NOPSEMA
Australia's offshore energy regulator

STATEMENT OF REASONS

Acceptance of the KATO Energy Corowa Development Offshore Project Proposal

Document No: A774874

Date: 19/04/2021

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) provides the following Statement of Reasons for its decision to accept the Corowa Development 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, in addition to the above, the following words and phrases have the following meaning:

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

   b. The offshore project is the Corowa Development described in the KATO Energy Offshore Project Proposal (Ref: COR-000-EN-RP-001, Rev 9).

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

   d. KATO Energy Pty Ltd is referred to as the proponent.

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

   f. Other terms used in this Statement of Reasons may be defined in the Environment Regulations and the OPGGS Act.

   g. EPBC Program refers to environmental management authorisation process for petroleum and greenhouse gas storage activities administered by NOPSEMA under the Environment Regulations endorsed by the Minister for Environment under section 146 of the EPBC Act.

   h. The Strategic Assessment Report for strategic assessment of the environmental management authorisation process for petroleum and greenhouse gas storage activities administered by NOPSEMA under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* is referred to as the SAR.

Decision

2. On 19 April 2021, NOPSEMA made the decision pursuant to regulation 5D of the Environment Regulations to accept the OPP.

3. Acceptance of the OPP permits the submission of an environment plan (EP) for an activity that is, or is part of, the accepted OPP for assessment by NOPSEMA under the Environment Regulations.

4. Notice of the decision was provided to the proponent on 19 April 2021.

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 a petroleum activity, as it does here, regulation 4 of the Environment Regulations defines the Regulator to be NOPSEMA.

6. I, Stuart Smith, am the decision maker responsible for this decision. I hold the position of Chief Executive Officer (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:

   a. when I refer to NOPSEMA having made a request, I am referring to a request made by me in exercising my authority to make this decision;

   b. when I refer to NOPSEMA having considered or had regard to a matter, whether it be expressed in those words or similar phrasing, I am referring to a matter that I have considered or taken into account in exercising my authority to make this decision; and

   c. when I refer to NOPSEMA making a finding of fact or accepting a submission, I am referring to a finding made by me in exercising my authority to make this decision.

8. Where appropriate, in making this decision, I have taken into account and accepted advice and recommendations from the assessment team within NOPSEMA.

The assessment process

9. On 16 August 2019, in accordance with regulation 5A of the Environment Regulations, the proponent submitted an OPP (Revision 0, 16 August 2019) for assessment by NOPSEMA in relation to its suitability for publication in accordance with regulation 5C.

10. In accordance with regulation 5B of the Environment Regulations, NOPSEMA requested the proponent to provide further written information about matters required by regulation 5A on two occasions: 12 September 2019 and 12 December 2019. Having assessed Revision 2 of the OPP (dated 16 January 2020), which had been revised by the proponent in response to NOPSEMA's requests for further information referred to above, on 17 February 2020 NOPSEMA decided that Revision 2 of the OPP was suitable for publication in accordance with regulation 5C of the Environment Regulations. The proponent made some editorial and formatting changes and the OPP (Revision 3, dated 27 February 2020) was published for public comment on 27 February 2020.

11. Following publication of that version of the OPP and an eight-week public comment period, and in accordance with regulation 5D of the Environment Regulations, the proponent submitted another copy of the OPP to NOPSEMA on 23 June 2020 (Revision 4, 23 June 2020). A NOPSEMA 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 in subregulation 5D(6).

12. On 10 July 2020, under subregulation 5D(2)(a) of the Environment Regulations NOPSEMA requested the proponent to provide further written information and this required that the OPP be submitted with the correct appendices.

13. On 13 July 2020, the proponent responded to NOPSEMA's request with further information which was incorporated into a resubmitted OPP (Revision 5, 13 July 2020), under subregulation 5D(4) of the Environment Regulations.

14. On 11 August 2020, 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 justification and evaluation of impacts of the routine flaring of reservoir gas;

    b. Greenhouse gas (GHG) emissions intensity and annual emissions benchmarking;

    c. Processes, monitoring and management to achieve environmental performance outcomes (EPOs) for scope 3 emissions;

    d. Impacts from artificial light on marine turtles;

    e. Impacts to the Commonwealth marine area from planned discharges;

    f. Further evidence to demonstrate that the offshore project will be undertaken in a manner that will prevent hydrocarbon spills form occurring; and

    g. Compliance with s572 of the Offshore Petroleum and Greenhouse Gas Storage Act.

15. On 12 October 2020, the proponent responded to NOPSEMA's request with further information which was incorporated into a resubmitted OPP (Revision 6, 12 October 2020), under subregulation 5D(4) of the Environment Regulations.

16. On 11 November 2020, 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. Evaluation of scope 3 GHG emissions;

    b. EPOs for GHG emissions;

    c. Impacts from light emissions on marine turtles;

    d. Compliance with s572 of the OPGGS Act; and

    e. Addressing environmental management matters raised in third party correspondence.

    f. GHG emissions- scope 1 and the principles of ESD;

17. On 18 December 2020, the proponent responded to NOPSEMA's request with further information which was incorporated into a resubmitted OPP (Revision 7, 18 December 2020), under subregulation 5D(4) of the Environment Regulations.

18. On 8 January 2021, 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 evaluation of environmental impacts and risks from GHG emissions;

    b. The GHG management plan, reduction and offset measures;

    c. Impacts from artificial light on marine turtles;

d. The evaluation of environmental risk from invasive marine species and relevant EPOs; and

e. EPOs from GHG emissions and climate change impacts.

19. On 10 February 2021, the proponent responded to NOPSEMA's request with further information which was incorporated into a resubmitted OPP (Revision 8, 10 February 2021), under subregulation 5D(4) of the Environment Regulations.

20. On 25 February 2021, 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 claims relating to environmental impacts and risks of the offshore project contained in additional third-party correspondence received following the closure of the public comment period;

    b. Impacts from artificial light on marine turtles;

21. On 18 March 2021, the proponent responded to NOPSEMA's request with further information which was incorporated into a resubmitted OPP (Revision 9, 18 March 2021), under subregulation 5D(4) of the Environment Regulations.

22. 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 included an examination of higher order environmental impacts and risks, with the specialist NOPSEMA assessors paying particular attention to those matters. The assessment included a general assessment of the whole OPP and three detailed topic assessments of the OPP content, as follows:

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

    b. Unplanned emissions and discharges (hydrocarbon sill risk); and

    c. Planned emissions and discharges (GHG).

23. On 19 April 2021, under subregulation 5D(5)(a) of the Environment Regulations I accepted the assessment team's recommendation that the OPP met the criteria in subregulation 5D(6). In so doing, I have considered and agree with each of the findings and conclusions made by the assessment team in relation to the general assessment and each topic assessment. Notice of this decision was provided to the proponent on 19 April 2021.

Key materials considered in making the decision

24. NOPSEMA assessed the OPP in accordance with legislative requirements and NOPSEMA policy and procedure. The material that NOPSEMA took into account in making this decision included:

    a. The OPP, comprising:

        i. Corowa Development OPP (Revision 9, dated 18 March 2021); and

        ii. Supporting OPP documentation (Appendices A, B, C, D, E, F).

