrative seven years later. It is, in any event, submitted that this issue – i.e., whether Princess Sigcau – mandated Mr Stephenson to represent the amaMpondo is a distraction from the main issue. That is, that none of the applicants were precluded (either in their personal capacities or on behalf of their organisations) from registering as IA&Ps. If the Applicants reject "top-down" leadership, then the appropriate course of action would have been for each interested and affected person to participate in the public comment process.

Ad para 56

168. I deny that the Applicants only learned about the seismic survey when SLR's notice was placed in the media. I refer to what I have said above regarding the EMPr consultation process, and that the EMPr made plain Shell's plans to conduct the survey, as well as what the survey entailed.

Ad paras 57-61

169. I note the contents of these paragraphs.

170. In relation to the allegation at paragraph 60 that certain of the members of the community sell sea harvests to tourists, I refer this court to page 10 of the EMPr where the EAP takes this into account and concludes as follows: *In terms of socio-economic impacts the impacts associated with tourism and recreation are deemed to be low (before and after mitigation), and the impact to diving and underwater related activities is deemed to be low-medium (prior to mitigation) and low after the implementation of mitigation measures.*

Ad para 62

171. I deny the contents of this paragraph.

M.M

172. I specifically deny that there will be "*great disruptions*" as alleged. The EMPr makes it clear (at page 10) that: *No exploration activities will occur within the MPAs (i.e., Amathole, **Dwesa-Cwebe**, Hluleka and Pondoland MPAs).* Also see page 132 of EMPr: *A seismic buffer zone of 10 km from the coast, and 2km around the MPAs will be implemented, within which there will be no firing of airguns. No exploration activities will occur within the MPAs (i.e., Amathole, **Dwesa- Cwebe**, Hluleka and Pondoland MPAs).* Shell is exceeding the requirements of the EMPr in this regard by adopting a 5km buffer zone around any MPA. Furthermore, as noted above, the minimum distance between the shore and the survey is 20km.

Ad para 63

173. I have read the affidavit of Mr Mhlangala. I have the following comments:

173.1. I have no knowledge of what Mr Mhlangala says about the circumstances in which he came to know about the plans to conduct the seismic survey. I can only repeat what I have said above about the capacity of any of the individual applicants to register as an IA&P, both in respect of the 2013 application and the 2020 audit.

173.2. I wish to explain what process was followed when it comes to public comment, both in 2013 and in 2020. In 2013, there were two forms of notifications to the public of the intention to apply for the exploration right. First, there was notification by the EAP to relevant stakeholders identified by the EAP. Secondly, there were public notices placed on 22 March 2013 in four newspapers: the Times, Die Burger, The Herald and the Daily Dispatch. This has been described in paragraph 72 above.

173.3. There was then the consultation process conducted in 2020. This is what I have described in paragraph 88 above.

173.4. It is simply impossible for an entity conducting a public consultation process to reach, individually, each and every person who might have an interest in the subject-matter of the consultation process. It is for this very reason that our law has developed processes, such as the publication of information in newspapers, to inform the general public about proposed action which may affect their interests. As shown above, the consultation process (especially in 2020) exceeded the requirements of law. In these circumstances, while I cannot contradict what Mr Mhlangala has said about when he came to know about the proposed survey, I submit that a proper public consultation process was followed.

173.5. Mr Mhlangala refers to Shell's affidavit in the BDSA application, in which I explained the consultation that was conducted with fisheries and tourism/recreational operators. These 7 notifications had **nothing to** do with the I&AP notifications that were sent out to hundreds of registered I&APs who did receive the notifications and were consulted. There is a further specific requirement in the EMPr to consult with relevant fisheries who may be impacted as a result of the survey, ahead of the survey taking place. Accordingly, *in addition* to the I&AP notices referred to above, the fisheries specialist consultant prepared what is referred to as a "*Notice to Mariners*", which provides specific details on the survey and contact details for mariners to receive daily operational look ahead reports of the vessel's location, should they request this. This Notice of Mariners was sent to the 7 "fisheries" I&APs which comprise associations operative in the fishing sphere. These associations in turn represented and distributed the Notice to hundreds of relevant fisheries I&APs working offshore (aka fishing operators). Shell received confirmation from FishSA (the overarching organisation for all recognised fisheries sectors) that they had sent the information to

all of their representatives in the association i.e., all fishing sectors and associated companies.

