#	Comments received (in general terms)	Titleholder response
3	***Matter:*** *Fundamental issues* Claim considers that the activity, and therefore the DEDEP, is inconsistent with these key principles (outlined below). ***Claim:*** Refer below	Santos' Environmental Hazard Identification and Assessment Guideline (EA-91-IG-00004) includes consideration of the principles of Ecologically Sustainable Development (ESD). For each of the identified aspects in Sections 6 and 7, Santos has considered whether the associated risks and impacts are consistent with the principles of ESD. No changes have been made to the EP regarding this matter.
3.1	***Matter:*** *Precautionary Principle* Claim that this activity is fundamentally inconsistent with the principles of Ecologically Sustainable Development (**ESD**) including the Precautionary Principle ***Claim:*** The DEDEP does not identify any climate change risks associated with the activities of exploring and developing new fossil fuel resources. That is, the DEDEP fails to identify that there is a threat of serious and irreversible damage associated with anthropogenic climate change	Santos' Environmental Hazard Identification and Assessment Guideline (EA-91-IG-00004) includes consideration of the principles of Ecologically Sustainable Development (ESD). Santos clarifies that this EP is only for an exploration drilling activity and not for the development of fossil fuels which would be subject to separate approvals. For each of the identified aspects in Sections 6 and 7, Santos has considered whether the associated risks and impacts are consistent with the principles of ESD. No changes have been made to the EP regarding this matter.
3.2	***Matter:*** *Intergenerational Equity Principle* Claim that development of petroleum and gas resources is fundamentally inconsistent with long-term health, diversity and productivity of the environment from a climate change perspective. ***Claim:*** The DEDEP cannot be made consistent with the aim of maintaining and enhancing the health, diversity and productivity of the environment for the benefit of future generations, as required by the Intergenerational Equity Principle Seismic exploration as proposed in the DEDEP is a necessary precursor to the extraction and burning of a new fossil fuel resource. Claim that this fundamentally runs counter to international climate stabilisation efforts and the Paris Agreement temperature limits	Santos' Environmental Hazard Identification and Assessment Guideline (EA-91-IG-00004) includes consideration of the principles of Ecologically Sustainable Development (ESD). For each of the identified aspects in Sections 6 and 7, Santos has considered whether the associated risks and impacts are consistent with the principles of ESD. For clarity – whilst the activity includes Vertical Seismic profiling (VSP), Santos confirms that no seismic vessel exploration is part of the scope of this exploration drilling EP. No changes have been made to the EP regarding this matter.

#	Comments received (in general terms)	Titleholder response
3.3	***Matter:*** *Conservation Principle* Claim that development of petroleum and gas resources is fundamentally inconsistent with long-term health, diversity and productivity of the environment from a climate change perspective. *Claim:* The DEDEP does not achieve the "fundamental" aims of the Conservation Principle.	Santos' Environmental Hazard Identification and Assessment Guideline (EA-91-IG-00004) includes consideration of the principles of Ecologically Sustainable Development (ESD). For each of the identified aspects in Sections 6 and 7, Santos has considered whether the associated risks and impacts are consistent with the principles of ESD. No changes have been made to the EP regarding this matter.
4.1	***Matter:*** *EP is non-compliant with key content requirements for activity description* ***Claim:*** That Santos must revise Section 2 of the DEDEP to ensure that it complies with this requirement before the DEDEP can be considered for acceptance by NOPSEMA, by including a detailed description of the projected future of the oil field to provide context to the current environment plan as set out in the Guidance Note.	Santos understands the requirements of Environment plan content requirement guidance note (2020), and submits that the activity description is adequately and appropriately described (the drilling of an exploration well) for the petroleum activity to be assessed. Santos is unable to provide a detailed description of the "projected future of the oil field" until exploration is undertaken. Assessment of projected future of the oil field would be information provided in any future EPs for development drilling and/or operations, if the field was assessed as being commercially viable. No changes have been made to Section 2 or elsewhere within the EP regarding this matter.