    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 – Offshore Project Proposal assessment*, (August 2020);

ii. Department of Sustainability, Environment, Water, Population and Communities (SEWPaC), *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 (DEWHA), *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 (DEWHA), *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance,* EPBC Act Policy Statement (2013).

d. Guidance:

i. NOPSEMA, *N-04790-GN1663 – Offshore project proposal content requirements,* (August 2020);

ii. NOPSEMA, *GN1488 – Oil pollution risk management* (February 2021);

iii. NOPSEMA, *N-04790- IP1664 – Information paper – Making public comment on offshore project proposals* (August 2020);

iv. NOPSEMA, *N-04750-IP1765 – Information Paper – Acoustic impact evaluation and management* (June 2020);

v. NOPSEMA, N-04750-IP1899 – *Information Paper – Reducing marine pest biosecurity risks through good practice biofouling management* (October 2020);

vi. NOPSEMA, *Environment Bulletin – Oil Spill Modelling* (April 2019); and

vii. Department of the Environment and Energy (DoEE), *National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds*, Version 1.0 (January 2020).

e. Procedures:

i. NOPSEMA, *N-04790 – SOP1678 – Offshore project proposal assessment standard operating procedure* (Revision 3, May 2020).

f. Other relevant documents and records:

i. Recorded findings of NOPSEMA's assessment team regarding assessment of how the OPP was considered to meet the requirements of the Environment Regulations.

ii. Letter dated 5 March 2021 from the Department of Industry, Science, Energy and Resources (DISER) to NOPSEMA in response to NOPSEMA's request for the Department's views on the case made in the Corowa Development OPP (Rev 8) that new oil fields are able to be developed

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

while achieving the intent of International Energy Agency's (IEA's) Sustainable Development Scenario (SDS) and not foregoing meeting the goals of the Paris Agreement.

iii. Letter dated 12 February 2021 from the Chairperson of the Ningaloo Coast Advisory Committee to NOPSEMA.

iv. Department of the Environment and Energy (DoEE), *Recovery Plan for Marine Turtles in Australia* (2017).

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

vi. Department of the Environment and Energy (DoEE), *Draft Wildlife Conservation plan for Seabirds* (2019).

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

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

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

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

xi. 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 Department of Agriculture, Water and Environment (DAWE) website.

xii. Relevant scientific literature.

xiii. Relevant publications of the International Energy Agency including the World Energy Outlook 2019 and 2020.

Legislative framework

25. The Environment Regulations relevantly provide that:

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

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

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

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. particular relevant values and sensitivities may include, but are not limited to any of the following (subregulation 5A(6)):

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 the EPBC Act;

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

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

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

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

A. a Commonwealth marine area within the meaning of the EPBC Act; or

B. Commonwealth land within the meaning of the EPBC Act; and

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

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

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 environmental impact or risk; and

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

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. The criteria are that the proposal (subregulation 5D(6)):

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 and findings of material facts

26. NOPSEMA takes into account relevant considerations and makes findings of fact as follows.

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

27. There were no public comments received during the public comment period for this OPP.

28. After closing of public comment, third party correspondence was received by NOPSEMA in relation to the Corowa Development on two occasions:

a. November 2020 by an anonymous third-party outlining matters in relation the impacts and risks including in relation to marine habitats and fauna, climate change, produced formation water, decommissioning and spill risk.

b. February 2021 by the Ningaloo World Heritage Advisory Committee (NCWHAC) outlining concerns in relation to the potential impacts of the Corowa Development on the Outstanding Universal Values (OUV) of the Ningaloo Coast World Heritage Area (NCWHA).

29. As the third party correspondence contained relevant claims about the potential environmental impacts and risks of the offshore project, NOPSEMA took these matters into account. NOPSEMA provided the proponent with an opportunity to address the claims and the proponent's response is presented in Appendix F of the OPP. NOPSEMA is satisfied that the proponent has adequately addressed the relevant matters in raised in the third party correspondence (addressed in relevant sections of this Statement of Reasons below).

30. Based on the above findings (cl 27–29), NOPSEMA is satisfied that the requirements of r 5D(1)(c) are met.

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

31. 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

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

    a. The OPP identified the proponent and included contact details including address, phone number and email, as well as a web link to the proponent's website.

Project summary - Description of each activity part of the project

33. The OPP explains that the proponent's business strategy is to develop multiple small marginal discovered fields which are currently uneconomic and subsequently 'stranded'. The proponent will produce the resource in these fields by using the relocatable honeybee production system to move from one field to the next. At the time of making its submission the proponent's portfolio consists of the Corowa Development and Amulet Development. A separate Statement of Reasons has been prepared for the Amulet Development offshore project.

34. A separate OPP for Amulet has been submitted to NOPSEMA (KATO 2021) and has also been subject to a public comment period. This OPP was accepted on 19 April 2021. The Amulet Development is centred on the Amulet field (a light crude oil field) located within Commonwealth waters in production lease WA-8-L on the North West Shelf ~132 km north of Dampier in 90 m of water. The Amulet field is ~335 km north-west from the Corowa Development.

35. There is no temporal or geographical overlap between the Corowa and Amulet Developments. The separate fields associated with the Corowa Development and Amulet Development cannot be developed concurrently given the honeybee production system will be used for each project and will therefore require successive project timing. At the time of this decision, KATO has not determined the order of the Corowa and Amulet Developments.

36. 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 of 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 offshore project.

    b. It was clear that the offshore project involves the use of a relocatable production system known as a 'honeybee production system' in order to develop the Corowa oil field. A comprehensive description of the project activities, as identified by the proponent, was provided.

    c. The description of the offshore project is provided with an emphasis on both infrastructure and activities. It was clear that:

        i. all infrastructure and activities that are part of the project are in Commonwealth waters

ii. Supply and support vessels are expected to operate from local regional ports (e.g. Exmouth, Onslow, Dampier) to transport fuel, stores, waste and specialist supplies such as cement and drilling fluids and will avoid the Ningaloo Coast World Heritage Area (WHA).

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

i. A geophysical survey of the well location and mooring spread to ensure suitable seabed conditions exist for anchoring and jacking. This may consist of high-resolution sub-bottom profiler, magnetometer, multibeam bathymetric survey, side-scan sonar and high-resolution multibeam echo sounder.

ii. A geotechnical survey of the well location and mooring spread to determine the shallow and surface geology/sediments at the project location. This may consist of borehole sampling, coring, Piezocone Penetration Test, seabed grab sampling, vibro-coring.

iii. Drilling activities are expected to take approximately 5 months with an additional 4 months if a second drilling campaign is required. Up to four production wells may be drilled, potentially over two drilling campaigns to a vertical depth of ~1,500–1,600 m. The final well design is subject to final engineering design and may change.

iv. The base case outlined in the OPP is for a separate mobile offshore drilling unit (MODU), to set-up adjacent to the mobile offshore production unit (MOPU), and drill the wells through the MOPU's conductor deck. In this case, the separate MODU will mobilise into and then exit the Project Area, likely towed by two or three support vessels. If the MOPU can drill, then the MODU may not be required.

v. Activities associated with the installation, hook-up and commissioning phase include the installation, hook-up of the MOPU, installation of a catenary anchor leg mooring (CALM) buoy and mooring arrangements, installation and commissioning of the flowlines including stabilisation and commissioning and hook-up of the floating storage and offloading (FSO) facility.

vi. Supply and support vessels activities are expected to operate from local regional ports (e.g. Exmouth, Onslow Dampier) to transport fuel, stores, waste and specialist supplies such as cement and drilling fluids. The transit of support vessels between any domestic port and the Project Area will avoid the Ningaloo Coast World Heritage Area (WHA).

