



ENVIRONMENT PLAN

Beehive-1 Exploration Drilling: Public Comment Report

6 December 2023

Rev 0



1. Introduction

In accordance with Regulation 9AB of the OPGGS(E), the Beehive-1 Drilling environment Plan (EP) was published on NOPSEMA's website, along with an invitation for public comment on the plan, for 30 days from the 12th of October 2023; closing at midnight on the 13th of November 2023.

2. Titleholder Contact Details

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3. Public Comments

The comments and EOG's responses are provided in Table 1.

Table 1 Summary of Comments and EOG's Responses

#	Comments received (in general terms)	Titleholder response
1	Matter: Unacceptable impacts to the environment	
1a	<p>Marine Parks</p> <p>Claim that Marine Parks of immense conservation, recreation, and tourism value are at risk, particularly the following key environmental receptors:</p> <ul style="list-style-type: none"> • The Joseph Bonaparte Gulf Australian Marine Park (AMP); • The North Kimberley Marine Park; • The Ord River Floodplain Ramsar site; • King Shoals Sanctuary Zone; and • Cape Domett Special Purpose Zone. <p>Request that the risks to marine life from the occurrence of an oil spill be thoroughly considered by NOPSEMA.</p> <p>Claim that the Proposal has the potential to produce indirect and direct impacts to critical ecosystems through noise and lighting emissions, ship movements, discharge of drill cuttings and muds, discharge of cement, and hydrocarbon spills. These impacts could affect critical ecosystems such as coral reefs, seagrass communities, mangroves, migratory birds, sea turtles, dugongs, Australian snubfin dolphins, diverse finfish communities, all reliant on a healthy marine ecosystem.</p> <p>Request that the location of the Proposal be changed to avoid such severe impacts to highly valued and biologically diverse Marine Parks and receptors.</p>	<p>EOG reviewed the information provided by the commenter and Appendix 11 of the EP (Description of the Existing Environment). The following management plans were also reviewed:</p> <ul style="list-style-type: none"> • Australian Marine Park North Marine Parks Network Management Plan 2018 (Director of National Parks, 2018) (includes the Joseph Bonaparte Gulf AMP). • Ord River and Parry Lagoons nature reserves management plan 77 2012 (Department of Environment and Conservation 2012) (includes the Ord River Floodplain Ramsar Site). • North Kimberley Marine Park Joint Management Plan 2016 Uunguu, Balanggaarra, Miriuwung Gajerrong, and Wilinggin management areas management plan 89 (WA Department of Parks and Wildlife, 2016) (includes the King Shoals Sanctuary Zone and the Cape Domett Special Purpose Zone). <p>These management plans were referenced in Appendix 11 of the EP in <u>sections 5.4.1, 5.4.4 and 5.4.9</u>, respectively. No changes have been made to Appendix 11 as a result of these comments because a review of Appendix 11 by EOG found that the identified ecological and cultural receptors within the spill EMBA had been adequately described.</p> <p>The impacts and risks that may influence water and sediment quality in the North Kimberley Marine Park were reviewed (Chapters 7 and 8 of the EP). The risks that could have an impact relate to unplanned events, these being oil spills and spill response activities.</p>

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		<p>Appendix 13 (Assessment of the risk of a LoWC on the management actions of protected areas) provides detail on the key environmental receptors' probability of exposure to an oil spill (using the stochastic modelling results). Appendix 13 also includes an assessment of EOG's compliance with these management plans, and provides information on the actions that would be taken in the event of a spill.</p> <p><u>Section 8.7 of the EP (RISK 7 – Loss of Well Containment and Major Oil Spill)</u> provides a clear explanation of how the modelling is interpreted for the risk assessment. The risk assessment methodology is described in detail in Chapter 6 of the EP.</p> <p><u>Section 8.7.1</u> outlines how the risk assessment is based on the consequences arising from a worst-case spill scenario, where oil freely flows for 77 days (i.e., until a relief well is drilled and the well killed). This scenario assumes multiple failures of control systems (as described in Sections 8.7.6) and that no spill response activities are implemented (as described in Section 8.8 of the EP and in detail in the OPEP).</p> <p><u>Section 8.7.4</u> explains that the modelling (<u>Appendix 12</u>) for these worst-case scenarios is based on stochastic modelling whereby 100 individual spill scenarios (for each season) are combined to provide an overall area, known as the environment that may be affected (EMBA), where impacts may potentially occur in the event of any particular oil spill. It should be noted that no individual spill would cover the entire EMBA.</p> <p>Deterministic modelling was used to track individual scenarios to give an indication of what may actually occur in the event of an oil spill. Figure 8.11 of the EP shows the individual scenario that resulted in the largest volume of oil ashore. For oil spill planning purposes (see the OPEP and OSMIP), the cumulative, stochastic area (EMBA) is used to determine the overall area for</p>