4.2	***Matter:*** *Poor baseline information presented for humpback whale migration* ***Claim:*** That the Proponent has not yet demonstrated that the activity would not have an unacceptable impact on humpback whales as a result of underwater noise emissions and should be required to gather contemporary data on humpback whale population and distribution to form an acceptable information baseline for assessment	In response to the claim, Santos has reviewed the baseline data provided in the EP and the *Values and Sensitivities of the Marine and Coastal Environment* (Appendix C of the EP) relating to humpback whale migration. Additional references such as Irvine et al. (2018) have been included to provide further contemporary evidence to support the baseline description. The claim mentions Oceanwise (2020), however, Santos has been unable to identify what this citation refers to. Other references mentioned (Bejder et al 2016) have been reviewed and incorporated into the baseline descriptions (Section 3.2.4.2 and 6.4.2.2 of the EP and Section 7.1.5 of the *Values and Sensitivities of the Marine and Coastal Environment* appendix) to show there has been an increase in the humpback whale population in Western Australia. Note that the first sentence of Section 3.2.4.2 of the EP has also been updated to remove an incorrect reference to the resting on migration BIA, which is not intersected by the operational area. References

#	Comments received (in general terms)	Titleholder response
		Bejder M, Johnston D.W., Smith J, Friedlaender A, Bejder L (2016) Embracing conservation success of recovering humpback whale populations: Evaluating the case for downlisting their conservation status in Australia. Marine Policy 66 (2016) 137–141. Irvine, L.G., Thums, M., Hanson, C.E., McMahon, C.R. & Hindell, M.A. (2018) Evidence for a widely expanded humpback whale calving range along the West Australian coast. *Marine Mammal Science,* 34(2): 294-310. RPS Group (RPS), 2010. Marine Megafauna Report. Browse Marine Megafauna Study 2009. RPS Planning and Environment Pty Ltd, Perth, Western Australia. Woodside 2020. WA-49-L Gemtree Anchor Hold Testing. NOPSEMA Reference 5049. Accessed at https://info.nopsema.gov.au/activities/406/show_public
4.3	***Matter:*** *Noise emissions from operations will negatively impact humpback whale migration and may have an unacceptable high environmental impact.* ***Claim:*** That the Proponent has failed (or neglected) to review recent scientific advances in relation to the impacts of seismic and drilling noise emissions on marine megafauna, including humpback whales. That it is critical that the Proponent acknowledges the recent and highly relevant scientific literature (attached as Appendix A) and that the key recommendations of these reports are incorporated into the next revision of the DEDEP. That a key matter for NOPSEMA's assessment is impacts to humpback whale migration and that, as discussed above, the Proponent is required to demonstrate a contemporary scientific basis for its statement that these impacts will not exceed an 'acceptable level' by addressing the recommendations of Duarte et al 2021 and Cato et al 2019 that relate to noise pollution-intensive aspects of the proposed activities in the DEDEP.	Santos has recently commissioned a technical study into Underwater Noise Impacts on Marine Fauna (JASCO, 2020a). Although not publicly available, Santos has used the findings of this study to update the underwater noise emissions impact assessment section of the EP. Santos notes that, as part of the activity, Vertical Seismic profiling (VSP) is planned. However, there will be no vessel-based seismic activities occurring and hence, that does not form part of the scope of the activity as outlined in Section 2 of the EP. VSP has a much shorter transmission pathway compared with seismic surveys and air guns, therefore VSP has a smaller total volume and impact on marine fauna compared with seismic surveys (Kent et al., 2016). In order to predict the level of impact resulting from the petroleum activity, Santos has used NMFS (2014) as mentioned in the claim as a behavioural threshold. For impulsive noise, NMFS currently uses step function thresholds of 160 dB re 1 µPa SPL (unweighted) to assess and regulate noise-induced behavioural impacts for marine mammals (NOAA 2018, NOAA 2019). Because of the complexity and variability of marine mammal behavioural responses to acoustic exposure, NMFS has not yet released technical guidance on behaviour thresholds for use in calculating animal exposures (NMFS 2018), and Southall et al (2019) does not address the topic of behavioural effects at all. A US-based expert working group lead by Brandon Southall is in the process of developing an updated approach to assess noise-induced behavioural effects on marine mammals