37. Based on the above findings (cl 33–36), NOPSEMA is satisfied that the requirements of r 5A(5)(b)(i) are met.

Project summary – Description of the location of each activity

38. NOPSEMA considered the location or locations of each activity proposed in the OPP and found that there is an adequate summary of the location or locations of each activity that makes up the offshore project:

a. The OPP indicates that the locations of the project activities in Commonwealth waters are detailed in diagrams, figures and coordinates depicting the geographic areas within which:

i. the proposed Project Area for the Corowa Development (Figure 3-2); and

ii. the environment that may be affected by planned aspects of the offshore project (Figure 5-1)).

b. NOPSEMA acknowledges that the exact location of the MOPU at the Corowa field is indicative at this stage and that accurate infrastructure lay out and locations within the proposed Project Area will be refined during future project design phases and subject to future EP assessments.

39. Based on the diagrams, figures and coordinates depicting the location of the proposed activities, and taking into account the 2 km buffer around the defined Project Area to allow some flexibility in final infrastructure locations, NOPSEMA is satisfied that:

    a. The Project Area does not overlap any Australian Marine Park (AMP). The closest AMP is the Ningaloo Marine Park located approximately 20 km from the proposed MOPU location. The Ningaloo Coast World Heritage Area is approximately 20 km from the proposed MOPU location. The Project Area does not involve any planned activity or part of an activity within any part of a declared World Heritage property and therefore NOPSEMA is satisfied that the requirements of r 5D(6)(e) are met.

40. Based on the above findings (cl 38–39), NOPSEMA is satisfied that the requirements of r 5A(5)(b)(ii) are met.

Project summary – Proposed timetable

41. NOPSEMA considered the proposed timetable in the OPP for carrying out the offshore project and found that the offshore project schedule is summarised in Table 3-2 of the OPP which includes the indicative duration of each phase of the offshore project. The target start date is Q3 2023 with a conservative project life (from mobilisation to decommissioning) of up to five years.

42. Based on the above findings (cl 41), NOPSEMA is satisfied that the requirements of r 5A(5)(b)(iii) are met.

Project summary – Description of facilities proposed for each activity

43. NOPSEMA considered the description of the facilities that are proposed to be used to undertake each activity in the OPP and found that there is a suitable description of the facilities proposed for each activity, including:

    a. Up to four production wells may be drilled, potentially over two drilling campaigns at the Corowa oil field. Either a separate MODU will be used, or the MOPU selected for use may have drilling capability itself. The drilling will be subject to EP assessments.

    b. The MOPU will be a jack-up facility that has been modified to include a production unit, and storage for small quantities of processed oil. It will also have a wells workover module with the ability to undertake well workovers and the plugging and abandonment of the wells prior to departure from the field.

    c. If a FSO unit is used, the MOPU may not be normally manned during steady-state operations but would still be manned during commissioning, decommissioning and maintenance/workover campaigns. If instead, a shuttle tanker is used, the MOPU will normally be manned during steady-state operations.

    d. There will be a short subsea static flowline extending ~1.5 km from the riser on the MOPU to the Flowline End Termination (FLET) and a dynamic section (riser) up to the CALM buoy. The flowline may have communication and power cables bundled with it or laid alongside.

    e. The CALM buoy will have a rotating head to which vessels can moor, typically with a turntable positioned above the stationary hull mounted on a bearing. It will include a single fluid swivel

suitable for transfer of stabilised crude oil from the dynamic flexible riser to the floating export hose. It may include an electric swivel to enable transfer of power or communications between MOPU and FSO.

f. The FSO or shuttle tanker will connect to the CALM buoy via a short floating marine hose which will be fitted with breakaway couplings and will be capable of being recovered and stored on the FSO or alternative (for shuttle tanker option).

44. Based on the above findings (cl 43), NOPSEMA is satisfied that the requirements in r 5A(b)(iv) are met.

Project summary – Description of actions proposed following project completion

45. 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 the project will be decommissioned in accordance with the prevailing legislation at the time.

b. The OPP recognises that the complete removal of infrastructure and the plugging and abandonment of wells is the default decommissioning requirement under the OPGGS Act and is consistent with Australia's international obligations to remove disused installations and structures.

46. Based on the above findings (cl 45), NOPSEMA is satisfied that the requirements of r 5A(5)(b)(v) are met.

Description of existing environment

47. 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 review and analysis of scientific evidence and benthic habitat studies and relevant literature.

b. The description of the environment presented in terms of the Environment that May be Affected (EMBA), the Project Area (the area defined to include the extent of all planned activities), the Light Area (the area defined to include the worst-case extent of predicted measurable light) and the Hydrocarbon Area (the area defined to include the worst-case extent of oil concentrations above ecological and/or visual impacts).

c. An overview of the features of the existing environment is provided that encompasses the Project Area, Light Area and EMBA which represents the areas that may be affected by planned and unplanned activities.

d. The description of the environment includes the physical, ecological, social, economic and cultural environment and their associated values and sensitivities.

e. The description of the environment addresses ecosystems, habitats, listed threatened and migratory species, biodiversity values and their constituent parts in the area that may be affected by the offshore project including planktonic assemblages, benthic habitats and communities (such as epifauna and infauna), banks, reefs and shoals, coastal habitats and, demersal and pelagic biota.

f. Socio-economic features of the environment that may be affected by the offshore project are identified and described including marine and coastal industries (i.e. commercial shipping, Defence,

petroleum exploration and production) marine tourism and recreation, and Commonwealth and State managed commercial fisheries, have been identified and described.

g. Known cultural and heritage environment features and values that may be affected by the offshore project have been identified and described.

h. The description of the environment considers existing pressures on the environment including commercial shipping, commercial fishing, defence activities and other oil and gas activities.

48. Based on the above findings (cl 47), NOPSEMA is satisfied that the requirements of r 5A(5)(c) are met.

Values and sensitivities – including Part 3 protected matters

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

a. A combination of physical, ecological and biological data and information has been used to describe the environment in both a local and regional context. This includes water and sediment quality, bathymetry, seabed features in the Commonwealth marine area and habitats for species protected under the EPBC Act.

b. Protected matters search reports for each of the defined 'environment that may be affected' are included in Appendix A of the OPP.

c. The benthic habitats within the Project Area broadly are composed of partially exposed cemented carbonates overlain by a fine to coarse grained sediment veneer, with sparse coverage and low-density of benthic communities.

d. Biologically important habitats and ecological features have been described in sufficient detail to inform the detailing and evaluation of environmental impacts and risks, including by using information from the Marine Bioregional Plan for the North-west Marine Region (DSEWPaC 2012) and a Corowa pre-spud survey.

e. Where relevant, in describing 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.

f. The OPP identifies that the Project Area and Light Area (where planned environmental impacts are predicted to occur) associated with the Corowa Development overlaps biologically important areas (BIA) and habitat critical for survival for listed threatened species, and these are identified and described.

i. The Project Area has some degree of overlap with the following BIAs:

A. breeding/foraging area for the wedge-tailed shearwater

B. foraging habitat for whale sharks

C. distribution area for the pygmy blue whale

D. migration area for the humpback whale

E. internesting or nesting habitat for green, flatback and loggerhead turtles.

ii. The Light Area has some degree of overlap with the following sensitive areas (in addition to those overlapping the Project Area):

A. breeding area for the fairy turn and lesser crested tern

B. breeding, calving, foraging and nursing areas for dugongs

C. nesting areas and habitat critical to the survival of green, flatback and loggerhead turtles

D. Muiron Islands and surrounding waters (part of the Ningaloo Coast World Heritage Area).

g. The OPP recognises the overlap of the hydrocarbon area (area potentially affected by an unplanned hydrocarbon spill) with a number of BIAs and habitats critical for survival for a listed threatened species and these are identified and described.

h. 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 knowledge of the species' presence and distribution in the area.

i. A description of the key ecological features (KEF) overlapped by the EMBA, the Project Area, the Light Area and the Hydrocarbon Area is included. The Project Area has ~0.12 km^2 overlap with the ancient coastline at 125 m depth contour KEF. The Light Area overlaps with the ancient coastline at 125 m KEF, the Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF and the continental slope demersal fish communities KEF.

j. Protected areas and places that are within the EMBA that may be affected in the unlikely event of a hydrocarbon spill are described in section 5 of the OPP. The OPP describes the values, including:

i. the representative values, of the AMPs that may be affected by unplanned hydrocarbon spills, utilising the information provided in the North-west Marine Park Network Management Plan.

ii. the outstanding universal values (OUV) of the Ningaloo Coast World Heritage Area.

