Acceptance of Scarborough Offshore Project Proposal

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) provides the following statement of reasons for its decision to accept the Scarborough Offshore Project Proposal (OPP), in accordance with regulation 5D of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (the Environment Regulations).

Relevant terms

1. In this statement, the words and phrases have the following meaning:

   1.1 The *Offshore Petroleum and Greenhouse Gas Storage Act 2006* is referred to as the OPGGS Act.

   1.2 The OPP is taken to mean the Scarborough Offshore Project Proposal (Revision 5, February 2020).

   1.3 The *Environment Protection and Biodiversity Conservation Act 1999* is referred to as the EPBC Act.

   1.4 Woodside Energy Pty Ltd is referred to as the proponent.

   1.5 The term 'offshore project proposal' has the meaning given by regulation 4 of the Environment Regulations: the document known as an offshore project proposal that is submitted to the Regulator under regulation 5A or subregulation 5F(2), and is described in paragraph 1.2 above.

   1.6 The term 'environment' has the meaning given by regulation 4 of the Environment Regulations: (a) ecosystems and their constituent parts, including people and communities; and (b) natural and physical resources; and (c) the qualities and characteristics of locations, places and areas; and (d) the heritage value of places; and includes (e) the social, economic and cultural features of the matters mentioned in paragraphs (a), (b), (c) and (d).

   1.7 The term 'environmental impact' has the meaning given by regulation 4 of the Environment Regulations: any change to the environment, whether adverse or beneficial, that wholly or partially results from an activity.

   1.8 The term 'environmental performance outcome' has the meaning given by regulation 4 of the Environment Regulations: a measurable level of performance required for the management of environmental aspects of an activity to ensure that environmental impacts and risks will be of an acceptable level.

   1.9 Principles of ecological sustainable development (ESD) means the principles set out in section 3A of the EPBC Act.

Decision

2. On 30 March 2020 NOPSEMA made the decision pursuant to regulation 5D of the Environment Regulations to accept the OPP.

3. Acceptance of the OPP permits a titleholder to submit an environment plan for an activity that is, or is part of, the accepted OPP to NOPSEMA for assessment under the Environment Regulations.

4. A notice of the decision was provided to the titleholder on 30 March 2020.

Authority

5. The decision maker for acceptance of an OPP under regulation 5D of the Environment Regulations is the 'Regulator'. Where the decision relates to petroleum activity, regulation 4 of the Environment Regulations defines the Regulator to be NOPSEMA.

6. I, Stuart Smith, was the responsible decision maker for this decision. I hold the position of CEO within NOPSEMA. Pursuant to subsection 666(2) of the OPGGS Act, anything done by the CEO in the name of NOPSEMA is taken to have been done by NOPSEMA.

7. In this Statement of Reasons, when I refer to NOPSEMA having made a request, or having regard to a matter, or similar phrasing, I am referring to a step that I took in exercising my authority to make this decision. Where appropriate, in taking such steps I took into account advice from the assessment team within NOPSEMA.

The assessment process

8. On 15 February 2019, in accordance with regulation 5A the proponent submitted an OPP (Revision 0, February 2019) for NOPSEMA to assess in relation to its suitability for publication in accordance with regulation 5C.

9. In accordance with regulation 5B, NOPSEMA requested the proponent to provide further written information about matters required by regulation 5A on two occasions, being 15 March 2019 and 23 May 2019. Having assessed Revision 2 of the OPP (dated June 2019), which had been revised by the proponent in response to NOPSEMA's requests for further written information referred to above, on 26 June 2019 NOPSEMA decided that Revision 2 of the OPP was suitable for publication in accordance with regulation 5C.

10. Following publication of that version of the OPP and an eight week public comment period, and in accordance with subregulation 5D(1) of the Environment Regulations, the proponent submitted another copy of the OPP to NOPSEMA on 7 October 2019 (Revision 3, October 2019). An assessment team then completed an assessment of the OPP in relation to the criteria set out in subregulation 5D(6). The findings and conclusions of the general assessment and each topic assessment were considered together to form a view as to whether the OPP, as a whole, met the criteria.

11. The assessment team comprised an assessment manager, lead assessor and appropriately experienced NOPSEMA environment specialists with expert knowledge in environmental and marine science relevant to the OPP and its associated environmental impacts and risks. The assessment examined higher order environmental impacts and risks, with the specialist NOPSEMA assessors assessing the OPP topics that focused on these impacts and risks. The assessment included a general assessment of the whole OPP and two detailed topic assessments of the OPP content, as follows:

    a. Matters protected under Part 3 of the EPBC Act; and

    b. Unplanned emissions and discharges.

12. At the conclusion of the assessment, the assessment team made a recommendation to me as the decision maker that the OPP met the criteria in subregulation 5D(6). As set out below, I accept the assessment team's recommendation as part of my decision to accept the OPP.

Background

13. On 7 October 2019, the proponent submitted an OPP (Revision 3, dated October 2019) to NOPSEMA in accordance with subregulation 5D(1) of the Environment Regulations.

14. On 6 November 2019, under subregulation 5D(2)(a) of the Environment Regulations NOPSEMA requested the proponent to provide further written information, including in relation to the following environmental management themes:

    a. The proponent's responses to public comments;

    b. The description of the project and the environment that may be affected by it;

    c. The proposed environmental performance outcomes;

    d. Legislative requirements that are applicable to the project and how they will be met; and

    e. The evaluation of environmental impacts and risks from greenhouse gas emissions, operational discharges, disturbance to the seabed and unplanned hydrocarbon spills, with a particular focus on impacts to listed threatened species under the EPBC Act, Australian Marine Parks and other values and sensitivities of the Commonwealth marine area (i.e. demersal fish assemblages and benthic habitats).

15. On 20 December 2019, the proponent responded to NOPSEMA's request with further information incorporated into a resubmitted OPP (Revision 4, December 2019), under subregulation 5D(4) of the Environment Regulations.

16. On 20 January 2020, under paragraph 5D(2)(a) of the Environment Regulations NOPSEMA again requested the proponent to provide further written information, this time in relation to the following environmental management themes:

    a. The description of the project and the environment that may be affected by it;

    b. The proposed environmental performance outcomes;

    c. Legislative requirements that are applicable to the project and how they will be met; and

    d. The evaluation of environmental impacts and risks arising from the generation of greenhouse gas emissions, disturbance to the seabed, acoustic emissions and artificial light with a particular focus on potential impacts to matters protected under Part 3 of the EPBC Act.

17. On 27 February 2020, the proponent responded to NOPSEMA's 20 January 2020 request with further information incorporated into the OPP (Revision 5, February 2020), under subregulation 5D(4) of the Environment Regulations.

18. On 30 March 2020, NOPSEMA accepted the OPP under paragraph 5D(5)(a) of the Environment Regulations. A notice of this decision was provided to the proponent on 30 March 2020.

