Environmental Protection Act 1986

Section 43A

NOTICE OF DECISION TO CONSENT TO AMEND A REFERRED PROPOSAL DURING ASSESSMENT

PERSON TO WHOM THIS NOTICE IS GIVEN

(a) Jamie Stewart
Vice President, Browse
Woodside Energy Ltd (ACN: 005 482 986)
Mia Yellagonga
11 Mount Street
PERTH WA 6000

PROPOSAL TO WHICH THIS NOTICE RELATES:

Browse to NWS Development (State component), Assessment No. 2191

Pursuant to s. 43A of the *Environmental Protection Act 1986* (EP Act), the Environmental Protection Authority (EPA) gives approval to the assessment of the proposal being completed in respect of the proposal as amended in accordance with the proponent's request to remove the TRE well location resulting in:

- a reduction of 4 wells in State waters, from 24 to 20
- a reduction of subsea flowline length of 13.9 km

The amended proposal content document and figures are attached.

EFFECT OF THIS NOTICE:

1. The assessment of the proposal is to be completed in respect of the proposal as amended in accordance with the decision set out in this notice.

2. The proposal as amended in accordance with this notice is taken to have been referred to the EPA under s. 38 of the EP Act.

RIGHTS OF APPEAL:

There are no rights of appeal under the EP Act in respect of this decision.

Prof. Matthew Tonts
Delegate of the Environmental Protection Authority

12 October 2022

Attachment 1- Amended proposal content document and figure showing the new approved proposal

Table 1: General proposal content description

Proposal title	Browse to NWS Development (State component)
Proponent name	Woodside Energy Ltd, as Operator for and on behalf of the Browse Joint Venture
Short description	Drilling and completion, subsea installation, commissioning, operation, inspection, maintenance and repair and decommissioning of subsea wells and associated subsea infrastructure located in Western Australian State waters, to extract hydrocarbons from the Torosa reservoir, located approximately 425 km north of Broome and approximately 290 km off the Kimberley coast.

Table 2: Proposal content elements

Proposal element	Location / description	Maximum extent, capacity or range
Physical elements		
Drilling and completion activities of up to 20 wells	Installation and physical presence of infrastructure within indicative field layout as per Figure 1 below.	Up to 0.24 km^2 of direct seabed disturbance (including 25% contingency).
Operation & maintenance of subsea infrastructure (e.g. x-mas trees, flowlines and umbilicals)		
Temporary mooring of MODU		
Construction elements		
Water supply (for installation vessels, MODUs and project vessels)	Water requirements sourced either from seawater (reverse osmosis plant) or loaded onto vessels at port.	Limited water requirements to support drilling and completion activities, subsea installation activities (e.g. potential hydrotest), vessel and MODU water needs and potentially also for decommissioning activities.
Power supply (installation vessels, MODUs and project vessels)	Power generated on board vessels and MODU.	As per each vessel capacity
Vessel discharges	Discharges from vessels	Limited volumes discharged in

(installation vessels, MODU, and project vessels)	and MODU include treated sewage, drain waters, cooling water, sullage, putrescible organic waste and desalination brine.	accordance with International Convention for the Prevention of Pollution from Ships MARPOL 73/78 Annex I, as applied in Australia under the *Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Part II Prevention of pollution from oil); Marine Orders 91 (Marine pollution prevention – Oil) 2014 as applicable to vessel class; *Pollution of Waters by Oil and Noxious Substance Act 1986*.
Drill cuttings and fluid discharges	Drill cuttings and drilling fluids.	Average of 850 m^3 of cuttings per well, with up to 20 wells to be developed in the State Proposal Area. Up to 17,000 m^3 cuttings total. Up to 130 m^3 of fluid discharged per well during well unloading.
Hydrotest fluid discharges	Hydrotest fluids discharged at the seabed during integrity testing of the subsea infrastructure.	One-off discharges of up to 250 m^3 from the TRF flowline.
Produced water	Low volumes of water that naturally occur within the hydrocarbon bearing geological formations.	Small volumes of formation water may result during well unloading activities by the MODU. These will be directly discharged by the MODU.
Underwater noise emissions	Underwater noise: • generated during drilling, completion and installation activities (including vessel movements using Dynamic Positioning (DP), vertical seismic profiling (VSP) and distributed acoustic sensing (DAS) • from piling activities for mooring installation for the MODU (note that this is unlikely to be required) • from installation vessels, MODUs and project	Noise related behavioural disturbance radius of up to approximately 10.5 km around drilling and installation activities. Noise related behavioural disturbance radius of up to approximately 500 m around subsea infrastructure during operations. Noise from piling and mooring installation as required for operations.