50. Based on the above findings (cl 49), NOPSEMA is satisfied that the requirements of r 5A(5)(d) are met.

Environmental performance outcomes

51. NOPSEMA considered the Environmental Performance Outcomes (EPOs) for the project in the OPP and found that:

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

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

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

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

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

52. The principles of ESD were relevant to the assessment of the proposal, with aspects of ESD inherent in the OPP content requirements and criteria for acceptance in the Environment Regulations. Overall, the

principles of ESD are reflected in the EPOs that were set for the project. 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').

b. 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 environment as defined under Regulation 4 of the Environment Regulations. Specifically, the OPP includes an evaluation of the potential environmental impacts and risks of the project on Commonwealth and WA State managed fisheries, marine tourism and recreation, marine and coastal industries taking into account the temporary nature of environmental impacts attributed to the short-term operational life of the project and decommissioning commitments to comply with section 572 of the OPGGS Act. The OPP has demonstrated that environmental impacts and risks to these socio-economic and ecological values will be of an acceptable level (addressed as identified in relevant sections of this Statement of Reasons).

c. 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').

d. NOPSEMA has considered the proponent's evaluation of environmental impacts and risks to the environment as well as its case for why these environmental impacts and risks will be of an acceptable level. NOPSEMA has considered the threat of serious or irreversible environmental damage and how the proponent has addressed uncertainty. For example, this includes:

    i. the uncertainty in the extent to which greenhouse gas emissions (GHG) arising from the project contribute to climate change impacts on the environment within the Australian jurisdiction. Consideration has been given to measures committed to and conservatism applied by the proponent to manage residual scientific uncertainty including the GHG monitoring and management commitments in place to address this uncertainty; and

    ii. The uncertainty associated with the artificial light levels that will be received at the Muiron Islands and Serrurier Island turtle nesting beaches and the consequences of light levels above baseline conditions. Consideration has been given to the commitment made by the proponent to design the MOPU and flare to ensure there are no changes above background light levels on nesting beaches of the Muiron Islands and Serrurier Island that may be perceived by marine turtles during nesting or hatchling seafinding.

e. The OPP has demonstrated with sufficient certainty that environmental impacts and risks will be of an acceptable level or where relevant has proposed appropriate EPOs and management commitments to guard against any potential for serious or irreversible harm (addressed as identified in relevant sections of this Statement of Reasons).

f. 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').

g. NOPSEMA has considered the EPOs and management commitment by the proponent to avoid and minimise environmental impacts and risks to an acceptable level for the duration of the project. NOPSEMA is reasonably satisfied that the project will be managed such that the health, diversity

and productivity of the environment in maintained by the proponent for future generations. As an example this includes the proponent's commitments to setting appropriate levels of performance for GHG emissions management and commitments to ensure that the project is undertaken consistent with the goals of the Paris Agreement.

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

i. NOPSEMA has considered the proponent's evaluation in the OPP 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. The evaluation and EPOs collectively demonstrate that the project can be managed so that impacts to biological diversity and the ecological integrity of the Commonwealth marine area will be of an acceptable level (addressed as identified in relevant sections of this Statement of Reasons).

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

k. NOPSEMA has considered that the proponent is required to 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. NOPSEMA considers that the onus is on the proponent to protect ecological services and capital associated with the environment that may be affected by the Corowa Development. To the extent that the principle is relevant for an individual offshore petroleum project, the OPP demonstrates compliance with Australian government legislation and policy requirements relating to environmental management.

l. The OPP has demonstrated that environmental impacts and risks will be of an acceptable level (addressed as identified in relevant sections of this Statement of Reasons).

53. For matters protected under Part 3 of EPBC Act, NOPSEMA found that 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 which have been set below significant impact levels where 'significant' is understood by having regard to the *Matters of National Environmental Significance – Significant impact guidelines 1.1*.

b. The project will not be inconsistent with the Recovery Plan for Marine Turtles in Australia (DoEE 2017) and the Conservation Management Plan for the Blue Whale – A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999 (DoE 2015).

c. Relevant policy, background and guidance documents have been used by the proponent to support the evaluations of environmental impacts and risks to demonstrate that the project is able to be managed to ensure environmental impacts and risks will be of acceptable levels. Relevant information considered includes the Marine Bioregional Plan for the North-west Marine Region (DSEWPaC 2012), EPBC Policy Statement 2.1 (DEWHA 2008), Conservation Advice for *Rhincodon typus* (whale Shark) (Threatened Species Scientific Committee 2015) and Conservation Advice for *Megaptera novaeangliae* (humpback whale) (Threatened Species Scientific Committee 2015).

d. The oil spill risk will be of an acceptable level with an EPO that sets the level of performance of *"Undertake the Corowa Development in a manner that will prevent an unplanned discharge of chemicals or hydrocarbons to the marine environment"*. Further consideration of controls applied

to prevent and respond to spills will be required through NOPSEMA's EP assessment process, specific to the activity risks, to demonstrate that EPOs can be achieved.

54. Based on the above findings (cl 51-53), NOPSEMA is satisfied that the requirements of r 5A(5)(e) and r 5D(6)(d) are met.

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

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

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

        i. Honeybee Production Unit;

        ii. Subsea development with onshore processing facility;

        iii. Floating Production, Storage and Offtake facility with mooring system and subsea flowlines;

        iv. Fixed Platform to FSO, Subsea storage or Export pipeline; and

        v. Subsea Tieback to an existing facility.

    b. An assessment of these options is provided including environmental, technical feasibility, safety and social criteria resulting in the first project concept option (i) above being selected.

    c. Alternatives within the preferred overall project design are also described. Such alternatives included consideration of options associated with gas management, flare design (including an enclosed flare option), produced water treatment and disposal, drilling facility type, drilling cutting handling, drilling fluid type, export strategy and CALM buoy mooring options. The OPP also provides a comparison of environmental impacts from these alternatives with reasons given as to why the selected options for project elements and activities 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.

    e. The OPP provides an overview of the feasible alternatives and a comparison of environmental impact aspects associated with each option.

    f. An explanation as to why each feasible option has not been selected is provided in the OPP.

56. Based on the above findings (cl 55), NOPSEMA is satisfied that the requirements of r 5A(5)(f) are met.

Description of requirements

57. NOPSEMA considered the description of requirements, including legislative requirements that apply to the project and are relevant to the environmental management of the offshore project in the OPP. NOPSEMA found that the OPP has presented a case that relevant requirements will be met. These requirements include, but are not limited to:

    a. OPGGS Act and Environment Regulations;

    b. EPBC Act and Regulations;

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

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

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

f. Listed Threatened Species Management/Recovery Plans, Conservation Advices and Threat Abatement Plans;

g. Management plans for places and areas approved under the EPBC Act;

h. Other approvals required under the OPGGS Act besides the OPP, relevant Commonwealth legislation, and relevant international agreements'

i. Other relevant Commonwealth legislation.