Key materials considered in making the decision

19. In making this decision, NOPSEMA assessed the OPP submission in accordance with legislative requirements and NOPSEMA's OPP assessment policy and procedure. The material that NOPSEMA took into account in making this decision included:

a. The OPP, comprising:
   i. Scarborough Offshore Project Proposal (Revision 5, February 2020); and
   ii. Supporting OPP documentation (Appendices A, B, C, D, E, F, G, H, I, J, K, L and M).

b. The legislative framework relevant to OPP assessments:
   i. The OPGGS Act;
   ii. The Environment Regulations;
   iii. The Endorsed EPBC Program[1].

c. Policies and guidelines:
   i. NOPSEMA, *PL1650 - OPP assessment*, Revision 1, (September 2018);
   ii. Department of Sustainability, Environment, Water, Population and Communities, *Environment Protection and Biodiversity Conservation Act 1999 (Cth) Policy Statement 'Indirect consequences' of an action: Section 527E of the EPBC Act*, BIO274.0613 (2013);
   iii. Department of the Environment, Water, Heritage and the Arts, *EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales: Industry Guidelines* , (September 2008);
   iv. Department of the Environment, Water, Heritage and the Arts, *Significant Impact Guidelines 1.1 - Matters of National Environmental Significance,* EPBC Act Policy Statement, ((2013); and
   v. Department of Sustainability, Environment, Water, Population and Communities, *EPBC Act environmental offsets policy*, (2012).

d. Guidance:
   i. NOPSEMA, *N-04790-GN1663 – Offshore project proposal content requirements,* Revision 4, (November 2019);
   ii. NOPSEMA, *GN1488 - Oil pollution risk management*, Revision 2, (February 2018); and
   iii. NOPSEMA, *GN1785 - Petroleum activities and Australian marine parks*, Revision 0, (July 2018);
   iv. NOPSEMA, *N-04790- IP1664 – Information paper – Making public comment on offshore project proposals*, Revision 3, (September 2018);
   v. NOPSEMA, *N-04750-IP1765 – Information Paper - Acoustic impact evaluation and management*, Revision 2 (December 2018);
   vi. NOPSEMA, *N-04750-IP1899 - Reducing marine pest biosecurity risks through good practice biofouling management*, Revision 1 (March 2020);
   vii. NOPSEMA, *Environmental Bulletin – Oil Spill Modelling*, (April 2019); and

[1] https://www.environment.gov.au/protection/assessments/strategic/offshore-petroleum-greenhouse-gas

viii. Department of the Environment and Energy, *National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds*, (2020).

e. Procedures:

i. NOPSEMA, *N-04790 – SOP1678 - Offshore project proposal assessment standard operating procedure*, (Revision 2, August 2019).

f. Other relevant documents and records:

i. Letter dated 25 March 2020 from the Department of Agriculture, Water and the Environment (DAWE) to NOPSEMA in response to NOPSEMA's request for views on impact evaluation and management of greenhouse gas emissions and implications for global climate change in the Woodside Energy Limited (WEL) document titled Scarborough Offshore Project Proposal (Revision 5, February 2020).

ii. Letter dated 13 March 2020 from the Department of Industry, Science, Energy and Resources (DISER) to NOPSEMA in response to NOPSEMA's request for views on the forecast global energy demand and the role of natural gas in meeting global energy demand as referenced in the impact evaluation and management of greenhouse gas emissions in the Woodside Energy Limited (WEL) document titled Scarborough Offshore Project Proposal (Revision 5, February 2020).

iii. Recorded findings of NOPSEMA's assessment team regarding assessment of how the OPP met the relevant criteria of the Environment Regulations.

iv. Director of National Parks, *Australian Marine Parks - North-west Marine Parks Network Management Plan 2018*, (2018).

v. Department of the Environment, *Recovery Plan for Marine Turtles in Australia*, (2017).

vi. Department of the Environment, *Conservation Management Plan for the Blue Whale—A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999*, (2015).

vii. Department of Sustainability, Environment, Water, Population and Communities, *Marine Bioregional Plan for the North-west Marine Region*, (2012).

viii. Threatened Species Scientific Committee, *Conservation Advice for Rhincodon typus (whale Shark)*, (approved on 01/10/2015).

ix. Threatened Species Scientific Committee, *Conservation Advice for Megaptera novaeangliae (humpback whale)*, (approved on 01/10/2015).

x. Other documents including policies, plans of management, recovery plans, conservation advice and, guidance and information relevant to matters protected under the EPBC Act published on the DAWE website.

xi. Minister for the Environment, *Ministerial Statement No. 757 - Statement that a proposal may be implemented (pursuant to the provisions of the Environmental Protection Act 1986)*, (published on 24 December 2007).

xii. Minister for the Environment, *Ministerial Statement No. 536 - Statement that a proposal may be implemented (pursuant to the provisions of the Environmental Protection Act 1986),* (published on 11 February 2000).

xiii. Relevant scientific literature and relevant publications of the International Energy Agency.

xiv. Comments received from the public on the OPP during the statutory public comment period, 5 July 2019 to 30 August 2019.

Legislative framework

20. The Environment Regulations provide relevantly:

a. subregulation 5A(1) states that before commencing an offshore project, a person must submit an offshore project proposal to the Regulator; and

b. subregulation 5A(4) states that the proposal must be in writing; and

c. subregulation 5A(5) states that the proposal must:

i. include the proponent's name and contact details; and

ii. include a summary of the project, including the following:

a. a description of each activity that is part of the project;

b. the location or locations of each activity;

c. a proposed timetable for carrying out the project;

d. a description of the facilities that are proposed to be used to undertake each activity;

e. a description of the actions proposed to be taken, following completion of the project, in relation to those facilities; and

iii. describe the existing environment that may be affected by the project; and

iv. include details of the particular relevant values and sensitivities (if any) of that environment; and

v. set out the environmental performance outcomes for the project; and

vi. describe any feasible alternative to the project, or an activity that is part of the project, including:

a. a comparison of the environmental impacts and risks arising from the project or activity and the alternative; and

b. an explanation, in adequate detail, of why the alternative was not preferred;

and

d. subregulation 5A(6) states that without limiting paragraph (5)(d), particular relevant values and sensitivities may include any of the following:

i. the world heritage values of a declared World Heritage property within the meaning of the EPBC Act;

ii. the national heritage values of a National Heritage place within the meaning of that Act;

iii. the ecological character of a declared Ramsar wetland within the meaning of that Act;

iv. the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act;

v. the presence of a listed migratory species within the meaning of that Act;

vi. any values and sensitivities that exist in, or in relation to, part or all of:

vii. a Commonwealth marine area within the meaning of that Act; or

viii. Commonwealth land within the meaning of that Act;

and

e. subregulation 5A(7) states that the proposal must:

i. describe the requirements, including legislative requirements, that apply to the project and are relevant to the environmental management of the project; and

ii. describe how those requirements will be met;