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		based on the latest research results and risk assessment frameworks. The only alternative criteria addressing behavioural impacts for marine mammals (Germany (BMU 2013) and The Netherlands (de Jong et al. 2015)) are tailored specifically for harbour porpoises (*Phocoena phocoena*, a HF cetacean species), both promulgating a threshold level for the onset of behavioural responses of 140 dB re 1 µPa2·s SEL. (JASCO, 2020a) NMFS (2018) has been used for auditory threshold shift (TTS / PTS) in marine mammals. We note that Southall et al. (2019) published an updated set of criteria for onset of TTS and PTS in marine mammals, however the proposed thresholds and weighting functions for exposure to underwater sound do not differ in effect from those proposed by NMFS (2018). For non-impulsive noise, NMFS currently uses step function (all-or-none) threshold of 120 dB re 1 µPa SPL (unweighted) to assess and regulate noise-induced behavioural impacts for marine mammals (NOAA 2019). The 120 dB re 1 µPa threshold is associated with continuous sources and was derived based on studies examining behavioural responses to drilling and dredging (NOAA 2018), referring to Malme et al. (1983), Malme et al. (1984), and Malme et al. (1986), which were considered in Southall et al. (2007). (JASCO, 2020a) Santos has updated Section 6.4.2 of the EP to update these references, noting that there has been no subsequent change to the threshold levels used for the assessment. Santos has conducted modelling of underwater noise impacts on marine fauna from VSP, including marine mammal injury and behaviour. Modelling shows that the maximum distance to the SPL threshold of 160 dB re 1 µPa (behaviour threshold; NOAA, 2019) was 2.42 km from the centre of the VSP array (JASCO, 2020b). Modelling against the PTS and TTS thresholds (Southall et al., 2019) for low frequency cetaceans predicts the maximum distances reached are 470 m for PTS and 3.1 km for TTS. Santos has updated Section 6.4.2.2 of the EP to include the above additional underwater noise analysis conducted by Jasco (2020a; 2020b), as well as supporting literature suggested in the claim (Cato et al 2019). In response to Durate et al (2021), Santos has assessed potential cumulative effects from the activity on marine mammals from underwater noise emissions and determined that cumulative effects are not expected. References

#	Comments received (in general terms)	Titleholder response
		[BMU] Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit. 2013. Konzept für den Schutz der Schweinswale vor Schallbelastungen bei der Errichtung von Offshore-Windparks in der deutschen Nordsee (Schallschutzkonzept). (In German). 33 p. [NMFS] National Marine Fisheries Service (US). 2018. 2018 Revision to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts. US Department of Commerce, NOAA. NOAA Technical Memorandum NMFS-OPR-59. 167 p. https://www.fisheries.noaa.gov/webdam/download/75962998. [NOAA] National Oceanic and Atmospheric Administration (US). 2018. Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys off of Delaware. Federal Register 83(65): 14417-14443. https://www.federalregister.gov/d/2018-12225. [NOAA] National Oceanic and Atmospheric Administration (US). 2019. ESA Section 7 Consultation Tools for Marine Mammals on the West Coast (webpage), 27 Sep 2019. https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/esa-section-7-consultation-tools-marine-mammals-west. (Accessed 10 Mar 2020). Cato, D.H., Noad M.J., Dunlop R.A. & McCauley R.D. (2019). Project BRAHSS: behavioural response of Australian humpback whales to seismic surveys. Final report. Sterling (VA): U.S. Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2019-0002. de Jong, C.A.F., F. Heinis, and Rijkswaterstaat Underwater Sound Working. 2015. Cumulative effects of impulsive underwater sound on marine mammals. TNO Report R10335-A. JASCO (2020a). Underwater Noise Impacts on Marine Fauna: Technical Appendix. Document 02028, Version 1.1. Technical Appendix by JASCO Applied Sciences for Santos WA Energy Ltd. (unpublished) JASCO (2020b). Dorado OPP Acoustic Modelling: Assessing Marine Fauna Sound Exposures. Document 02076, Version 1.1. Technical report by JASCO Applied Sciences for Santos WA Energy Ltd. (unpublished)

#	Comments received (in general terms)	Titleholder response
		Kent, C.S., McCauley, R.D., Duncan, A., Erbe, C., Gavrilov, A., Lucke, K., and Parnum, I. (2016). Underwater Sound and Vibration from Offshore Petroleum Activities and their Potential Effects on Marine Fauna: An Australian Perspective. *Centre for Marine Science and Technology (CMST). Curtin University.* Southall, B.L., J.J. Finneran, C.J. Reichmuth, P.E. Nachtigall, D.R. Ketten, A.E. Bowles, W.T. Ellison, D.P. Nowacek, and P.L. Tyack. 2019. Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects. Aquatic Mammals 45(2): 125-232. https://doi.org/10.1578/AM.45.2.2019.125.