58. Based on the above findings (cl 57), NOPSEMA is satisfied that the requirements of r 5A(7) are met.

Environmental impacts and risks – details and evaluation

59. Based on the reasons provided in cl 160 –122, NOPSEMA is satisfied that the requirements of r 5A(8), r 5D(6)(b) and r 5D(6)(c) are met.

60. 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 environmental impacts and risks associated with:

a. Physical presence – interaction with other users;

b. Physical presence – seabed disturbance;

c. Emissions – light;

d. Emissions – atmospheric emissions;

e. Emissions – underwater noise;

f. Planned discharge – drilling cuttings and fluids;

g. Planned discharge – cement;

h. Planned discharge – commissioning fluids;

i. Planned discharge – produced formation water;

j. Planned discharge – cooling water and brine;

k. Planned discharge – deck drainage and bilge; and

l. Planned discharge – sewage, greywater and food waste; and

m. Cumulative impacts.

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

a. Unplanned introduction of invasive marine species;

b. Physical presence – interaction with marine fauna;

c. Physical presence – unplanned seabed disturbance;

d. Unplanned discharge – solid waste;

e. Unplanned discharge – minor loss of containment of chemicals and hydrocarbons;

f. Accidental release – light crude oil; and

g. Accidental release – marine diesel/gas oil.

62. The statements and conclusions drawn by the proponent regarding environmental impacts and risks have been sufficiently supported with scientific literature, with greater effort afforded to supporting aspects of evaluation where there is a higher degree of uncertainty in the predicted environmental impacts and/or higher severity of potential consequences. Appropriate additional studies and a public comment consultation report are provided in the OPP to support the evaluation of impacts and risks, specifically:

a. EPBC Act protected matters reports (Appendix A) that identifies 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;

b. Facility and flare light assessment (Appendix B) which provides an assessment of predicted light intensity and the area of light impact.

c. Greenhouse gas assessment (Appendix C) which presents the method and results of the estimation of greenhouse gas (GHG) emissions for the Corowa Development.

d. Produced Formation Water (PFW) and Cooling Water (CW) Discharge Modelling (Appendix D) that presents the results of PFW and CW modelling for the Corowa Development.

e. Quantitative Oil Spill Modelling (Appendix E) that predicts the movement and fate of spilled hydrocarbons that would result in the event of accidental, uncontrolled releases and predicts risks to sensitive environments on the basis of the probability of exposure above defined exposure concentrations.

f. Third-party comment consultation report (Appendix F).

63. NOPSEMA considered the details and evaluation of all environmental impacts and risks of the offshore project in the OPP in the context of whether these are appropriate to the nature and scale of each environmental impact or risk and found that:

a. A sufficiently robust method has been applied for the identification and evaluation of environmental impacts and risks of the project. This included describing aspects of the project and the sources of impact and risk, evaluating the environment that may be impacted and at risk, defining acceptable levels of environmental impact and risk and an evaluation to demonstrate that the defined acceptable level of impact and risk can be met. Following this method provides for the establishment of EPOs that are consistent with the principles of ESD and reflect the defined acceptable levels of impact and risk. Further evaluation and potential adoption of additional control measures will be undertaken by the proponent during the development of EPs, as part of

that assessment process whereby the proponent must demonstrate that the environmental impacts and risks of an activity will be reduced to 'as low as reasonably practicable' (ALARP).

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 environmental 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 offshore project will be of an acceptable level. This process takes into account:

   i. Environmental impact and risk consequence and adopted management controls to demonstrate that EPOs will be met;

   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 published scientific literature;

   iii. The principles of ESD, including by:

      A. Identifying the levels of uncertainty in conclusions arising from the evaluation of environmental impacts and risks, and accounting for this uncertainty (precautionary principle). Specific examples of measures to address uncertainty include:

         - For the impacts of light emissions, an EPO that requires the proponent to undertake the Corowa Development in a manner that will not result in the displacement of marine turtles from habitat critical to survival of the species or disrupt biologically important behaviours within BIAs (EPO11). A further EPO requires that the MOPU flare is designed to ensure there are no changes above background light levels on nesting beaches of the Muiron Islands and Serrurier Island that may be perceived by marine turtles during nesting or hatchling seafinding (EPO12). This EPO addresses uncertainty in relation to the nature and magnitude of impacts to turtle nesting and hatchling behaviours associated with artificial light on nesting beaches. Best practice design of the flare will be undertaken during front end engineering design (FEED) to reduce light emissions and an artificial light management plan will be developed in alignment with the National Light Pollution Guidelines (CoA 2020).

         - For the uncertainty in relation to the project's contribution to global GHG emissions and climate change, an EPO that requires the proponent to monitor and manage GHG emissions of the Corowa Development so that the project will not result in the supply of oil that is inconsistent with the IEA's SDS and jeopardise keeping a global temperature rise within the objectives of the Paris Agreement. NOPSEMA is satisfied that EPOs and associated management commitments collectively establish that the proponent is committed to addressing uncertainty by ensuring that the sale of the Corowa Development is into countries that have ratified the Paris Agreement and to undertaking adaptive management informed by data published in reputable publications such as annual IEA World Energy Outlook, IRENA Global Renewables Outlook and Global Stocktake report.

B. Defining acceptable levels of environmental impact and risk for biodiversity and ecological values and sensitivities 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 and sensitivities of the Commonwealth marine area and listed threatened and migratory species (biodiversity principle). The level of significant impact is specific to the sensitivity, vulnerability, and recoverability of receptors and was determined by whether the receptor is listed as a matter of national environment significance and what level of protection is afforded.

C. Undertaking robust evaluations of higher order environmental impacts and risks using appropriate impact prediction tools (e.g. empirical modelling). Results from predictive impact tools can then be used to ensure that impacts and risks will be managed to an acceptable level (biodiversity and intergenerational equity principles). Impact prediction tools have been used to predict environmental impacts of the project on matters protected under the EPBC Act from uncontrolled hydrocarbon release scenarios, artificial light emissions and underwater sound to predict the environmental impacts of the project of matters protected under the EPBC Act.

D. Where applicable, undertaking an assessment of predicted environmental impacts in the context of requirements of relevant statutory instruments for biodiversity conservation to support demonstration that the project would not be inconsistent with these instruments, including recovery plans for listed threatened species.

iv. Application of the mitigation hierarchy in the evaluation of environmental impacts and risks to identify where further risk and impact treatment beyond good practice and legislative control measures are needed to provide confidence that the environmental impacts and risks of the offshore project will be managed to acceptable levels.

v. A comparison of 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 the principles of ESD; and

vi. EPOs that reflect the defined acceptable levels of environmental impacts and risks and are in turn consistent with the principles of ESD.

64. NOPSEMA's assessment of the OPP placed greater attention on the higher order environmental impacts and risks of the project, including planned discharge impacts on the values of Commonwealth marine area, greenhouse gas emissions, light and noise emissions and unplanned hydrocarbon discharges.

65. The OPP has provided an evaluation of environmental 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. The evaluations relating to higher order environmental impacts and risks are outlined in cl 66-120 below.

Potential impacts to the Commonwealth marine area

66. Quantitative estimates have been included in the OPP for the potential extent of seabed that will be disturbed from subsea infrastructure and installation including 50% contingency (0.0329 km^2). This disturbance is considered to be localised within the Project Area over a relatively short project life (~5 years).