and

f. subregulation 5A(8) states that the proposal must include:

i. Details of the environmental impacts and risks for the project; and

ii. An evaluation of all the impacts and risks, appropriate to the nature and scale of each impact or risk; and

g. subregulation 5D(5) states that within 30 days after the proponent gives the Regulator a copy of the proposal as described in paragraph (1)(b):

i. if the Regulator is reasonably satisfied that the proposal meets the criteria set out in subregulation (6), the Regulator must accept the proposal; or

ii. if the Regulator is not reasonably satisfied that the proposal meets the criteria set out in subregulation (6), the Regulator must refuse to accept the proposal; or

iii. if the Regulator is unable to make a decision on the proposal within the 30 day period, the Regulator must give the proponent notice in writing and set out a proposed timetable for consideration of the proposal; and

h. subregulation 5D(6) states that for subregulation (5), the criteria are that the proposal:

i. adequately addresses comments given during the period for public comment; and

ii. is appropriate for the nature and scale of the project; and

iii. appropriately identifies and evaluates the environmental impacts and risks of the project; and

iv. sets out appropriate environmental performance outcomes that:

a. are consistent with the principles of ecologically sustainable development; and

b. demonstrate that the environmental impacts and risks of the project will be managed to an acceptable level; and

v. does not involve an activity or part of an activity being undertaken in any part of a declared World Heritage property within the meaning of the EPBC Act.

Consideration of the principles of ecological sustainable development (ESD)

21. The principles of ESD were relevant to the assessment of the proposal, with consideration of many aspects inherent with the OPP content requirements and criteria for acceptance as defined in the Environment Regulations. An overview of how NOPSEMA has considered these principles is provided below:

a. *Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations* (the 'integration principle').

NOPSEMA has considered the proponent's evaluation of the socio-economic and ecological matters that may potentially be affected by the project. The OPP has demonstrated an integrated approach to considering all environmental features, including relevant social, cultural and economic features that make up the definition of environment under Regulation 4 of the Environment Regulations. Specifically, the OPP includes an evaluation of the potential impacts and risks of the project on Commonwealth and State managed fisheries, recreation and tourism activities, commercial shipping and other oil and gas exploration and operational activities and has demonstrated that impacts and risks to these socio-economic values will be of an acceptable level.

b. *If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation* (the 'precautionary principle').

NOPSEMA has considered the proponent's evaluation of impacts and risks to the environment as well as its case for why these impacts and risks will be of an acceptable level. This includes consideration given to measures committed to by the proponent to manage residual scientific uncertainty associated with evaluation of environmental impacts and risks, particularly in relation to impacts to the Commonwealth marine area and potential impacts arising from the generation of greenhouse gas emissions.

c. *That the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations* (the 'intergenerational principle').

NOPSEMA has considered measures the proponent has taken to apply the mitigation hierarchy so as to avoid and minimise environmental impacts and risks and to manage these to be of an acceptable level though setting out appropriate environmental performance outcomes (EPOs).

d. *The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making* (the 'biodiversity principle').

NOPSEMA has considered the proponent's evaluation of environmental impacts to the biodiversity and ecological values of the Commonwealth marine area, including listed threatened and migratory species under the EPBC Act, and the EPOs defined in the OPP.

e. Improved valuation, pricing and incentive mechanisms should be promoted (the 'valuation principle').

NOPSEMA notes that the proponent will bear the costs relating to management of environmental aspects of the project and its activities to ensure that environmental impacts and risks will be of an acceptable level.

Consideration and findings of material facts in relation to the proponent's assessment of public comments received [regulation 5D(1)(c)]

22. Following publication of the OPP and receipt of public comments, a summary of all the comments received during the public comment period, as well as an assessment of the merits of each objection or claim about the project and a statement of the proponent's response to these was included with a copy of the OPP.

23. The assessment of the merits of each objection or claim about the project or any activity that is part of the project is found at Appendix M of the OPP.

24. Changes made to the OPP in response to public comments include (though were not limited to) an evaluation of scope 3 greenhouse gas emissions, clarity on the overlap with other petroleum titles and a discussion of the proponent's obligations in relation to the EPBC Environmental Offsets Policy. This included a discussion of whether changes to the project were practical or feasible in relation to improving environmental outcomes.

25. The OPP adequately addresses comments given during the period for public comment.

Consideration and findings of material facts in relation to the content [Regulation 5A]

29. Following an assessment of the OPP undertaken in accordance with the Environment Regulations and NOPSEMA's assessment policies and procedures, NOPSEMA provides the following findings of material facts in relation to the content of the OPP which led me to be reasonably satisfied that the OPP meets the criteria under subregulation 5D(6) and must be accepted under subregulation 5D(5).

Proponent's name and contact details

30. NOPSEMA considered the information provided in the OPP and found that:

a. The OPP identified the proponent and included their contact details including an address, phone number and email, as well as a web link to a dedicated project website.

Project summary - Description of each activity part of the project

31. NOPSEMA considered the description provided of each activity that is part of the project in the OPP and found that:

a. The summary of the project provided details key characteristics of the project, including geographic locations of infrastructure and project activities as well as their, scale, duration and timing. The project description also informed the understanding of the extent of the environment that may be affected and was appropriate to the nature and scale of the project.

b. A comprehensive description of the project activities in Commonwealth waters, as identified by the proponent, was provided.

c. The description of the project places it within local and regional environmental context, including timing relative to seasonal features of the environment, which is relevant for the consideration of environmental impacts and risks of the project.

d. The description of the project and the activities that make up the project provide a basis for the proponent to evaluate all environmental impacts and risks, including potential for cumulative impacts. Key aspects of the project description included the following:

   i. The project includes all activities within Commonwealth waters involved in the development of the Greater Scarborough gas fields, which include the Scarborough, North Scarborough, Thebe and Jupiter fields.

   ii. These gas resources will be developed through new offshore facilities located approximately 375km off the Burrup Peninsula and will be connected to the mainland by an approximately 430km long trunkline to the existing onshore Pluto LNG processing and export facility on the Burrup Peninsula, Western Australia.

   iii. The development will include the drilling and construction of up to 20 subsea gas wells tied back to a semi-submersible Floating Production Unit (FPU) moored in approximately 900m of water close to the Scarborough gas field.

   iv. The installation of the trunkline in Commonwealth waters will include pipelay, trenching and backfill activities, removal of sediment from a 'borrow ground' that will be used to backfill and stabilise the trunkline and use of a spoil ground for disposal of sediments removed during trunkline installation that cannot be used for backfill.

   v. Other activities described as part of the project include: commissioning and operation of the wells, FPU and trunkline; inspection maintenance and repair; support operations (vessels, mobile offshore drilling units (MODUs), helicopters, remotely operated vehicles (ROVs)) and decommissioning and well abandonment at the end of the project.