	vessels • from helicopter movements to/from the MODU.	
Light emissions – operational lighting	Artificial light emitted by installation vessels, MODUs and project vessels.	Limited to functional lighting at levels that provide a safe working environment for personnel.
Light emissions – flaring	Intermittent flaring from the MODU during well unloading. This occurs only during well installation.	As required for operations and safety.
Air emissions – offshore activities	Air emissions resulting from power generation on project vessels and MODU.	As required for operations and safety.
Operational elements		
Operation of inspection maintenance and repair vessels to maintain subsea infrastructure	Vessels will operate within the State proposal area, in close proximity to installed infrastructure. Discharges from vessels and include treated sewage, drain waters, cooling water, sullage, putrescible organic waste and desalination brine.	Vessel discharges are performed with International Convention for the Prevention of Pollution from Ships.
Operation of up to 20 subsea wells and associated subsea infrastructure	Wells are controlled via umbilicals (e.g. containing electrical or hydraulic connections) via the Torosa FPSO.	Hydraulic fluid may be released to the environment, expected to have no lasting effect on the environment.
Subsea control fluid discharge	Control fluid discharged at the x-mas trees to maintain valve functionality.	Intermittent discharge of water-based hydraulic control fluid when subsea valves are actuated (~0.1 L). Maximum volume of control fluid that will be released to the marine environment per manifold is 1,900 L per year of water based fluid containing approximately ~3% active ingredient (40– 68 L of control fluid additive).
Underwater noise emissions	Underwater noise: • generated from subsea infrastructure during operations • from inspection maintenance and repair	Noise related behavioural disturbance radius of up to approximately 500 m around subsea infrastructure during operations. Noise related behavioural

	(IMR) vessel activities.	disturbance radius of up to approximately 5 km around subsea IMR vessels.
Light emissions – operational lighting	Artificial light will be emitted by IMR vessels and project vessels.	Limited to functional lighting at levels that provide a safe working environment for personnel.
Air emissions – offshore activities	Air emissions resulting from power generation on project vessels and MODU.	As required for operations.
Proposal elements with greenhouse gas emissions		
Construction elements:		
Installation and construction vessels (including MODU flaring) and activities	Scope 1: N/A Scope 3: ~0.31* million tonnes CO_2-e over project life. *No more than 50,000 tonnes CO_2-e in any given year.	
Operation elements		
Fugitive emissions from subsea infrastructure	Scope 1: <0.01 million tonnes CO_2-e over project life.	
Inspection maintenance and repair vessel	Scope 3: 0.03 million tonnes CO_2-e over project life.	
Includes onshore and offshore processing and use (combustion) of product by customers.	Scope 3: ~650 million tonnes CO_2-e over project life.	
Rehabilitation		
N/A		
Commissioning		
Wells and flowline infrastructure each may have a brief period (days) of commissioning prior to coming into full production in which non-routine emissions or discharges may occur. This includes a brief period when hydrocarbons from a newly completed well may be sent to the MODU (drill rig) to be flared, in order to prevent impacts to the production system. Subsea flowlines may also discharge inhibited seawater to the ocean during commissioning.		
Decommissioning		
At the end of the proposed Browse to NWS Development life, all subsea infrastructure will be decommissioned in accordance with good oilfield practice and relevant legislation and practice at the time. This is likely to include well suspension, plugging and abandoning wells and removing the subsea infrastructure. All infrastructure installed above the seabed		

will be designed to allow removal.		
Other elements which affect extent of effects on the environment		
Proposal time	Maximum project life	Until 2070
	Construction phase	Well construction and subsea installation activities may occur at any time during the operations phase. First activity to occur no earlier than 2027.
	Operations phase	Until 2070
	Decommissioning phase	5 years, prior to 2070