4.4	***Matter:*** *Noise emissions from operations will negatively impact flatback turtle biologically important areas and may have significant impact on species.* ***Claim:*** The proponent has failed to identify noise interference from seismic activities as a threatening process relevant to the EP (Table 3-8, DEDEP). The Proponent to include seismic noise as a threatening process relevant to the EP, and to develop and implement specific measures to mitigate and monitor against impacts of seismic activities on the flatback turtle, particular within and nearby to the operational area.	Santos has update Table 3-8 (Section 3.2.4.1) to identify noise emissions as a potential threat to flatback turtle. Santos notes that, although Section 6.4.2.3 of the EP already assesses impact of noise emission on marine turtles, the thresholds for impulsive noise suggested by Popper et al. (2014) shown in Table 6-13 are no longer referenced (JASCO, 2020a), and instead has been replaced by Finneran et al. (2017). Santos has updated Section 6.4.2.3 of the EP to reflect these revised thresholds and include outcomes of the VSP modelling undertaken by JASCO (2020b). Modelling of VSP underwater noise undertaken by JASCO (2020b) (unpublished) using the Finneran et al. (2017) thresholds predicts that PTS threshold is exceeded at a maximum distance of 30 m, and TTS threshold is exceeded at a maximum distance of 380 m. Behavioural response in marine turtles may occur. The Recovery Plan for Marine Turtles in Australia (Department of the Environment and Energy et al. 2017) acknowledges the 166 dB re1 µPa SPL reported by McCauley et al. (2000b) as the level that may result in a behavioural response to marine turtles. Modelling of VSP underwater noise undertaken by JASCO (2020b) using the McCauley et al. (2000b) thresholds predicts that behavioural threshold is exceeded at a maximum distance of 1.22 km. In light of these new thresholds and modelling results, Santos has reconsidered the consequence evaluation for marine turtles, and determined that no changes to the consequence level are required. References

#	Comments received (in general terms)	Titleholder response
		Bartol, S and Ketten, D.R. 2006. Turtle and tuna hearing. In: Swimmer Y, Brill R (eds) Sea turtle and pelagic fish sensory biology: Developing techniques to reduce sea turtle bycatch in longline fisheries. Technical Memorandum NMFS-PIFSC-7, National Ocean and Atmospheric Administration (NOAA), US Department of Commerce, pp 98–105. Department of the Environment and Energy, NSW Government, and Queensland Government. 2017. Recovery Plan for Marine Turtles in Australia. https://www.environment.gov.au/marine/publications/recovery-plan-marine-turtles-australia-2017. Finneran, J.J., E.E. Henderson, D.S. Houser, K. Jenkins, S. Kotecki, and J. Mulsow. 2017. Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III). Technical report by Space and Naval Warfare Systems Center Pacific (SSC Pacific). 183 p. https://apps.dtic.mil/dtic/tr/fulltext/u2/a561707.pdf. Martin, K.J., Alessi, S.C., Gaspard, J.C., Tucker, A.D.,Bauer, G.B., and Mann, D.A. 2012. Underwater hearing in the loggerhead turtle (*Caretta caretta*): a comparison of behavioral and auditory evoked potential audiograms. *Journal of Experimental Biology*, 215: 3001-3009. McCauley, R.D., J. Fewtrell, A.J. Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhitya, J. Murdoch, et al. 2000a. Marine seismic surveys: Analysis and propagation of air- gun signals; and effects of air-gun exposure on humpback whales, sea turtles, fishes and squid. Report Number R99-15. Prepared for Australian Petroleum Production Exploration Association by Centre for Maine Science and Technology, Western Australia. 198 p. https://cmst.curtin.edu.au/wp-content/uploads/sites/4/2016/05/McCauley-et-al-Seismic-effects-2000.pdf. McCauley, R.D., J. Fewtrell, A.J. Duncan, C. Jenner, M.-N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhitya, J. Murdoch, et al. 2000b. Marine seismic surveys: A study of environmental implications. Australian Petroleum Production Exploration Association (APPEA) Journal 40(1): 692-708. https://doi.org/10.1071/AJ99048. Piniak, W.E.D., Mann, D.A., Eckert, S.A., and Harms C.A. (2012) Amphibious Hearing in Sea Turtles. In: Popper A.N., Hawkins A. (eds) The Effects of Noise on Aquatic Life. Advances in Experimental Medicine and Biology, vol 730. Springer, New York, NY. https://doi.org/10.1007/978-1-4419-7311-5_18