Project summary - Description of the location of each activity

32. NOPSEMA considered the location or locations of each activity proposed in the OPP and found that:

a. The locations of the project activities in Commonwealth waters are set out by diagrams, figures and coordinates depicting the areas within which:

   i. the proposed wells will be drilled and the FPU will be installed in offshore title areas (the offshore project area);

   ii. the trunkline route and buffer area 1.5km either side of the pipeline to account for vessel movements is located, including the offshore spoil ground (trunkline project area);

   iii. borrow grounds are located (borrow grounds project area); and

   iv. the proponent predicts the environment may be affected by unplanned hydrocarbon releases (EMBA).

b. The exact locations of proposed wells are not defined at this stage but they will be located within the Scarborough (WA-1-R), North Scarborough (WA62-R), Thebe (WA-63-R) and Jupiter (WA-61-R) petroleum title areas.

c. The trunkline from the FPU to the onshore Pluto LNG Facility traverses into Western Australian State waters. The location at which the trunkline will cross into State waters is approximately 20km north-west from the shore and in water depths of 31m. Installation and operation of the nearshore section of the trunkline in State waters is not provided for in the OPP and these activities are not considered further.

d. The trunkline will traverse the Montebello Australian Marine Park parallel to the existing Pluto trunkline.

e. The borrow ground is immediately adjacent to the Dampier Australian Marine Park with a 250m buffer.

f. It is clear from the project description and description of the environment within which the project is proposed to take place, that the project does not involve any planned activity or part of an activity within any part of a declared World Heritage property.

Project summary – Proposed timetable

33. NOPSEMA considered the proposed timetable in the OPP for carrying out the project and found that:

    a. The first drilling phase is targeted in 2020, followed by the installation of the trunkline in 2022, installation of the FPU in 2023 and phase 2 drilling (potentially including Thebe and Jupiter) in 2025. Decommissioning is expected to commence in 2055.

Project summary – Description of facilities proposed for each activity

34. NOPSEMA considered the description of the facilities that are proposed to be used to undertake each activity in the OPP and found that:

    a. The facilities that will be used to undertake the activities include: MODUs that may be moored, semi-moored, dynamically positioned or a drill ship; wellheads, subsea infrastructure including manifolds, flowlines and umbilicals, export trunkline, communications lines, tiebacks; an FPU for which utilities are described in the OPP; pipelay and support vessels; ROVs and helicopters; air guns for vertical seismic profiling (VSP) and sound receivers; and piling facilities.

Project summary – Description of actions proposed following project completion

35. NOPSEMA considered the description in the OPP of the actions proposed to be taken, following completion of the project in relation to the facilities proposed to be used to undertake each activity and found that:

    a. The OPP states that all structures will be removed from the seabed when they are no longer in use, unless otherwise authorised.

Description of existing environment

36. NOPSEMA considered the description in the OPP of the existing environment that may be affected by the project and found that:

    a. The description of the existing environment is appropriate to the nature and scale of the project and has a well-founded basis in the analysis of scientific evidence.

b. An overview is provided defining the existing environment to encompass the areas the project will be located in, including all planned and future activities. The OPP also describes areas that may be affected directly or indirectly, including under potential emergency conditions or by emergency response arrangements. These are addressed in the OPP with respect to the offshore project area, trunkline project area, borrow ground project area and EMBA for hydrocarbon release risks.

c. The description of the environment includes physical environmental features, such as oceanographic and coastal processes including currents, tides, waves and wind, weather, water temperature and salinity, geomorphology, bathymetry, marine sediments, air quality, ambient noise and light.

d. The description of the environment includes biological habitats, ecosystems and their constituent parts in the area that may be affected by the project including planktonic assemblages, benthic habitats and communities (such as epifauna and infauna), coastal habitats and demersal and pelagic biota.

e. Social and economic features of the environment that may be affected by the project including defence areas, recreational activities (including fishing), marine tourism, commercial shipping, Commonwealth and State managed commercial fisheries and petroleum industry activities have been identified and described.

f. Cultural and heritage environment features and values have been identified and described.

Values and sensitivities – including Part 3 protected matters

37. NOPSEMA considered the details of the particular relevant values and sensitivities of the existing environment in the OPP and found that:

a. The OPP includes details of the particular relevant values and sensitivities of that environment, including those protected under Part 3 of the EPBC Act.

b. Protected matters search reports for each of the defined project areas and EMBA are included in Appendix D.

c. Biologically important habitats and ecological features have been described in sufficient detail to inform the detailing and evaluation of environmental impacts and risks, including using information from the Marine Bioregional Plan for the North-west.

d. Where relevant, in providing a description of matters protected under Part 3 of the EPBC Act, the OPP has considered information found in relevant plans of management, recovery plans, conservation advice, and other relevant guidance and information published on the DAWE website.

e. Relevant conservation actions for key threats such as noise interference, vessel disturbance, light pollution, acute chemical discharge/pollution contamination, and habitat degradation/loss/modification are identified.

f. The project area and EMBA overlap a number of biologically important areas (BIAs) and habitat critical for survival for a listed threatened species and these are identified and described.

g. The project areas (planned impacts) associated with the borrow ground, trunkline and/or offshore areas that have some degree of overlap with the following BIAs are identified and described including:

   i. breeding areas for three bird species (Australian fairy tern, roseate tern and wedge-tailed shearwater);

   ii. migration routes for humpback whale and pygmy blue whale;

   iii. distribution area for pygmy blue whales;

   iv. foraging habitat for whale sharks;

   v. internesting habitat green, hawksbill, flatback and loggerhead turtles; and

   vi. habitat critical to survival for flatback, green and hawksbill turtle species.

h. It is identified that the borrow ground and trunkline areas are within 10km of hawksbill and flatback turtle nesting habitats.

i. Species of fauna that may, are likely to or are known to, occur in the project area including seabirds, fish, marine mammals and reptiles are described in a manner appropriate to the nature of overlap between the project and distribution.

j. A description of key ecological features (KEFs) that are overlapped by the project is included. Three KEFs intersect the project areas (Exmouth plateau, ancient coastline and slope demersal fish). Values of three additional KEFs that are within the EMBA (canyons, waters adjacent to Ningaloo reef, Glomar shoals noting the latter is only 6km from the trunkline project area) are also described.

k. Australian marine parks (AMPs) that occur within or near the project area are identified and an appropriate description of protected areas and places that overlap with the project area is included. Protected areas and places described in close proximity include the Montebello AMP, the Dampier AMP and the Dampier Archipelago indigenous National Heritage Place on the Dampier Coast. The OPP describes the values, including the representative values, of the AMPs that may be affected, utilising the information provided in the North-west Marine Park Network Management Plan.

l. The trunkline area traverses approximately 80km of seabed within the Multiple Use Zone of the Montebello AMP and the borrow ground is immediately adjacent to the Habitat Protection Zone of the Dampier AMP.

m. A combination of geophysical and geotechnical data, published literature and ROV survey data are used to describe the seabed in the three project areas in terms of their bathymetry, marine regional characteristics, oceanographic environment and coastal processes, geomorphology, sediment characteristics, seabed features and substrates, benthic habitats and communities, water quality, including those species protected under the EPBC Act.

n. In general, the seabed in the offshore area and borrow ground area is comprised of unconsolidated sediments and sparse epifauna communities. The trunkline project area traverses areas of unconsolidated sediments as well as areas with hard substrates and denser aggregations of

epifauna. Some rocky outcrops with greater densities of epifauna are described in the OPP near the trunkline where it crosses the continental shelf. These areas of epifauna at higher densities appear to be found in the broader region as well as in the project areas.