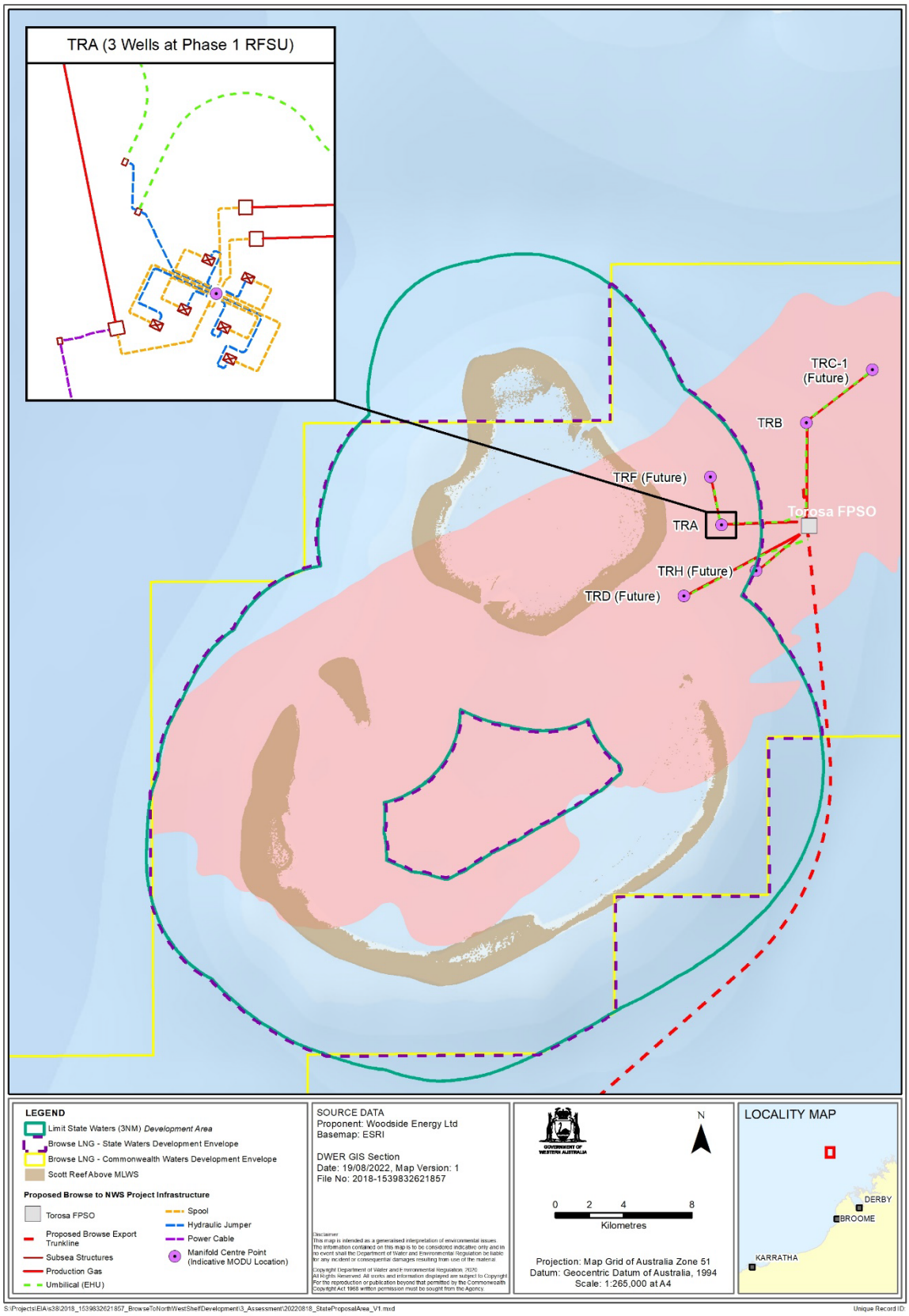

Figure 1: Browse to North West Shelf Development - State proposal area

Summary of reasons for decision – request to amend a referred proposal during assessment under s. 43A of the *Environmental Protection Act 1986*

Proposal title: Browse to NWS Development (State component)

Environment Online Reference Number: n/a

Date request to amend referred proposal under s. 43A received: 7 July 2022

Proponent: Woodside Energy Ltd

Proposal referral date: 19 October 2018

Level of assessment: Public Environmental Review (public review period of 6 weeks)

Existing referred proposal:

The proposal involves the drilling and completion, subsea installation, commissioning, operation, inspection, maintenance and repair and decommissioning of subsea wells and associated subsea infrastructure located in Western Australian State waters, to extract hydrocarbons from the Torosa reservoir, located approximately 425 km north of Broome and approximately 290 km off the Kimberley coast.

Short description of amendment(s) sought:

The proposed amendment removes the TRE drill centre location reducing the number of wells to be developed in State waters from 24 to 20 and removing a 13.9 km length of flowline previously proposed to be installed between the TRD and TRE drill centre locations. This will result in a reduction of seabed disturbance, drill cuttings discharges, fluid discharges, hydrotest, light emissions, marine noise emissions and vessel movements.

Table 1: proposed changes from the original proposal as a result of the amendment

Proposal element	Original Proposal*	S43a (Amended Proposal)
Physical elements		
Drilling and completion activities of up to 20 wells	Approximately 0.31 km^2 of direct seabed disturbance (including 25% contingency).	**Up to 0.24 km^2** of direct seabed disturbance (including 25% contingency).
Operation & maintenance of subsea infrastructure (e.g. x-mas trees, flowlines and umbilicals)		
Temporary mooring of MODU		
Construction elements		
Drill cuttings and fluid discharges	Approximately 850 m^3 of cuttings per well, with up to approximately 24 wells to be developed in the State	**Average of** 850 m^3 of cuttings per well, with up to **20** wells to be developed in the State Proposal Area. **Up**