#	Comments received (in general terms)	Titleholder response
4.5	***Matter:*** *Temporal sensitivity of dugong to noise impacts has not been addressed.* ***Claim:*** That the Proponent has not reviewed the temporal sensitivity of the dugong in the EP, in respect of breeding, calving and nursing (Table 7-17, DEDEP). At a minimum, the Proponent should address these sensitivities, including defined birthing seasons, and incorporate them into the EP to minimise the likelihood of the Proponent's activities having a disruptive or adverse impact on these key biological behaviours to ALARP. The Proponent should conduct further field-based surveys to ensure that these knowledge gaps are filled, and that seismic testing/exploratory drilling is avoided during periods of high sensitivity for dugongs, such as birthing and calving periods	Dugongs are identified in the EPBC PMST report as 'breeding known to occur within area' for the EMBA, with no presence expected in the Operational Area. As described in the Values and Sensitivities of the Marine Environmental (Appendix C to the EP), key populations of dugong along the WA coast are principally located at: Shark Bay (the largest resident population in Australia), Ningaloo Marine Park and Exmouth Gulf, the Pilbara coast and offshore areas including Montebello/ Barrow/ Lowendal Islands. These locations are all greater than 60 km from the Operational Area. PTS onset and TTS onset for sirenians provided by Southall et al. (2019) are higher than those proposed for low frequency and high frequency cetaceans (as shown in Table 6-10 and Table 6-11 in the EP), indicating that any effects would be concentrated closer to the source. Behavioural response to noise emissions by marine mammals, including sirenians, is therefore predicted to be localised (1 km from the MODU / support vessels, 2.42 km from VSP operations). Due to the water depth (approximately 63 m) and distance from the shoreline (60 km from Dampier Archipelago), dugong are not expected to be present within 2.42 km of planned activities. This is validated by the EPBC PMST search for the Operational Area (2 km) which does not list dugong. Subsequently, no impacts to dugong are expected from noise emissions. No changes to the EP have been made and no additional data collection is proposed or considered necessary. References Southall, B.L., J.J. Finneran, C.J. Reichmuth, P.E. Nachtigall, D.R. Ketten, A.E. Bowles, W.T. Ellison, D.P. Nowacek, and P.L. Tyack. 2019. Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects. Aquatic Mammals 45(2): 125-232. https://doi.org/10.1578/AM.45.2.2019.125.
4.6	***Matter:*** *Poor baseline information on benthic habitat and biodiversity of the Dampier and Montebello Australian Marine Parks.* ***Claim:*** That the DEDEP contains a critically insufficient level of information regarding the benthic habitat of the Dampier Australian Marine Park (AMP) and Montebello AMP. In particular, the DEDEP has ignored a comprehensive CSIRO study led by Senior Principal	Oil spill modelling predictions show that Montebello AMP is within the High Exposure Value Area (HEVA) and Dampier AMP is within the Moderate Exposure Value Area (MEVA) and HEVA, which is defined by the modelling in Section 7.1.5 of the EP. The EP describes how the modelling is used to identify the high environmental value (HEV) receptors contacted by surface, subsurface (entrained hydrocarbon and DAH's), and shoreline accumulation.