Environmental performance outcomes

38. NOPSEMA considered the EPOs for the project in the OPP and found that:

    a. The OPP sets out EPOs, including those for higher order impacts and risks such as underwater noise, artificial light, seabed disturbance, greenhouse gas emissions and spill risk, which:

        i. are relevant to identified environmental impacts and risks for the project;

        ii. establish measurable levels for management of environmental aspects of activities that are part of the project;

        iii. when read in conjunction with the relevant environmental impact/risk evaluation content and proposed management measures in the OPP, demonstrate that impacts and risks will be managed to acceptable levels, which are defined through a process that takes into account ESD; and

        iv. are considered consistent with the principles of ESD considering items i-iii above.

39. In relation to matters protected under Part 3 of EPBC Act, the EPOs in combination with the proponent's evaluation of environmental impacts and risks demonstrate that:

    a. the environmental impacts and risk to the values of the Commonwealth marine area will be managed to acceptable levels as these levels are set below, where what is considered 'significant' is understood by having regard to the *Matters of National Environmental Significance - Significant impact guidelines 1.1*.

    b. The EPOs demonstrate that the project will not be inconsistent with the *North-west Marine Parks Network Management Plan, Recovery Plan for Marine Turtles in Australia* and *Conservation Management Plan for Blue Whales*.

    c. Relevant policy, background and guidance documents have been used by the proponent to support the evaluations of environmental impacts and risks that underpin the demonstration that the project is able to be managed to ensure acceptable levels of impact and risks will be met. Relevant materials include the *Marine Bioregional Plan for the North-west, National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds*, and *EPBC Policy Statement 2.1*.

40. The OPP includes an EPO in relation to environmental risks of unplanned hydrocarbon releases that represents a commitment to prevent the identified spill risks being realised.

Description of feasible alternatives – comparison of impacts and risks and explanation

41. NOPSEMA considered feasible alternatives to the project, or activity that is part of the project, provided in the OPP, including a comparison of the impacts and risks arising from the project or activity and the alternative, as well as a detailed explanation of why the alternative was not preferred, and found that:

    a. Feasible alternatives to the project are described including four different project concepts:

i. A semi-submersible linking to Pluto LNG;

ii. Subsea tiebacks to shore;

iii. Subsea tieback via Pluto upstream; and

iv. Floating Liquefied Natural Gas (FLNG) concept.

b. An assessment of these options is provided including economic, technical, environmental and social drivers resulting in the first option (i) above being selected.

c. Alternatives within the preferred overall project design are also described. Such alternatives included consideration of options for energy efficiencies, geosequestration of carbon dioxide, mooring of construction vessels, manning of FPU, use of different drilling fluids, piling techniques, trunkline route, location of borrow ground, post-lay stabilisation activities, energy efficiencies, produced water reinjection and MODU design. The OPP also provides a comparison of environmental impacts from these different alternatives with reasoning given as to why the final design(s) for each activity were preferred.

d. The OPP describes an alternatives analysis that was undertaken for the project and sets out the findings and conclusions of this analysis.

Description of requirements

42. NOPSEMA considered the description of requirements in the OPP, including legislative requirements that apply to the project and are relevant to the environmental management of the project and found that legislative requirements are identified and described in the OPP. These requirements include:

a. OPGGS Act and Environment Regulations;

b. EPBC Act and Regulations;

c. *Environment Protection (Sea Dumping) Act 1981* Environment Protection (Sea Dumping) Regulations 1983;

d. *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (MARPOL) Protection of the Sea (Prevention of Pollution from Ships) (Orders) Regulations 1994;

e. *Biosecurity Act 2015* and Australian Ballast Water Management Requirements 2017 Quarantine Regulations 2000;

f. National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Cth) (SGM) made under the *National Greenhouse and Energy Reporting Act 2007* (Cth) (NGERS);

g. Listed Threatened Species Management/Recovery Plans and Conservation Advices;

h. Marine bioregional plans;

i. Management plans for protected species, places and areas, included Australian marine parks;

j. EPBC Policy Statement 2.1 as applicable to manage of impacts of noise on whales;

k. National Light Pollution Guidelines for Wildlife (CoA 2020); and

l. Other approvals required under the OPGGS Act besides the OPP, relevant Commonwealth legislation relating to navigation, radiation management, chemical use, pollution to the air and sea, biosecurity, heritage and hazardous waste, and relevant international agreements.

Environmental impacts and risks – details and evaluation

43. NOPSEMA considered the details and evaluation of all of the environmental impacts and risks for the project in the OPP appropriate to the nature and scale of each environmental impact or risk and found that:

a. A sufficiently robust method, consistent with internationally recognised standard ISO 31000:2018 Risk Evaluation has been applied for the identification and evaluation of environmental impacts and risks of the project. This included scoping the aspects of the project and their impacts and risks, analysis and evaluation of impacts and risks, consideration of adopted controls to manage impacts and risks to acceptable levels, and consideration of the principles of ESD, internal and external context and other requirements to determine whether impacts and risks would be of an acceptable level.

b. Impacts and risks to the environment resulting from all aspects of the project are identified and described in sufficient detail to set the foundation for an appropriate evaluation of those impacts and risks. The proponent has utilised an appropriate methodology to identify impact and risk pathways which then establishes the basis for the evaluation needed to demonstrate that the project's environmental aspects are able to be managed to ensure its environmental impacts and risks will be of an acceptable level.

c. An appropriate process has been applied by the proponent to demonstrate that each environmental impact and risk of the activity will be of an acceptable level. This process takes into account:

i. Significance, sensitivity and conservation status of receptors and levels of protection for the environment that may be affected including species, ecological communities and designated protected areas;

ii. relevant external context such as relevant international and national standards, laws, policies, statutory instruments (e.g. plans of management and recovery plans relevant to matters protected under Part 3 of the EPBC Act) and relevant peer reviewed scientific literature;

iii. The principles of ESD, including:

a. Identifying the levels of uncertainty in conclusions arising from the evaluation of environmental impacts and risks, and accounting for this uncertainty through commitments to monitor and verify predictions and manage adaptively if warranted (precautionary principle). Examples include:

- Monitoring global energy outlooks and the demand for lower carbon intensive energy in displacing higher carbon intensive fuels, combined with mechanisms to ensure adaptive management of greenhouse gas management measures will occur for the duration of the project to achieve EPO 3.2; and

- Development and implementation of a management framework for dredging and backfill activities based on water quality to manage activities to achieve EPO 6.2 and EPO 6.4.

b. Defining acceptable levels of impact and risk for biodiversity and ecological values at levels that are below the significant impact criteria (defined in Policy Statement 1.1 – Significant impact guidelines) for matters protected under Part 3 of the EPBC Act including: ecological values of the Commonwealth marine area and listed threatened and migratory species (biodiversity principle);

c. Undertaking a robust evaluation using appropriate impact assessment tools (such as waste dispersion, underwater acoustic, artificial light, sediment dispersion and oil spill modelling) to provide the basis for assessing higher order impacts and risks and demonstrating that these impacts and risks will be managed at or below the defined acceptable level (biodiversity and intergenerational equity principles);

d. Where applicable, undertaking an assessment against requirements of statutory instruments for biodiversity conservation to demonstrate that the project would not be inconsistent with these instruments. Examples include statutory recovery plans (e.g. National Recovery Plan for Marine Turtles in Australia and the Conservation Management Plan for Blue Whales) and the North West Australian Marine Park Network Management Plan (2018); and

e. Applying the mitigation hierarchy in the evaluation of environmental impacts and risks to identify where management measures and monitoring are required to provide confidence that the defined acceptable level of impact or risk can be met. In some cases this included commitments to monitoring predictions and adaptively managing the project which can be embedded and considered in further detail during the environment plan (EP) assessment process (precautionary, biodiversity and inter-generational equity principles).

iv. Comparisons of the predicted environmental impacts and risks with the defined acceptable levels which includes an evaluation of how each impact and risk aspect of the project is consistent with principles of ESD (section 7 of the OPP); and

v. Setting out EPOs that are aligned with the defined acceptable level of impact and risks and in turn consistent with the principles of ESD (also refer to paragraphs 38, 39 and 40 on EPOs).

44. The environmental impacts and risks resulting from the project are appropriately identified, given the description of the project and environment that may be affected by the project. These include impacts and risks associated with:

a. Light emissions;

b. Atmospheric and GHG emissions;

c. Acoustic emissions from sources including VSP, side-scan sonar, drilling, piling, operations and decommissioning;

d. Displacement of other users;

e. Seabed disturbance;

f. Sewage and grey water discharges;

g. Food waste discharge;

h. Chemical discharge and deck drainage;

i. Brine and cooling water discharges;

j. Operational fluid discharges;

k. Routine and non-routine subsea installation and commissioning discharges;

l. Routine and non-routine drilling discharges; and

m. Cumulative impacts.

45. The environmental impacts and risks associated with potential emergency conditions are appropriately identified. These include impacts and risks associated with:

a. Unplanned chemical and solid waste discharges;

b. Unplanned seabed disturbance;

c. Introduction of IMS;

d. Collision with marine fauna; and

e. Unplanned hydrocarbon releases.

46. The statements and conclusions drawn by the proponent regarding environmental impacts and risks have been sufficiently supported with scientific literature, with greater emphasis placed on supporting the evaluation where there is a higher degree of uncertainty and/or higher potential consequences. Appropriate additional studies are provided in the OPP to support the evaluation of impacts and risks, including but not limited to:

a. Scarborough offshore benthic marine habitat assessment (Appendix A), to provide sufficient information to enable the proponent to adequately describe the benthic habitats including benthic species and habitats of conservation significance;

b. Dampier Archipelago Commonwealth waters marine benthic habitat surveys (Appendix B) which collates information to support an environmental impact assessment of using the proposed borrow ground including information on the presence of sensitive benthic biota or habitat near the proposed borrow ground and the adjacent Dampier Australian Marine Park;

c. Montebello Marine Park Benthic Habitat Survey (Appendix C) which provides results of ROV surveys which were undertaken for the Scarborough project to characterise benthic habitats along the proposed trunkline route within the Montebello Australian Marine Park;

d. EPBC Act protected matters reports (Appendix D) generated to identify matters of national environmental significance and other matters protected by the EPBC Act in the vicinity of the project area and the area that may be affected under oil spill scenarios;

e. Scarborough Gas Development Underwater noise modelling study (Appendix E) that involves modelling of underwater acoustic from the FPU installation and operation, vessel operations associated with pipe laying, and pile driving activities associated with the project;

f. Discharge modelling (Appendices F, G and H) to predict the dispersion of proposed cooling water, hydrotest water and produced formation water; and

g. Light modelling (Appendix L) to predict the biologically relevant light levels associated with the proposed trunkline installation and borrow ground activities associated with the project.

47. NOPSEMA's assessment of the OPP focussed greater attention on the higher order impacts and risks of the project, including disturbance to the values of the Montebello and Dampier Australian Marine Parks, greenhouse gas emissions, underwater noise emissions, light emissions and unplanned hydrocarbon discharges.

48. The OPP has provided a description and evaluation of impacts and risks in a manner appropriate to the nature and scale of each impact and risk, and demonstrated that these will be reduced to an acceptable level for the reasons outlined below.

Potential impacts to the Commonwealth marine area including potential impacts to values of the Australian Marine Parks

49. Quantitative estimates have been included in the OPP for the extent of seabed that will be disturbed due to the placement of subsea infrastructure on the seabed, drilling, dredging and trunkline installation. The impact evaluation supports the specific EPOs for seabed disturbance that allow for development with a quantified amount of environmental disturbance, which is not irreversible, and is not serious, and where biological diversity and essential ecological processes at relevant spatial scales are maintained.

50. Sediment dispersion modelling, using literature-based definitions and thresholds, has been included in the OPP to predict the potential extent of impacts from dredging, trenching, backfill and spoil disposal activities that will occur with the installation of inshore sections of the trunkline and borrow ground activities in Commonwealth waters. The proponent's sediment dispersion modelling predicts:

a. Turbidity plumes generated by dredging along the inshore section of the trunkline in Commonwealth waters and in the borrow ground would not contact sensitive receptors or the National Park Zone of the Dampier Australian Marine Park respectively;

b. Areas of the Habitat Protection Zone of the Dampier Australian Marine Park may be exposed to turbidity from dredging, but at levels below those known to cause impacts to sponges, which are described to be the dominant benthic fauna in the park. The proponent consulted with the Director of National Parks in relation to this dredging program to confirm that the proposed activities were not inconsistent with the AMP management plan, including parts relevant to the Habitat Protection Zone of the park;

c. Contact of turbidity plumes with corals at Madeleine Shoals, with thresholds for contact described to be below levels known to cause impacts to corals; and

d. Dredging in the borrow ground is predicted to cause moderate levels of impact (recoverable within 5 years) to corals located on the south west corner at Hauy Island. The proponent has committed to implement a dredge monitoring and management framework to ensure that these predicted impacts will not occur.