67. The environmental impacts from the proposed project have been evaluated according to the values and sensitivities on the seabed that may be affected. The Project Area does not overlap with any known shoals, banks, or AMPs. Although there is 0.12 km^2 overlap between the Project Area and the ancient coastline at 125 m depth contour KEF, planned impacts (e.g. subsea infrastructure, cooling water and produced water discharges) are not predicted to overlap with:

    a. The KEF, therefore the ecological function and values of the KEF will be maintained.

    b. The Ningaloo Coast World Heritage Area, therefore there are no predicted impacts from planned discharges on any values of the World Heritage property.

68. The OPP presents an evaluation that is supported by relevant scientific literature and surveys conducted in the region and concludes that the physical presence of the Corowa Development is unlikely to have any adverse impact on the utilisation of fish habitats, including on the availability of food sources within the foraging BIA for whale sharks and therefore will not result in an unacceptable impact to fish habitat values of the Commonwealth marine area.

69. The OPP presents an evaluation of planned drilling and operational discharges impacts (e.g. drilling fluids, cooling water and produced formation water) that is supported by scientific literature and technical studies. The OPP concludes that environmental impacts from planned discharges will not result in a substantial change in water or sediment quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health, and therefore will be of an acceptable level.

70. NOPSEMA considered the potential for cumulative environmental impacts to the Commonwealth marine area. Cumulative impacts refer to the changes to the environment that are caused by an action in combination with other past, present and future human actions (as outlined in the SAR for the EPBC Program (at p65)). In an OPP assessment, the concept of cumulative impacts refers to the impacts associated with the activities of a proposed development interacting with existing and other proposed developments and future uses in the environment of the immediate locality or region (SAR, p65). The environmental impacts of the Corowa Development combined with existing and proposed future pressures on the Commonwealth marine area must be demonstrated to be of an acceptable level and consistent with the principles of ESD.

71. The OPP has considered the environmental impacts resulting from multiple aspects of the Corowa Development in combination with other pressures on the environment. For example, the OPP evaluates the visible light exposure areas for the Corowa Development together with adjacent oil and gas facilities. The OPP also provides an evaluation of potential cumulative impacts on water quality, sediment quality, climate, plankton, benthic habitats and communities, seabirds and shorebirds, fish, marine mammals and marine reptiles. NOPSEMA is satisfied that the EPOs in combination with the associated management commitments, provide confidence that the environmental impacts of the Corowa Development, when considered in the context of other anthropogenic pressures, will be of an acceptable level.

72. NOPSEMA is satisfied that the defined acceptable levels of impact to the Commonwealth marine area and associated EPOs are appropriate and demonstrate that the project can be managed consistent with the principles of ESD and to an acceptable level.

73. Considering the EPOs in place and management commitments, including those associated with seabed disturbance, planned discharges, underwater noise, artificial light and vessel activity, the OPP demonstrates that the impacts and risks from the Corowa Development will be managed to an acceptable level.

74. NOPSEMA recognises that a detailed evaluation of the environmental impacts and risks to the Commonwealth marine area for each activity that makes up the Corowa Development will be undertaken during the EP preparation and assessment process. This will require a further demonstration that the offshore project will be managed to as low as reasonably practicable (ALARP) and acceptable levels with the application of appropriate control measures, environmental performance standards and measurement criteria.

Potential environmental impacts arising from Greenhouse gas emissions (GHG)

75. In assessing the OPP, NOPSEMA has had regard to the EPBC Act Policy Statement 'Indirect consequences of an action: Section 527E of the EPBC Act (SEWPaC 2013), in particular in relation to GHG emissions, including scope 3 emissions.

76. The OPP estimates the volumes of total lifecycle GHG emissions (including scope 1 and scope 3 emissions) and evaluates the potential environmental impacts of project GHG emissions from domestic and global perspectives, including potential implications for the Australian environment as a result of global climate change.

77. The OPP makes a case that the acceptable level of impact from GHG emissions has been agreed by the international community in Article 2 of the Paris Agreement. The OPP also considers that while the environmental impacts of GHG emissions on the global and Australian climate are uncertain, the Paris Agreement is the most comprehensive global means of addressing these uncertainties available.

78. The OPP sets an EPO that requires the proponent to "Undertake the Corowa Development in a manner that will strengthen the global response to the threat of climate change and will not result in the supply of oil that is inconsistent with the IEA's SDS and jeopardise keeping a global temperature rise within the objectives of the Paris Agreement". The IEA's SDS published in the World Energy Outlook 2020 outlines a major transformation of the global energy system that would be needed to deliver on the three main energy-related United Nations Sustainable Development Goals simultaneously while achieving the goal of the Paris Agreement to hold the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels. Further to this, the OPP asserts that the International Energy Agency's WEO 2020 recognises that there remains a role for oil within the sustainable development scenario for the foreseeable future.

79. The OPP explains that under the Paris Agreement and global GHG accounting conventions, each country is responsible for accounting for reporting and reducing emissions that physically occur in its jurisdiction. The proponent in its OPP commits to only sell its stabilised crude oil to companies such that the first sale of oil is into a country that has ratified the Paris Agreement and asserts that this measure limits emissions to those countries that have committed to implementing frameworks to reduce emissions and to achieve the goals of the Paris Agreement.

80. Prior to Project Sanction by the proponent (typically the point at which a final investment decision is made and the project is approved by the proponent to proceed), the proponent has committed to reassessing the acceptability and effectiveness of the GHG emissions reductions measures and adaptive management measures to manage GHG emissions to as low as reasonably practicable (ALARP) and acceptable levels and will not proceed with the project if the criteria for acceptance under the Environment Regulations cannot be met. For EPs submitted for activities set out in the Corowa Development OPP, NOPSEMA will assess whether the following EPO can be met: "*Undertake the Corowa Development in a manner that will strengthen the global response to the threat of climate*

change and will not result in the supply of oil that is inconsistent with the IEA's SDS and jeopardise keeping a global temperature rise within the objectives of the Paris Agreement".

81. For scope 1 emissions, the OPP explains that Australia has ratified the Paris Agreement and has set a target to reduce emissions by 26–28% below 2005 levels by 2030. Consistent with the primary domestic legislation for emissions accounting and reporting; the National Greenhouse and Energy Reporting Act 2007 (Cth) (NGER Act), the proponent will report GHG emissions required as per the National Greenhouse and Energy Reporting (NGER) Scheme including requirements of the Safeguard Mechanism to purchase Australian Carbon Credit Units if designated emissions baseline is exceeded, as determined by the Clean Energy Regulator.

82. The proponent has identified that routine flaring of reservoir gas to support production of oil is not consistent with international best practice (i.e. the World Bank's 'Zero Routine Flaring by 2030' where routine flaring pertains to routine flaring and not to flaring for safety reasons or non-routine flaring). To counter this inconsistency, the proponent has committed to offset all GHG emissions from routine production flaring, defined by the proponent as all production flaring excluding flaring during well clean-up and flowback, commissioning, well maintenance, purge gas, and emergency flaring.

83. The OPP recognises the inherent uncertainty associated with climate projections and the role of oil in the future energy mix under the IEA's SDS. The OPP recognises the project's contribution to the global scale of GHG emissions and notes that anthropogenic climate change impacts cannot be directly attributed to any one development, as they are the result of net global GHG emissions, minus GHG sinks, that have accumulated in the atmosphere. The proponent proposes to address this uncertainty by establishing and managing GHG emissions from the project consistent with EPOs that reflect an acceptable level of impact. These EPOs are to:

    a. Undertake the Corowa Development in a manner that will not significantly contribute to Australia's annual greenhouse gas emissions.

    b. Undertake the Corowa Development in a manner that will strengthen the global response to the threat of climate change and will not result in the supply of oil that is inconsistent with the IEA's SDS and jeopardise keeping a global temperature rise within the objectives of the Paris Agreement.

    c. Undertake the Corowa Development in a manner that will achieve net-zero GHG emissions attributed to routine production flaring.