	Proposal Area. Approximately 100-130 m^3 well discharge fluid per well during well unloading.	**to 17,000 m^3 cuttings total.** **Up to** 130 m^3 **of fluid discharged** per well during well unloading.
Hydrotest fluid discharges	One-off discharges of up to approximately 950 m^3 of hydrotest fluid for the TRE flowline and up to approximately 250 m^3 from the TRF flowline.	One-off discharges of **up to** 250 m^3 from the TRF flowline.

*proposal as amended by s43A of the EP Act on 16 December 2019 and included in the ERD which was released for public comment on 18 December 2019.

Table 2: Amendments to the PCD for clarification or as a requirement of the PCD template

Proposal element	Original Proposal*	S43a (Amended Proposal)
Construction elements		
Power supply (installation vessels, MODUs and project vessels)	Power generated on board vessels and MODU.	**As per each vessel capacity.**
Underwater noise emissions	Noise related behavioural disturbance radius of up to approximately 10.5 km around drilling and installation activities. Noise related behavioural disturbance radius of up to approximately 500 m around subsea infrastructure during operations.	Noise related behavioural disturbance radius of up to approximately 10.5 km around drilling and installation activities. Noise related behavioural disturbance radius of up to approximately 500 m around subsea infrastructure during operations. **Noise from piling and mooring installation as required for operations.**
Light emissions - flaring		**As required for operations and safety**
Air emissions – offshore activities		**As required for operations and safety**
Operational elements		
Operation of up to 20 subsea wells and associated subsea infrastructure		**Hydraulic fluid may be released to the environment, expected to have no lasting effect on the environment.**
Underwater noise emissions	Noise related behavioural disturbance radius of up to approximately 500 m around	Noise related behavioural disturbance radius of up to approximately 500 m around