#	Comments received (in general terms)	Titleholder response
	Research Scientist with CSIRO Oceans and Atmosphere Research Dr John Keesing, which collected detailed baseline data for benthic habitats and biodiversity in both MP's. 4.6.1 The Proponent's baseline information for benthic habitat in the Dampier in the EP is presented in extremely low resolution (p 34, DEDEP), in non-descript habitat categories (p 35, DEDEP) and without reference to specific habitat types (Table 3-5, DEDEP) or a representative number of species (p 44 and 46, DEDEP). In other areas, discussion of benthic habitats is grouped and based on very old field data (p 28, DEDEP) which does not reflect significant ecosystem level changes in the past decade, including marine heatwave events 4.6.2 The Proponent's description of the values of the Dampier AMP (p 44, DEDEP) is of extremely low quality and badly lacks detail. In relation to the Dampier AMP, the Proponent has not described which marine turtles utilise internesting habitat, failing to demonstrate their capability to predict the extent, severity and duration of impacts and consequences affecting interesting turtle species. In relation to the Montebello AMP, the Proponent has also not identified which seabirds utilise breeding habitat, or which marine turtle species utilise breeding, nesting, internesting and foraging habitat within the Marine Park. To rectify these major deficiencies in the DEDEP and align with the *Petroleum Activities and Australian Marine Park Guidance Note*, the Proponent should gather this information from the recent CSIRO study on the benthic habitat and biodiversity of the Dampier and Montebello Australian Marine Parks	The EP (Section 7.1.6) includes a detailed risk assessment of 'hot spots' which are a subset of HEV areas that: • Have the highest probability of contact (at least higher than 5%) above the impact assessment exposure values for surface hydrocarbons and shoreline accumulation based on modelling results; and • Receive the greatest concentration or volume of oil, either floating or stranded oil, entrained hydrocarbon or DAHs above contact exposure values described in Section 7.1.5 of the EP. Montebello AMP and Dampier AMP are not identified as hot spots in the consequence evaluation (Section 7.2.4.1). In Section 6.2.1 of the EP, seabed disturbance (and subsequent impact to the benthic habitat) from the activity is described as occurring within only 780 m^2 of the Operational Area. The Montebello AMP and Dampier AMP are 93 km and 60 km respectively from the Operational Area and therefore are outside of the environment that may be affected by seabed disturbance. Santos has updated Section 3.2.4.4 and 3.2.4.6 of the EP to provide further information relating to important BIA's at the Montebello AMP for marine turtles and seabirds using the CSIRO report (Keesing, 2019). References Keesing, J.K. (Ed.) 2019. Benthic habitats and biodiversity of the Dampier and Montebello Australian Marine Parks. Report for the Director of National Parks. CSIRO, Australia.

#	Comments received (in general terms)	Titleholder response
	4.6.3 It is critical that the Proponent should be required to update the DEDEP with the information collected and presented in this study (sic).	