84. To demonstrate how these EPOs are able to be met, the proponent has committed to implementing GHG management measures including:

    a. To implement a destination-restricted requirement within sales contracts that require the first destination of the proponent's stabilised crude is into a country that has ratified the Paris Agreement.

    b. To periodically monitor and review the ongoing acceptability of GHG emissions and their associated environmental impacts and ensure consistency with the objectives of the Paris Agreement.

    c. During implementation, if host countries are not meeting their policies to achieve the goals of the Paris Agreement, the proponent will implement adaptive management responses described in the Greenhouse Gas Management Plan (GHGMP) which could include:

        i. assessing the outcome on the SDS scenario from the Paris Agreement adaptive management process in future investment decisions.

ii. Advocating and providing industry support and encouragement to relevant government bodies to achieve the goals of the Paris Agreement.

iii. Maintaining a list of permissible host countries for the first export destination of the proponent's product, and annually evaluate performance against those countries policies to achieve the goals of the Paris Agreement.

iv. Revising sales agreements to include permissible host countries, as part of destination restriction of export.

d. To engineer facilities to provide for space, weight and tie-ins to enable the adoption of emissions reduction technologies, and has a plan in place to continually assess the liability of current and emerging technologies to reduce GHG emissions.

e. To develop and implement a GHG management system which will include both energy efficiency and fugitive emissions management elements that will align with the following standards where relevant:

i. ISO 50001 Energy Management Systems (International Organization for Standardization, 2018);

ii. Global Methane Initiative (2020) Identifying and Evaluating Opportunities for Greenhouse; and

iii. United Nations Economic Commission for Europe (2019) Best Practice Guidance for Effective Methane Management in the Oil and Gas Sector.

f. To periodically monitor and review the effectiveness of GHG emissions performance, reduction targets and ensure GHG emissions targets are consistent with national and regional GHG reduction targets.

g. To voluntarily offset all GHG emissions from routine production flaring of associated gas through carbon offsets eligible under the Climate Active Carbon Neutral Standard (CoA 2020b) or surrendered under the Safeguard Mechanism; such that net-zero emissions are contributed from production flaring.

85. The OPP refers to future regulatory approval processes required before activities can commence. The EP approval process requires the identification and evaluation of environmental impacts and risks, detailed control measures and provide specific details of environmental performance, and for these to be reviewed and amended over time to account for changes in external and internal context.

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

87. NOPSEMA requested DISER's views on whether the Corowa Development as proposed in the OPP can be progressed while achieving the intent of IEA's SDS and meeting the goals of the Paris Agreement. In response to this request, DISER advised:

a. New oil fields will be required at least until 2040 and this is supported by the WEO 2020 SDS analysis;

b. The Corowa Development, as presented in the OPP, is not inconsistent with the intent of the IEA's SDS;

c. Provided GHG emissions associated with the Corowa Development occur within countries with mitigation commitments as part of the Nationally Determined Contributions (NDCs) under the Paris Agreement, the Corowa Development is not inconsistent with commitment made by governments to meet the Paris Agreement goals;

d. If the proponent limits the first sale of the Corowa product to countries that are party to the Paris Agreement and if these exports destinations are the same as Australia's oil export trading partners (2018-2019), the GHG emissions arising from the Corowa Development in those import countries would be covered by NDCs to limit or reduce emissions.

88. In addition to the management commitments made in the OPP, the Environment Regulations provide a 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 oil in the SDS to ensure the EPOs are achieved for the life of the project.

89. In making this decision, NOPSEMA has taken into account the predicted GHG emissions of the Corowa Development and potential for combined impacts arising from the release of GHG emissions to the atmosphere in the event that both the Corowa and Amulet Developments proceed. NOPSEMA has considered that Australia has ratified the Paris Agreement and that the SDSs of the IEA's World Energy Outlooks are calibrated off three sustainability goals including the global temperature goals of the Paris Agreement. NOPSEMA therefore considers that the SDS aligns with the objectives of the Paris Agreement. The proponent has committed to a framework of monitoring and management to ensure the Amulet and Corowa Developments, should they both proceed, will be undertaken "in a manner that will strengthen the global response to the threat of climate change and will not result in the supply of oil that is inconsistent with the IEA's SDS and jeopardise keeping a global temperature rise within the objectives of the Paris Agreement". NOPSEMA is satisfied that the proponent has committed to measures in both OPPs that will ensure that any environmental effects arising from the release of GHG emissions to the global atmosphere, from both the Corowa and Amulet developments, will be managed consistent with the global temperature goals of the Paris Agreement. The proponent has committed to only proceed beyond project sanction for each offshore project if there is a demonstrable role for new oil fields in the IEA's SDS. This approach, combined with the EPOs and framework of monitoring and management, provides assurance that both projects and their associated whole of life cycle GHG emissions will be implemented consistent with the goals of the Paris Agreement and in accordance with requirements within the Australian jurisdiction. With the EPOs and management commitments made, the OPP demonstrates that the GHG emissions associated with the Corowa Development 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.

90. 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 from petroleum activities that are part of the project will be of an acceptable level and managed in accordance with the principles of ESD.

Light emission impacts on marine fauna

91. 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 facility and flare lighting, and sky glow.

92. The Corowa Development Light Area overlaps with turtle nesting BIAs, habitat critical to the survival of marine turtles and a portion of the Ningaloo Coast World Heritage property.

93. The results of the Corowa Development facility and flare light assessment (using worst case scenarios) show that artificial light from the project, without adequate control measures in place, will intersect with nesting habitat for marine turtles at the Muiron Islands and Serrurier Island, and therefore light from the MOPU has the potential to inhibit nesting by adult female turtles and disrupt the orientation and seafinding behaviour of hatchlings.

94. To ensure artificial lighting from the Corowa Development does not result in the displacement of marine turtles from habitat critical to the survival of the species or disrupt biologically important behaviour from occurring within BIAs (therefore demonstrating that the project will not be inconsistent with the National Recovery Plan for Marine Turtles in Australia (2017)), the proponent has included commitments in the OPP to designing the MOPU and flare to ensure there are no changes above background light levels on nesting beaches of the Muiron Islands and Serrurier Island that may be perceived by marine turtles during nesting or hatchling seafinding.

95. During the implementation of the project, the proponent has included commitments in the OPP to manage light impacts consistent with policies, strategies, guidelines, conservation advice, and recovery plans for threatened species. This will include further consideration and application of the *National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds, (2020)* through the EP assessment process, when more specific activity-specific details are available.

96. NOPSEMA also assessed the potential impacts to light-sensitive fauna associated with the Amulet Development and has considered the potential for cumulative impacts associated with undertaking both the Corowa and Amulet Developments sequentially. NOPSEMA is satisfied that artificial light impact areas of both developments will not overlap given the spatial and temporal separation of these offshore projects. Considering the EPOs and management commitments documented in the respective OPPs, NOPSEMA is satisfied that the combined artificial light impacts of the Corowa and Amulet Developments will be of an acceptable level.

97. NOPSEMA recognises that a detailed evaluation of the environmental impacts and risks to the light sensitive receptors will be undertaken during the EP assessment process which will require a further demonstration that the project will be managed to ALARP and acceptable levels with inclusion of appropriate control measures, environmental performance standards and measurement criteria.