	subsea infrastructure during operations.	subsea infrastructure during operations. **Noise related behavioural disturbance radius of up to approximately 5 km around IMR vessel activities.**
Air emissions – offshore activities		**As required for operations.**
Proposal elements with greenhouse gas emissions		
Construction elements:		
Installation and construction vessels (including MODU flaring) and activities		**Scope 1: N/A** **Scope 3: ~0.31* million tonnes CO_2-e over project life.** ***No more than 50,000 tonnes CO_2-e in any given year.**
Operation elements:		
Fugitive emissions from subsea infrastructure		**Scope 1: <0.01 million tonnes CO_2-e over project life.**
Inspection maintenance and repair vessel		**Scope 3: 0.03 million tonnes CO_2-e project life.**
Includes onshore and offshore processing and use (combustion) of product by customers		**Scope 3: ~650 million tonnes CO_2-e over project life.**
Rehabilitation		
		N/A
Commissioning		
		Wells and flowline infrastructure each may have a brief period (days) of commissioning prior to coming into full production in which non-routine emissions or discharges may occur. This includes a brief period when hydrocarbons from a newly completed well may be sent to the MODU (drill rig) to be flared, in order to prevent impacts to the production system. Subsea flowlines may also

		discharge inhibited seawater to the ocean during commissioning.
Decommissioning		
		At the end of the proposed Browse to NWS Development life, all subsea infrastructure will be decommissioned in accordance with good oilfield practice and relevant legislation and practice at the time. This is likely to include well suspension, plugging and abandoning wells and removing the subsea infrastructure. All infrastructure installed above the seabed will be designed to allow removal.
Other elements which affect extent of effects on the environment		
Proposal time – maximum project life		**Until 2070**
Proposal time – construction phase		**Well construction and subsea installation activities may occur at any time during the operations phase. First activity to occur no earlier than 2027.**
Proposal time – operations phase		**Until 2070**
Proposal time – decommissioning phase		**5 years, prior to 2070**

*proposal as amended by s43A of the EP Act on 16 December 2019 and included in the ERD which was released for public comment on 18 December 2019.

Decision:

Amendment(s) to proposal as set out in attachment 1 is approved

Environmental factors relevant to amendment(s):

- Marine environmental quality: discharges of drill cuttings and fluids, hydrotest discharges, vessel discharges and risk of hydrocarbon spills near the Scott Reef. The reef was established as a nature reserve to conserve the relative pristine, unique and geographically isolated coral reef formations and exceptional biodiversity.
- Benthic communities and habitats: seabed disturbance, discharges of drill cuttings and fluids at drill centre locations near the Scott Reef.
- Marine fauna:
    - light emissions, vessel interactions including vessel strikes and seabed subsidence on marine turtles particularly the green turtle listed as Vulnerable under the *Biodiversity Conservation Act 2016* (BC Act) and as Vulnerable and Migratory under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
    - underwater noise emissions and vessel interactions including vessel strikes on whales, particularly pygmy blue whale, which is a subspecies of the blue whale, which is listed as Endangered and Migratory (EPBC Act) and Endangered (BC Act).
- Air quality and greenhouse gas emissions: atmospheric emissions including greenhouse gas emissions occur mainly in the construction phase from sources such as combustion of fuel for power generation and flaring from the MODU.

Summary of likely changes to environmental impacts from proposed amendment

Through review and engineering refinement the proponent has determined that the proposal can access the Torosa gas reserve without drilling wells at the TRE location within the Scott Reef channel. A summary of the changes to environmental impacts for each proposed amendment, in comparison to existing referred proposal is provided in table 3 below.