173.6. In addition to the Notice to Mariners, focussed meetings were held telephonically with vessel operators potentially operational in the area identified by CapMarine, the fisheries specialist consultant. All responses indicate no longline activity in the survey area.

173.7. As mentioned, these consultations with fisheries took place on top of the standard notifications that were sent to the registered I&APs. It is important to make this distinction because it is respectfully submitted that the position of these fisheries is different to the position of the Applicants because these are deep-sea fishing entities. In other words, they operate much closer to the survey site than any of the Applicants or their representatives.

173.8. It is, with respect, simply not true that the seismic survey will have "irreversible, harmful and disastrous effects on the coastal environment, marine life and . . . culture, including [the deponent's] fishing practices". As explained above, this statement is made without a proper appreciation of the nature of the survey and without recognition that it will take place between 20 and 80km from the coastline.

Ad para 64-68

174. I have read the affidavit of Mr Nongcavu. I have no reason to dispute anything that he has said.

175. I would only wish to reiterate that his enjoyment of the sea – and I mean the term "enjoyment" in the wide sense to reflect all of the uses to which Mr Nongcavu put the sea,

including a relief to stress, a source of food, a site for tourism, a mystical and spiritual venue and a source of healing – will not be impacted at all by the seismic survey.

176. I also wish to reiterate that the implications of climate change – and its self-evident importance to humanity – simply do not arise in the present application. Even if Mr Nongcavu is correct that he and his community have felt the effects of climate change (and this is a technical question, requiring expert evidence), there is nothing about the survey which could possibly implicate climate change at all.

177. The allegation in paragraph 21 of Mr Nongcavu's affidavit, serves, with respect, to demonstrate precisely why Shell should succeed in its argument that the interim interdict application should be dismissed. As Mr Nongcavu has explained, the boat (which he says was from China and which I am not in a position to dispute) docked near the shores where they fish (900m) and the sound from the boat caused them to catch no fish for the two days that they were there. This correlates precisely with what I have said above – fish do relocate in the presence of noise but this relocation is temporary and relates also to the proximity between the site of the noise and the location of the fish. Also as shown above, it is not surprising that fish would relocate from a noise located less than 900m away from them. But this is a far cry from the survey site, which is 20km from the shoreline, and not 900m. I have explained in detail above the effect of noise underwater.

178. I have addressed above the irrelevance of concerns about oil spillage to the present proceedings. I have also addressed the issue of consultation. I note that Mr Nongcavu admits that he became aware of Shell's right in April 2021. As shown above, Shell only acquired the right to conduct the survey in August 2021. It would have alleviated much of Shell's prejudice if all interested parties (across both the present application and the BDSA application) had challenged the rights timeously. I appreciate that the applicants in the

present matter have deliberately avoided bringing a review in Part B (unlike the BDSA applicants, whose urgent application was premised on their intention to bring a review in due course) in order to avoid arguments relating to delay. But the fact remains that Shell assumed, when acquiring the right, that it was valid and enforceable (given that it had not been challenged since 2013).

Ad para 69-73

179. I have addressed the factual matters relevant to the position of the 5th and 6th Applicants above. I do not wish to repeat that discussion here. These paragraphs are denied to the extent that they are inconsistent with what I have said above.

180. The contents of paragraph 72 are specifically denied. I refer what I have said above regarding the EMPr approval process.

Ad para 74-78

181. I note the contents of these paragraphs.

182. I note too that the community members appear disgruntled at "*government's disregard for the rights of rural communities*" and the Applicants' displeasure at "*development projects*" in the area. I deny that this has any relevance to the current matter.

Ad paras 79-82

183. I have addressed the factual matters relevant to the position of the 7th Applicant above. I do not wish to repeat that discussion here. These paragraphs are denied to the extent that they are inconsistent with what I have said above.

Ad para 83-91

184. I note the contents of these paragraphs.

Ad para 92

185. It is denied that these considerations had to be taken into account at the survey phase, for the reasons given above.

Ad para 93

186. I deny the contents of this paragraph, which falls outside the ambit of this application. For present purposes, it suffices to say that the Applicants misrepresent the findings of the International Energy Association and accordingly this paragraph should not be considered. It is, in any event, reiterated that if there is an objection to investment in oil and gas projects, this needs to be addressed at the level of government policy and, at the very least, is an irrelevant consideration when it comes to this phase of the process.