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		<p>which oil spill response planning is required, while the deterministic trajectories are used to determine worst-case resourcing requirements.</p> <p><u>Section 8.7.1</u> presents data showing that the frequency of a blowout was 3.1×10^{-4} (0.00031, or 0.031%) per exploration well drilled between 1980 and 2004 (OGP, 2010 in DNV, 2011). More recent data will be included in a revision of the EP, which indicates that the frequency of a blowout for deep, normal oil exploration wells drilled using the North Sea standard from 1980 to 2014 is 1.2×10^{-4} (0.00012, or 0.012%) (IOGP, 2019), which is less than the frequency currently provided in the EP. The inherent likelihood of a blowout occurring was assessed as ‘rare’ in Section 8.7.6. The likelihood was further reduced to ‘remote’ with additional controls and mitigation measures for well control incorporated into the activity, including learnings from the Macondo and Montara blowouts.</p> <p>The evaluation of environmental risks (Section 8.7.5 of the EP) was reviewed. The existing evaluations were found to adequately identify and assess potential impacts on significant environmental receptors.</p> <p>The risk assessment (<u>Section 8.7.6</u>) was reviewed. The environmental performance outcomes (EPOs), environmental performance standards (EPS’) and their measurement criteria were reviewed. No additional controls were considered to be practicable. With the proposed controls implemented, the risk was found to be reduced to as low as reasonably practicable (ALARP).</p> <p>In considering whether the risk is acceptable, EOG considered a number of factors, including the concerns raised by this commenter. With the additional responses detailed in the Oil Pollution Emergency Plan (OPEP) and the Operational and Scientific Monitoring Implementation Plan (OSMIP), EOG considered the following in evaluating the risk of a spill resulting from a LoWC:</p> <ul style="list-style-type: none"> • The residual risk ratings are as low as can be achieved;

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		<ul style="list-style-type: none"> • The activity will be conducted in accordance with the company’s Safety and Environmental Policy which will ensure EPOs and EPS’ are achieved; • An Implementation Strategy (described in Chapter 9) is in place to ensure the EPOs and EPS’ are achieved. • Input from engagement with relevant persons has been considered and incorporated into the risk assessment; • Relevant legislation and industry best practice has been identified and will be complied with; • In the unlikely event of a spill, no long-term or significant impacts on MNES are predicted; • In the unlikely event of a spill, the spill can be managed in a manner that is not inconsistent with: <ul style="list-style-type: none"> ○ the aims of recovery plans/conservation plans/advice that are in force for EPBC Act-listed threatened and migratory species; ○ the aims of relevant protected area management plans; and ○ ESD principles. <p>The risks from spill response activities (Chapter 9 of the EP) were reviewed. Potential environmental impacts are identified and assessed. The controls were found to reduce the risk to ALARP and appropriate for the nature and scale of the activity. The risk was considered acceptable. No changes were made.</p> <p>In regard to the request that the location of the Proposal be changed, it is not possible to change the location of the Proposal because the location of the geological formation determines where it can be drilled from. Moving the location of the drill site to another area far from the potential reservoir makes achieving the objectives of the well impossible to meet and means that the exploration obligations within the title issued by the government will not be achieved.</p>

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1b	<p>Scope 3 emissions</p> <p>Objection was made that the full extent of environmental risks from the activity have not been assessed and that an estimate of Scope 3 emissions and their cumulative impacts should be provided for evaluation.</p>	<p>Scope 3 emissions are not relevant for the assessment of the activity as it is an exploration well that will not be producing hydrocarbons for combustible use by EOG or any third parties. Further, the exploration permit EOG is operating under does not allow for the commercial extraction of resources. Therefore, only Scope 1 emissions are considered in evaluating the activity, as noted in Section 7.4.1 (IMPACT 4 – Routine Emissions – Atmospheric) of the EP. Drilling is necessary to determine whether there are recoverable hydrocarbons in the part of the reservoir to be drilled and any future possibility of production.</p> <p>Section 7.4 (IMPACT 4 – Routine Emissions – Atmospheric) was reviewed. Realistic estimates of carbon dioxide equivalent (CO₂-e) emissions are provided. Potential environmental impacts are identified and assessed. The controls were found to reduce the risk to ALARP and are appropriate for the nature and scale of the activity. The risk was considered acceptable. No changes were made.</p>