Table 3: Amendments and changes to environmental impacts

Amendment sought	Changes to environmental impacts
The removal of the TRE well centres which involves: - a reduction of 4 wells in State waters, from 24 to 20 - a 13.9 km reduction of subsea flowline	***Marine environmental quality*** **Likely decreased impacts to marine environmental quality:** - there will be a 3,400 m^3 reduction of cuttings discharge, from 20,400 m^3 to 17,000m^3 (based on an average of 850 m^3 per well) - there will be a reduction of fluid discharge of up to 520 m^3, from 3,120 m^3 to 2,600 m^3 (based on each of the wells discharging up to130m^3 of fluid per well during uploading) - the removal of a one-off discharge of up to 950 m^3 of hydrotest fluid for the TRE flowline - there will be a reduction in vessel activity including discharges within the Scott Reef channel - as a result of the amendment there has been a change to Levels of Ecological Protection (LEP) areas as follows: o decrease in low LEP of about 16 ha during

Amendment sought	Changes to environmental impacts
	construction and operation o decrease of moderate LEP of about 362 ha during construction and operation. o decrease of high LEP of about 3,903 ha during construction (no change during operation). ***Benthic communities and habitats*** **Likely no change in impact to the Scott Reef coral community:** - 3,400 m^3 of cuttings discharge is no longer required for the TRE drill centre within the Scott Reef channel - the proposal requires cuttings discharge at the TRD, TRA and TRF well locations which are also located adjacent to the Scott Reef - in the EIS/ERD (Woodside 2019) the proponent committed to managing discharges of drill cuttings and fluids at drill centre locations for the original proposal in such a manner that impacts to Scott Reef shallow water benthic communities and habitats (less than 75 m water depth) are avoided. **Likely decreased impacts to deep-water benthic communities and habitats:** - deepwater communities and habitats are dominated by soft sediments and sparse benthic biota (epifaunal and infaunal). These communities and habitats surround the Scott Reef (Woodside 2019). - there will be a reduction in direct seabed disturbance (permanent loss) of deepwater seabed habitat of 0.07 km^2, from 0.31 km^2 to 0.24 km^2 - there will be a reduction in indirect seabed disturbance (reversible loss) of deepwater seabed habitat of 0.72 km^2, from 3.84 km^2 to 3.12 km^2. ***Marine fauna*** **Likely decreased light impacts to turtles:** - the EIS/ERD (Woodside 2019) predicted that light at the turtle nesting location of Sandy Islet from the mobile offshore drilling unit (MODU) at the TRE drill centre would result in light intensity levels of lower than 0.01 Lux which is equivalent to between a quarter moon and a moonless clear night sky - the EIS/ERD (Woodside 2019) reports that light intensity at the Sandy Islet from the Floating Production Storage and Offloading (FPSO) facility in Commonwealth waters would be from 0.05 Lux (between a quarter moon and moonless clear night sky) 0.002 Lux (moonless clear night sky to overcast night sky) - the removal of the TRE location would potentially reduce

Amendment sought	Changes to environmental impacts
	cumulative light impacts to the turtles in the Scott Reef area particularly green turtles utilising Sandy Islet. **Likely no change in subsidence impacts to green turtles:** - the Torosa gas field is likely to be transmissive and therefore the removal of the TRE well location is unlikely to change the impact to seabed subsidence and subsequent reduction of green turtle nesting area at Sandy Islet. **Likely decreased vessel impacts to green turtles and pygmy blue whales:** - the removal of the TRE drill centre is likely to result in a reduction of construction and operation vessels in the Scott Reef channel lessening the risk of vessel interactions including vessel strikes in this location. **Likely decreased noise impacts to pygmy blue whales:** - The EIS/ERD (Woodside 2019) reports that MODU dynamic positioning noise emissions impact behaviour within a 10.5 km radius - as an MODU will not be required to drill the TRE well centre then the amendment will reduce behavioural impacts to the pygmy blue whale which have been recorded in the Scott Reef area including the Scott Reef channel - underwater noise generated from the construction of other well heads in State waters (TRA, TRD and TRF) and in Commonwealth waters (e.g. TRH adjacent to the State waters boundary) remains unchanged - underwater noise impact from the Torosa FPSO remains unchanged. ***Air quality and greenhouse gas emissions*** **No change in impacts to air quality:** - The removal of the TRE from the proposal will result in a slight reduction in air emissions, including greenhouse gas emissions. However, due to the small size of these reductions, the estimated greenhouse gas emissions remain unchanged. The EPA advises that the potential impacts and the pathways for those impacts, to each of the identified environmental factors remain unchanged. The EPA considers the proposed changes do not alter the key environmental factors likely to be impacted by the original proposal. These impacts will be considered during the assessment.