4.7	***Matter:*** *Oil spill risk to Dampier and Montebello AMP's may be significantly underestimated: including assessments of low, medium and high environmental risk.* ***Claim:*** The submission references the findings of two major scientific reports, which indicate that the values used by the Proponent in assessing risks and impacts are at least twenty-fold higher than the best available science on oil spill risk, which could have resulted in a significant underestimation of the risk and impact to the environmental values of the Dampier and Montebello AMP's, as well as 22 other AMP's within the EMBA. In the event of a hydrocarbon spill, all of the environmental values of the nearby Dampier and Montebello AMP's could face extreme losses across due to the well-established ecotoxicity of hydrocarbons. Santos claims that the risk of impacts from a loss of well control has been reduced to a level that is considered acceptable by proposed control measures. The thresholds used, including low, moderate, and high exposure values, are not consistent with other scientific literature about ecotoxicity thresholds. 4.7.2 The Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement Report also used much lower toxicity threshold values that Santos has included in their OPEP 4.7.3 To ensure that the worst-case environmental risks have not been underestimated (and therefore ensure that the proposed	Commonly used exposure values for oil spill modelling are provided by NOPSEMA Environmental Bulletin #1: Oil spill modelling (April 2019). These are based on available scientific literature and selected to approximate the spatial extent and variability of the receiving environment's contact with oil and subsequently inform risk evaluation and planning for oil spill response and monitoring. The NOPSEMA Environmental Bulletin #1 states that it is up to the applicant/titleholder to justify the thresholds being used for surface, entrained and dissolved hydrocarbons. Santos has undertaken a review of relevant scientific literature and acknowledges the presence of literature which indicates impacts may occur at lower exposure values in certain species or at different aspects of a lifecycle. However, for the purposes of an impact assess Santos has provided justification for the exposure values selected in Section 7.1.5 (Table 7-8) of the EP. In response to the comment, Santos has conducted a review of the literature used to support this justification, such as French-McKay (2018). Upon consideration of these new literature sources, Santos has determined to continue to adopt the commonly used exposure values provided by NOPSEMA for the Dancer-1 EP, as they are appropriate for the values and sensitivity of the receiving environment. In addition, the exposure values used help inform the response arrangements within the OPEP, that links to the Operational and Scientific Monitoring Plan (OSMP) which is sufficiently flexible, adaptable and conservative to account for uncertainty, and is able to provide for environmental monitoring at lower exposure values if required in the event of a spill. Section 7.1.5 (Table 7-8) of the EP has been updated to reflect the additional literature sources. No further changes to the impact assessment are required. References French-McKay D, Crowley D, Rowe JJ, Bock M, Robinson H, Wenning R, Hayward Walker A, Joeckel J, Nedwed TJ, Parkerton TF. 2018. Comparative Risk Assessment of spill response options for a deepwater oil well blowout: Part 1. Oil spill modelling. Marine Pollution Bulletin 133 (2018) 1001–1015

#	Comments received (in general terms)	Titleholder response
	management and monitoring measures ensure the impact is reduced to as low as reasonably practical) that the titleholder should undertake new Oil Spill Modelling (SINTEF's OSCAR system was used in the DEDEP/OPEP) to ensure that the DEDEP and OPEP are consistent with the best available science regarding photoinduced PAH toxicity, and use the lower toxicity threshold value of PAH = 0.5ppb for surface waters.	
4.8	***Matter:*** *Claims regarding industry statistics on loss of well control events needs revision* ***Claim:*** 4.8.1 That the Proponent should revise Section 7.2.5 and all related sections of the DEDEP, which may have been informed by 2010 OGP report that the Proponent has cited to support its conclusions, and to ensure that it's risk assessment of a LOWC event is informed by the best available science and industry knowledge of historical LOWC events to ensure this risk is entirely avoided or reduced to ALARP.	The SINTEF Offshore Blowout Database is only accessible to project sponsors, and not publicly available. The website quoted in Appendix D of the claim provides a high-level summary of the data, including the quoted 92 blowouts from exploration drilling. Santos notes that the 92 blowout/well releases over the 34 years period quotes does not represent a frequency as it does not account for the total number of wells drilled during that period. New data published by the IOGP (2019) presents the most current data available from several sources, including: • SINTEF Analysis: 1980-2014 • Lloyds Register analysis for Operations of North Sea Standard: 1980-2014 • Lloyds Register analysis for US GoM OCS: 1980-2011 IOGP (2019) states the frequency of blowouts from exploration drilling operations at wildcat wells is 1.5×10^{-4} blowouts per drilled well. This is based on operations of North Sea standard, which is comparable to operations within Australian commonwealth waters. Based on this, Section 7.2.5 of the EP has been updated to reflect the revised frequency. This data does not change the likelihood outcome, which remains unlikely (defined as *Has occurred elsewhere OR could occur within decades*). No changes have been made to the likelihood or risk assessment outcomes. References IOGP (2019) Risk Assessment Data Directory – Blowout Frequencies. Report 434-02. September 2019.