51. Recognising that some degree of uncertainty is inherent in predictions of this nature, the proponent has committed to implement a dredge monitoring and management framework to address uncertainty and ensure the relevant EPO is met. The dredge monitoring and management framework will be used to validate the model predictions and inform where trigger levels in relation to impact thresholds to corals and sponges are being approached so that the proponent can proactively manage the activity to prevent predicted impacts to benthic communities (e.g. at Hauy Island) and ensure any impacts are of an acceptable level. Further, through development of the EP the titleholder will be required to demonstrate how impacts predicted to corals and sponges are acceptable and will be reduced to as low as reasonably acceptable (ALARP).

52. The impacts from the installation of the trunkline have been evaluated according to the values and sensitivities on the seabed that will be disturbed:

    a. Biological receptors that will be impacted mostly include sponges and other sessile invertebrate fauna, which the OPP indicates are patchy and at low densities but ubiquitous along the length of the trunkline.

    b. The trunkline will traverse the Montebello Australian Marine Park (multiple use zone) where the benthic habitat impacted is representative of habitats in the park outside of the route, and the impacts described are not inconsistent with the management plan.

    c. The trunkline will intersect the key ecological features of the Ancient Coastline, Continental Slope Demersal Fish Communities and the Exmouth Plateau, but impacts are not predicted to compromise ecological functioning of the KEFs or their values.

    d. The trunkline traverses near some seabed features at the continental shelf margin including pinnacles, an unidentified seabed feature and the shelf itself. The OPP does not predict impacts to these features.

    e. The OPP evaluates the potential for impacts to marine turtles through loss of foraging habitat and determines that any losses of potential food sources are minimal compared with availability of these resources. Further, impacts are not predicted in areas that are identified as important to marine turtles, and as such there are no impacts considered to be inconsistent with the Recovery Plan for Marine Turtles.

    f. The OPP evaluates the potential for impacts to marine fishes through loss of habitat and concludes that the levels of impact will be minimal, acceptable and consistent with the principles of ESD.

    g. While the proponent's categorisation of epifauna (foraging habitat and habitat for turtles and fishes) as 'low value' receptors is not consistent with classifications in published literature in relation to marine turtles and fishes, the proponent makes a case that the particular epifauna that will be affected are represented elsewhere. The proponent also makes the case that this has been taken into account in assigning the receptor sensitivity category and does not appear to affect the predicted outcome.

    h. The seabed in the vicinity of the proposed FPSO and drill centres is relatively featureless and comprised of unconsolidated sediments, so impacts are predicted to be negligible given the scale of impact relative to the extent of similar benthic habitat.

Greenhouse gas emissions (GHG)

53. In assessing this OPP, NOPSEMA has had regard to the Department of Sustainability, Environment, Water, Population and Communities' Policy Statement '*Indirect consequences' of an action: Section 527E of the EPBC Act*, in particular in relation to GHG emissions, including scope 3 emissions.

54. The OPP estimates the volumes of total lifecycle GHG emissions (including scope 3 emissions) and evaluates the potential impacts of GHG emissions using a domestic and global perspective, including potential implications for the Australian environment as a result of global climate change. The evaluation recognises the project's contribution to the global scale of GHG emissions and acknowledges the cumulative nature of global GHG emissions and associated impacts.

55. The OPP explains that the Federal government's plan to meet Australia's national determined contribution (NDC) set in accordance with the Paris Agreement already considers the emissions from processing Scarborough gas through an onshore LNG plant. Therefore the OPP concludes that, the project will not compromise Australia's ability to meet its NDC to reduce emissions by 26-28% below 2005 levels by 2030.

56. The OPP clarifies that GHG emissions from downstream processing of Scarborough gas are provided for under other appropriate legislation and approvals, i.e. Pluto LNG Facility (Ministerial Statement 757) and Karratha Gas Plant (Ministerial Statement 536). The limits and management requirements in relevant approvals documents are described in the OPP, along with how they relate to processing of Scarborough gas.

57. The OPP makes a case that natural gas (including Scarborough gas) is expected to play a key role in the future energy mix needed to contribute to an incremental reduction in net global atmospheric greenhouse gas concentrations by displacing more carbon intensive power generation, and will therefore contribute to the International Energy Agency's (IEA) sustainable development scenario (SDS).

58. To manage scope 1 emissions, the OPP commits to designing and operating facilities to optimise energy efficiency and refers to Australia's GHG management framework under the Safeguard Mechanism, requiring scope 1 emissions above a facility-specific baseline to be offset.

59. The OPP also recognises the inherent uncertainty associated with predicting climate change and that the policy response to it has evolved rapidly and is expected to continue to do so. Therefore, the proponent has proposed to adopt a range of management and mitigation measures and established EPOs to address this uncertainty:

    a. EPO 3.1: Optimise efficiencies in air emissions and reduce direct GHG emissions to ALARP and Acceptable Levels; and

    b. EPO 3.2: Actively support the global transition to a lower carbon future by net displacement of higher carbon intensive energy sources.

60. To demonstrate how these EPOs are able to be met, the proponent commits to the following mitigation, management and monitoring measures in the OPP:

    a. Actively monitor and market the role of LNG in displacing higher carbon intensity fuels;

    b. Advocate for stable policy frameworks that reduce carbon emissions;

c. Monitor and report on the global energy outlook including the demand for lower carbon intensive energy such as LNG; and

d. Monitor developments in the global energy outlook and emerging regulatory change in order to adapt business plans and strategies for changing expectations and to manage risk.

61. There is adequate information provided in the OPP to explain how the proponent proposes to meet EPO 3.2; in particular through future regulatory approval processes required before activities can commence. Such approvals are required to provide specific details of management measures, which are regularly reviewed and tailored to match circumstances, at the time of review.

62. The arguments made by the proponent in the OPP are based on consideration of current published and reputable literature (e.g. IEA reports and scientifically peer-reviewed literature) regarding GHG emissions and global climate change.

63. With the proposed management measures in place, including those associated with third party emissions outside of the proponent's direct operational control, in conjunction with the monitoring and adaptive management commitment and EPOs, the OPP demonstrates that the GHG emissions associated with the Scarborough project will be managed to an acceptable level. This conclusion is supported when considering the cumulative global nature of GHG emissions and subsequent net global atmospheric GHG concentrations associated with global energy use. Further to this, the IEA highlights the role of gas to displace higher carbon intensive energy sources and supporting the transition to renewable energy sources to reduce global greenhouse gas emissions over time.

64. Further to the management commitments made in the OPP, the Environment Regulations provide the future legislative mechanism for EP assessments that:

a. Require a detailed evaluation of all activity-specific environmental risks and impacts, including those associated with GHG emissions and global climate change, and will also require demonstration that GHG emissions will be reduced to ALARP;

b. Provides for NOPSEMA to further assess measures the proponent proposes in order to meet the established EPOs, which will be subject to regular review and compliance monitoring;

c. Will address specific monitoring and management actions that would need to be taken by the proponent to address uncertainties in the role of natural gas in displacing higher emission insensitive fuels, to ensure the EPO is achieved for the life of the project.