Ad para 94-98

187. I have set out in detail what a seismic survey entails above. I deny these paragraphs to the extent that they are inconsistent with what I have set out above.

Ad paras 99-102

188. I deny the contents of these paragraphs, which relate to the merits of part B.

Ad para 103

189. I deny the contents of this paragraph. I have addressed the position of invertebrates above.

Ad para 104

190. I deny the contents of these paragraphs, which relate to the merits of part B. I specifically deny that the EMPr does not propose any mitigation to deal with the impact of fish. I refer in this regard to pages 142 and 143 of EMPr, where the EAP deals with

mitigation to address impact on breeding populations and deems the residual impact as negligible post implementation of the mitigation measures.

Ad para 105

191. I note the contents of this paragraph.

Ad paras 106-107

192. I deny the contents of these paragraphs, which relate to the merits of part B. I specifically deny that the EMPr does not propose any mitigation to deal with the impact of the survey on marine mammals. I refer in this regard to page 178 of EMPr, where the EAP deals specifically with mitigation of impacts on cetaceans.

Ad paras 108-110

193. These paragraphs are denied for the reasons given above.

194. I repeat what I have said in paragraph 115 to 121 above.

Ad paras 111-124

195. These paragraphs are noted. I have no knowledge of the preparatory steps taken by the applicants in preparing to launch this litigation, but I reiterate that Shell contends that they delayed too long before launching this application, to the prejudice of Shell.

196. With reference to paragraphs 114 to 116 of the founding affidavit, I refer to what I said above in paragraph 124 in relation to the renewal of ER 252. It was indeed granted in August 2021.

Ad para 125

197. I confirm that Shell has an exploration right in terms of the MPRDA together with an approved environmental management programme in terms of that same Act. The EMPr has already been annexed above.

Ad para 126

198. I deny the contents of this paragraph and refer to what I have stated above.

Ad para 127-144

199. These paragraphs engage legal argument, which will be addressed fully in the heads of argument filed by Shell and at the hearing of this matter.

200. I note that on 26 August 2021, the Notarial Deed of the Renewed Exploration Right was executed. I annex the document as "**HM12**" here. The Renewed Exploration Right authorises the conducting of the seismic survey in express terms (see the approved Exploration Work Programme, which is Annexure B to the document). Shell therefore has a right to conduct the seismic survey, which is inconsistent with the interdictory relief sought by the Applicants in both Part A and Part B of their notice of motion. This will be addressed further in argument.

Ad para 145

201. I deny that the Applicants have made out a case for the relief which they seek, for the reasons given above and for reasons to be explained fully in argument.

Ad paras 146-153

202. I deny that the Applicants have established any legally cognisable right that would justify the granting of an interdict against the survey.

Ad paras 154-158

203. I deny that the Applicants have established any irreparable harm that will occur should the interdict not be granted by this honourable Court.

Ad paras 159-168

204. I deny that the balance of convenience favours granting the interdict. As Govindjee AJ held in the previous application in relation to which judgment was handed down on 3 December 2021, the balance of convenience favours the dismissal of the application.

Ad paras 169-172

205. I deny that the Applicants have no alternative remedy.

206. Section 90, read with section 47, of the MPRDA provides the Applicants with a remedy in circumstances where they believe that the conducting of an activity (such as, in this case, the conducting of a seismic survey) contravenes the Act. They could have applied to the Minister for the suspension or cancellation of the right. Crucially, the power of the Minister to do so does not only apply in cases where there is some or other legal defect in the right itself, or because the holder is breaching a term of the right itself. It also applies in cases where it is alleged that the holder is conducting exploration activities in contravention of the Act. That is precisely the Applicants' case here.

207. It will accordingly be argued at the hearing of this matter that the Applicants have not made out a case for interim or final relief because, on either formulation, they cannot be granted an interdict if they have alternative remedies available to them.

Ad paras 173-177

208. I note allegations regarding the Biowatch principle.

209. I am advised that the Biowatch principle does not apply uniformly to applications against private parties (such as Shell in this case) and that there are several recent decisions of our appellate courts (to be addressed fully in argument) in which our Courts have refused to deny private respondents (such as Shell) their costs in the event of them being successful.