Summary of consultation

Table 1.1 of the s.43A application provides a summary of the consultation between the proponent and EPA Services. The proponent has not undertaken consultation with other decision-makers regarding the proposed changes to the proposal.

Summary of consideration of amendment

The EPA has considered whether, if the proposal were already approved, the amendment would be a significant amendment. This has included considering the likely significance of:

- Effects of the proposed amendment on its own
- Effects of the proposed amendment in the context of the existing referred proposal
- Cumulative environmental impacts
- Holistic impacts.

The EPA has considered whether it has sufficient information about the proposed amendment to be able to reasonably proceed with assessment of the amended proposal with or without performing any additional functions at this stage.

The EPA has considered whether the amended proposal will still be substantially the same character as the existing referred proposal.

Approval – not a significant amendment

The EPA considers the amended proposal to be substantially the same character as the existing referred proposal and does not consider that the amendment would be a significant amendment if the proposal were already approved. The EPA considers it has enough information to reasonably proceed with assessment of the amended proposal without performing any additional functions at this stage.

Attachments

1. Amended Proposal content document
2. Figure: Browse to NWS Development (State component)

Appeals: Decision not appealable.

Prof. Matthew Tonts
CHAIR
Delegate of the Environmental Protection Authority

12 October 2022

References:
Woodside 2019, Proposed Browse to NWS Project – Draft EIS/ERD, Woodside, December 2019

Attachment 1: Amended Proposal content document

Table 1: General proposal content description

Proposal title	Browse to NWS Development (State component)
Proponent name	Woodside Energy Ltd, as Operator for and on behalf of the Browse Joint Venture
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Operation & maintenance of subsea infrastructure (e.g. x-mas trees, flowlines and umbilicals)		
Temporary mooring of MODU		
Construction elements		
Water supply (for installation vessels, MODUs and project vessels)	Water requirements sourced either from seawater (reverse osmosis plant) or loaded onto vessels at port.	Limited water requirements to support drilling and completion activities, subsea installation activities (e.g. potential hydrotest), vessel and MODU water needs and potentially also for decommissioning activities.
Power supply (installation vessels, MODUs and project vessels)	Power generated on board vessels and MODU.	As per each vessel capacity
Vessel discharges (installation vessels, MODU, and project	Discharges from vessels and MODU include treated sewage, drain waters,	Limited volumes discharged in accordance with International Convention for the Prevention of