65. The future EP assessment and compliance monitoring processes are the appropriate mechanisms for NOPSEMA to provide regulatory oversight and verification of the case made that impacts and risks arising to petroleum activities that are part of the project will be of an acceptable level and managed in accordance with the principles of ESD.

<u>Underwater noise emissions</u>

66. The OPP includes results of underwater noise modelling, including predictions of received levels of underwater noise in relation to biologically relevant thresholds. Using this modelling, the evaluation process indicated that there was potential for unacceptable impacts on pygmy blue whales during pile driving activities.

67. To address this potential unacceptable impact and ensure that the project will be managed so that it is not inconsistent with the Conservation management plan for blue whales, the OPP commits to excluding pile driving activities during the months of May and June, and November and December to avoid peak migration periods of the pygmy blue whale.

68. The OPP has defined the acceptable levels of impact to marine fauna and has included an EPO to demonstrate that underwater noise associated with pile driving activities will be of an acceptable level: *EPO 4.4: Impact piling activities will not occur during the months of May and June and December to avoid peak migration periods of the pygmy blue whale.*

69. The OPP also commits to ensuring that all relevant activities associated with routine acoustic emissions will be conducted in line with the EPBC Act Policy Statement 2.1 – Interaction between Offshore Seismic Exploration and Whales.

70. The OPP demonstrates that, with the implementation of proposed management measures, the project is unlikely to injure blue whales or interfere with migration behaviours when whales are in biologically important areas and is therefore considered not inconsistent with the Conservation Management Plan for Blue Whales (2015).

Light emissions

71. The OPP recognises the potential adverse impacts from artificial light on light-sensitive receptors such as avifauna and marine turtles, and that impacts can arise from both light spill and skyglow.

72. To support the evaluation of impacts from artificial light, modelling has been undertaken for two representative vessel types using ILLUMINA Artificial Light at Night against the nearest turtle nesting habitat to the trunkline and borrow ground project areas.

73. NOPSEMA noted that ILLUMINA is a three-dimensional model that accounts for both line of sight and atmospheric scattering, allowing the attenuation of light over distance and extent of light glow to be modelled. Four scenarios were considered associated with trunkline installation and stabilisation activities. Details are presented in Appendix L.

74. This modelling has formed the basis for the assessment of artificial light impacts on marine turtles that utilise 'habitats critical to survival' defined in the National Recovery Plan for Marine Turtles in Australia.

75. It is evident in the OPP that the proponent has applied the National Light Pollution Guidelines for Wildlife Including marine turtles, seabirds and migratory shorebirds in undertaking the evaluation of artificial light emissions on light sensitive fauna receptors. Based on the impact evaluation provided, the project has demonstrated that it will not be inconsistent with the Recovery Plan for Marine Turtles in Australia because:

    a. There is unlikely to be an effect on nesting turtles informed by light modelling;

    b. There is unlikely to be an effect on hatchlings emergence (misorientation of disorientation) informed by light modelling;

    c. There is no published literature to indicate that artificial light interferes with foraging, migration or internesting behaviours, and therefore the trunkline and borrow ground activities are unlikely to affect these in-water biologically important behaviours;

d. While there is potential for changes to light on water to attract dispersing hatchlings, this is short-term with a low likelihood of occurrence given the distance of the borrow ground activities to the nesting beaches (Delambre and Rosemary Islands) and the absence of defined dispersion pathways;

e. This OPP has defined the acceptable level of impact to marine turtles from artificial light and included EPO 1.5: Trunkline installation and borrow ground activities will be undertaken in a manner that aims to avoid the displacement of marine turtles from important foraging habitat or from habitat critical during nesting and internesting periods. This EPO aligns with the defined acceptable level of impacts, is consistent with the principles of ESD and demonstrates that the project can be managed so that it is not inconsistent with the Recovery Plan for Marine Turtles in Australia.

f. To ensure that the EPOs for artificial light impacts on marine turtles are achieved, NOPSEMA's EP assessment process will require demonstration that the impacts and risks from artificial light will be managed to an acceptable level, consistent with the Recovery Plan for Marine Turtles in Australia, and reduced to ALARP, for example through further consideration of control measures.

Unplanned hydrocarbon discharges

76. The OPP evaluation applied a systematic process to assess potential consequences of unplanned hydrocarbon releases by considering receptor sensitivity and predicted extent, duration, frequency and scale of impacts of hydrocarbons at the surface and in the water column from worst case spill scenarios utilising outputs of stochastic spill modelling.

77. The risk evaluation found that the likelihood of an unplanned hydrocarbon release from the project was highly unlikely, and that the potential consequences to receptors within the area of the environment that may be affected mostly ranged from negligible to minor, due to rapid weathering and the low concentrations of hydrocarbons in worst-case scenarios potentially contacting receptors.

78. The risk evaluation found that coral reef habitat was the most sensitive receptor in the environment that may be affected by unplanned hydrocarbon releases from the project. However, the potential consequences of worst-case scenarios are not expected to modify, destroy, fragment, isolate or disturb an important or substantial area of coral habitat resulting in an adverse impact on marine ecosystem functioning or integrity, because of the short duration, short hydrocarbon exposure time and confined spatial extent of potential spills.

79. NOPSEMA considered the OPP risk evaluation, including a description of the environment that may be affected by the project, which was based on the application of marine diesel modelling thresholds for dissolved aromatic and entrained hydrocarbons derived from ecotoxicity testing commissioned by the proponent in 2013. NOPSEMA recognises that the proponent may be required to apply additional and/or alternative oil thresholds to address the additional requirements of the evaluation of oil spill impacts and risks in the preparation of an EP submission (refer to NOPSEMA Bulletin #1 – Oil spill modelling).

Findings on subregulation 5D(6) criteria

80. NOPSEMA was reasonably satisfied that the OPP:

    a. Adequately addresses comments given during the period for public comment;

    b. Is appropriate for the nature and scale of the project;

    c. Appropriately identifies and evaluates the environmental impacts and risks of a project;

    d. Sets out appropriate environmental performance outcomes that:

        i. Are consistent with the principles of ecologically sustainable development;

        ii. Demonstrate that the environmental impacts and risks of the project will be managed to an acceptable level; and

    e. Does not involve an activity or part of an activity being undertaken any part of a declared World Heritage property within the meaning of the EPBC Act.

81. As NOPSEMA was reasonably satisfied that the OPP meets the criteria set out in subregulation 5D(6) of the Environmental Regulations, NOPSEMA accepted the OPP pursuant to subregulation 5D(5)(a) of the Environment Regulations.

Signed

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Stuart Smith

Chief Executive Officer

6 April 2020