Underwater noise emissions impacts on fauna

98. The OPP provides an appropriate evaluation of the potential for environmental impacts from underwater noise emissions. The Corowa Development Project Area overlaps with BIAs for threatened marine mammals; the pygmy blue whale distribution BIA and the humpback whale migration BIA.

99. The OPP includes results of underwater noise modelling, including predictions of received levels of underwater noise in relation to biologically relevant thresholds for marine fauna. Modelling results predict the potential for injury (including permanent threshold shift and temporary threshold shift) to

low frequency cetaceans (including blue whales and humpback whales) is limited to within 300 m from impulsive noise sources (activity duration of up to two days), and within 50 m of the source for continuous noise.

100. To address the predicted environmental impacts of underwater noise and ensure that the project will be managed in a manner that is not inconsistent with the Conservation Management Plan for the Blue Whale (DoE 2015), and will not result in unacceptable impacts to cetaceans, the OPP includes commitments for the application of EPBC Policy Statement 2.1 (DEWHA 2008) during relevant operations and development of a noise management plan taking into account the Conservation Advice for Megaptera novaeangliae (Humpback Whale) (TSSC 2015) for activities involving potential acoustic environmental impacts.

101. The OPP has included EPOs that demonstrate that underwater noise impacts associated with the project will managed to an acceptable level, including: 'Noise emissions are managed such that any blue whale continues to utilise the area without injury and is not displaced from a foraging BIA' and that the proponent will 'Undertake the Corowa Development in a manner that will not kill, injure or interfere with protected marine fauna during project activities'. In consideration of the Project Area overlap with the humpback whale migration BIA, the OPP includes an EPO that requires KATO to 'undertake the Corowa Development in a manner that will not disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of a population of listed threatened species'.

102. The OPP demonstrates that based on the location and nature and scale of the project and the implementation of proposed management measures, the project is unlikely to injure cetaceans or interfere with migration behaviours when whales are in BIAs and is therefore not inconsistent with the Conservation Management Plan for the Blue Whale (DoE 2015) or the Conservation Advice for *Megaptera novaeangliae* (Humpback Whale) (TSSC 2015).

103. NOPSEMA also assessed the potential impacts to noise-sensitive fauna associated with the Amulet Development and has considered the potential for cumulative impacts associated with undertaking both the Corowa and Amulet Developments. NOPSEMA is satisfied that the underwater noise propagation impact areas of both developments will not overlap given the spatial and temporal separation of these offshore projects. Considering the EPOs and management commitments documented in respective OPPs, NOPSEMA is satisfied that the combined underwater noise impacts of the Corowa and Amulet Developments will be of an acceptable level.

104. NOPSEMA recognises that a detailed evaluation of the environmental impacts and risks to the noise sensitive receptors will be undertaken during the EP assessment process which will require a further demonstration that the project will be managed to ALARP and acceptable levels with inclusion of appropriate control measures, environmental performance standards and measurement criteria.

Potential impacts on the outstanding universal values of the Ningaloo Coast World Heritage Area

105. The OPP has evaluated the potential impacts and risks to the Ningaloo Coast World Heritage Area (NCWHA) and its Outstanding Universal Value (OUV). This includes the potential impact of artificial light, planned discharges and unplanned hydrocarbon spills.

106. NOPSEMA considered the OUVs for the NCWHA including:

a. World heritage listing criterion (vii) relating to *superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance*; and

b. World heritage listing criterion (x) relating to *important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation* (including whale shark aggregations and marine turtle nesting habitats).

107. The OPP includes an EPO that requires the proponent to "Undertake the Corowa Development in a manner that will not result in a change that may cause one or more of the World Heritage values or National Heritage values of a declared World Heritage property or National Heritage place to be lost, degraded or damaged, or notably altered, modified, obscured or diminished.".

108. To meet this EPO, the OPP has been able to demonstrate that:

a. Predicted impacts from planned discharges (e.g. produced formation water and cooling water) will not result in detectable changes to water, sediment quality or biota within the NCWHA (refer to cl 66-74).

b. Light impacts will be managed such that there will be no change to baseline light levels received on any nesting beach within the World Heritage property (refer to cl 91-97).

c. Underwater noise impacts will not propagate into the World Heritage property at levels that may adversely impact on the OUVs of this property (refer to cl 98-104)

d. There will be no planned vessels transits within the NCWHA attributed to the project (refer to cl 36).

e. Spill risk will be managed to an acceptable level by reducing the likelihood of a spill through facility design features (refer to cl 111-120).

109. NOPSEMA is satisfied that the impacts and risks of the Corowa Development to the OUVs of the NCWHA will be of an acceptable level and not be inconsistent with the Australian World Heritage management principles.

110. NOPSEMA also recognises that a detailed evaluation of the environmental impacts and risks to the values of the NCWHA will be undertaken during the EP assessment process which will require a further demonstration that the project will be managed to ALARP and acceptable levels with inclusion of appropriate control measures, environmental performance standards and measurement criteria.

Unplanned hydrocarbon discharges risk

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

112. The oil spill modelling provided in Appendix E of the OPP provides modelling of the credible spill scenarios, presenting the distribution of hydrocarbons and providing information to determine potential risks for environmental receptors within the EMBA. It utilises appropriate thresholds for surface, entrained and dissolved hydrocarbons to inform the risk evaluation. The spill scenarios presented are appropriate given the nature of the project, and for informing the level of controls that would be required to demonstrate the risk can be managed to an acceptable level.

113. The OPP defined the EMBA, the outer extent of which was informed by the maximum predicted extent of hydrocarbon exposure at low exposure values in the marine environment.

114. The OPP identified and described features of the existing environment within the EMBA.

115. The risk evaluation found a number of sensitivities within the EMBA, including emergent and submerged oceanic reefs, islands, shoals and banks. Informed by the EPBC Protected Matters Database Search, the OPP also identified listed threatened and migratory species, BIAs, Australian marine parks and protected heritage places within the EMBA.

116. The OPP presented an assessment of risks associated with the spill scenario presented. The OPP details a range of controls that are intended to reduce the likelihood of such a release occurring.

117. The OPP outlines design features of the project that are relevant to mitigation of spill risk, including elements such as the design requirements of the MOPU, manning strategy of MOPU and FSO, the export strategy to be utilised, and protection of the riser and flowlines.

118. The OPP refers to future regulatory approval processes required before activities can commence, that are relevant to hydrocarbon spill risk. These include the requirement for a Well Operations Management Plan for management of well integrity and well control measures, Safety Cases for the MOPU and vessels involved in the project that will include further consideration of project design features and how activities will be undertaken in a safe manner, and an EP with oil spill contingency and emergency arrangements.

119. The Environment Regulations provide the mechanism for EP assessments that:

    a. Require a detailed evaluation of all activity-specific environmental risks associated with unplanned hydrocarbon discharges, and a demonstration that those risks will be acceptable and 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.

120. Based on the outcomes of the assessment, it is concluded that the residual environmental risks of the unplanned hydrocarbon spill aspect of the Corowa Development are acceptable.

Findings on subregulation 5D(6) criteria

121. 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:

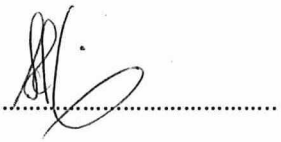
        i. Are consistent with the principles of ecologically sustainable development;

        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 in any part of a declared World Heritage property within the meaning of the EPBC Act.

122. 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



.....

Stuart Smith
Chief Executive Officer
19 April 2021