210. Shell accepts that some of the individual applicants in this matter are almost certainly not people with deep financial resources (and I make this statement with specific reference to paragraph 174 of the founding affidavit). However, this application is, for the reasons given above, part of a well-coordinated and abusive strategy which essentially amounts to forum shopping (because Shell had a right for the question of the interim halting of the survey to be determined once and for all by Govindjee AJ) – clearly orchestrated by the NGO Applicants and their attorneys. I am advised that, in those circumstances, Biowatch does not apply. Shell has no intention to pursue individual, indigent applicants for the costs of this application. But, in the event of it being dismissed, Shell will argue that a costs order against the juristic applicants (i.e., the first, third and seventh applicants) should at least me made.

211. Shell's legal representatives argued, in the case management meeting held on 9 December 2021, that the papers in this matter have become unmanageable and that the proper ventilation of this application (even Part A) required a timetable leading to the hearing of this application in early January. Shell would have been (and in principle still is) amenable to settling the question of costs – i.e., agreeing not to pursue a costs order in the event of it being successful – against an agreement to have this matter determined in a more orderly fashion. This is particularly important because the Applicants appear to have misunderstood the facts. Their counsel argued in the case management meeting that, if this application were to be argued in early January, Shell would use that as an excuse to argue

that no interim relief could be granted because, by then, the survey would be too far advanced. In other words, he anticipated that Shell would argue, as part of its arguments on the balance of convenience, that because the survey would, by then, have been conducted for a period of roughly a month, it would be too late to stop it because of the undue prejudice to Shell that it would cause. However, as I have explained above, the JV requires the full survey to be conducted so that the data may be assessed. A survey of three to four weeks cannot serve as a basis to acquire meaningful data. So, this Court could as easily interdict the survey in two weeks from now, as it could now. The insistence of the Applicants for this matter to be heard on 17 December 2021, in circumstances where Shell clearly has had an inadequate opportunity to prepare this affidavit (and argument – given that it will have one day to finalise its heads in the light of the replying affidavit and will not have sight of the Applicants' heads of argument before filing its heads of argument), is clearly designed to obtain a strategic advantage. In those circumstances, the application cannot be said to be in good faith, and Biowatch does not therefore apply.

Ad para 178

212. I deny that the matter is urgent, or that the seismic survey is harmful or plainly unlawful as alleged.

213. I refer again to what I have said above regarding the EMPr consultation process and the fact that the Applicants and their communities were not denied or precluded from registering as I&APs pursuant to the newspaper advertisements in 2013 nor where they precluded from attending any one of the three group meetings held in an open house format as part of the then public consultation process.

Ad para 179

214. I deny the contents of this paragraph, having due regard to the public participation process set out above.

Ad paras 180 to 183

215. I deny the contents of these paragraphs for the reasons give above.

216. Paragraph 182 sums up the abusive approach by the Applicants to this matter.

217. If the crisp issue is a matter of law (as summarised in the paragraph under reply), then it has to be asked why the Applicants have brought a Part A/Part B application in which the main relief sought (i.e., an interdict) is identical. It also has to be asked why they insisted on the filing of a further 200 pages of "expert evidence", six days after launching this application, which is all relevant to issues such as balance of convenience and irreparable harm. The answer can only be that they wished to avail themselves of the procedural advantages of seeking interim relief in circumstances where, given that their cause of action turns on a "crisp" issue of interpretation, it would have been more appropriate from them to file a 20-page application seeking final relief on an urgent basis. Had they done so, the entire flavour of this application would have been different. The papers would have been a quarter of the length, the issues to be determined would be narrow and the Court and the parties would have had a reasonable opportunity to prepare argument on the narrow issue.

218. The Applicants cannot have it both ways. They cannot say that this matter raises a crisp legal issue (as a mechanism, as they do in paragraphs 180 to 183, to try to minimise the prejudice caused by their handling of this application), on the one hand, and then run this case on the basis that, because they seek interim relief, they are entitled to file 500 pages of founding papers, rich with "expert evidence", on the other hand.

CONCLUSION

219. In the premises, the Applicants have failed to make out a case for the relief sought in the Notice of Motion and the application falls either to be struck from the roll with costs, including the costs of two counsel; alternatively be dismissed with costs, including the costs of two counsel.

DEPONENT

Thus signed and sworn to at Bryanston on 14 December 2021, the deponent having declared that he knows and understands the contents of this affidavit, that he has no objection to taking the oath and that he regards the oath as binding on his conscience.

COMMISSIONER OF OATHS

FULL NAME:

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