vessels)	cooling water, sullage, putrescible organic waste and desalination brine.	Pollution from Ships MARPOL 73/78 Annex I, as applied in Australia under the *Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Part II Prevention of pollution from oil); Marine Orders 91 (Marine pollution prevention – Oil) 2014 as applicable to vessel class; *Pollution of Waters by Oil and Noxious Substance Act 1986*.
Drill cuttings and fluid discharges	Drill cuttings and drilling fluids.	Average of 850 m^3 of cuttings per well, with up to 20 wells to be developed in the State Proposal Area. Up to 17,000 m^3 cuttings total. Up to 130 m^3 of fluid discharged per well during well unloading.
Hydrotest fluid discharges	Hydrotest fluids discharged at the seabed during integrity testing of the subsea infrastructure.	One-off discharges of up to 250 m^3 from the TRF flowline.
Produced water	Low volumes of water that naturally occur within the hydrocarbon bearing geological formations.	Small volumes of formation water may result during well unloading activities by the MODU. These will be directly discharged by the MODU.
Underwater noise emissions	Underwater noise: • generated during drilling, completion and installation activities (including vessel movements using Dynamic Positioning (DP), vertical seismic profiling (VSP) and distributed acoustic sensing (DAS) • from piling activities for mooring installation for the MODU (note that this is unlikely to be required) • from installation vessels, MODUs and project vessels • from helicopter movements to/from the	Noise related behavioural disturbance radius of up to approximately 10.5 km around drilling and installation activities. Noise related behavioural disturbance radius of up to approximately 500 m around subsea infrastructure during operations. Noise from piling and mooring installation as required for operations.

	MODU.	
Light emissions – operational lighting	Artificial light emitted by installation vessels, MODUs and project vessels.	Limited to functional lighting at levels that provide a safe working environment for personnel.
Light emissions – flaring	Intermittent flaring from the MODU during well unloading. This occurs only during well installation.	As required for operations and safety.
Air emissions – offshore activities	Air emissions resulting from power generation on project vessels and MODU.	As required for operations and safety.
Operational elements		
Operation of inspection maintenance and repair vessels to maintain subsea infrastructure	Vessels will operate within the State proposal area, in close proximity to installed infrastructure. Discharges from vessels and include treated sewage, drain waters, cooling water, sullage, putrescible organic waste and desalination brine.	Vessel discharges are performed with International Convention for the Prevention of Pollution from Ships.
Operation of up to 20 subsea wells and associated subsea infrastructure	Wells are controlled via umbilicals (e.g. containing electrical or hydraulic connections) via the Torosa FPSO.	Hydraulic fluid may be released to the environment, expected to have no lasting effect on the environment.
Subsea control fluid discharge	Control fluid discharged at the x-mas trees to maintain valve functionality.	Intermittent discharge of water-based hydraulic control fluid when subsea valves are actuated (~0.1 L). Maximum volume of control fluid that will be released to the marine environment per manifold is 1,900 L per year of water based fluid containing approximately ~3% active ingredient (40– 68 L of control fluid additive).
Underwater noise emissions	Underwater noise: • generated from subsea infrastructure during operations • from inspection maintenance and repair (IMR) vessel activities.	Noise related behavioural disturbance radius of up to approximately 500 m around subsea infrastructure during operations. Noise related behavioural disturbance radius of up to approximately 5 km around subsea IMR vessels.

Light emissions – operational lighting	Artificial light will be emitted by IMR vessels and project vessels.	Limited to functional lighting at levels that provide a safe working environment for personnel.
Air emissions – offshore activities	Air emissions resulting from power generation on project vessels and MODU.	As required for operations.
Proposal elements with greenhouse gas emissions		
Construction elements:		
Installation and construction vessels (including MODU flaring) and activities	Scope 1: N/A Scope 3: ~0.31* million tonnes CO_2-e over project life. *No more than 50,000 tonnes CO_2-e in any given year.	
Operation elements		
Fugitive emissions from subsea infrastructure	Scope 1: <0.01 million tonnes CO_2-e over project life.	
Inspection maintenance and repair vessel	Scope 3: 0.03 million tonnes CO_2-e over project life.	
Includes onshore and offshore processing and use (combustion) of product by customers.	Scope 3: ~650 million tonnes CO_2-e over project life.	
Rehabilitation		
N/A		
Commissioning		
Wells and flowline infrastructure each may have a brief period (days) of commissioning prior to coming into full production in which non-routine emissions or discharges may occur. This includes a brief period when hydrocarbons from a newly completed well may be sent to the MODU (drill rig) to be flared, in order to prevent impacts to the production system. Subsea flowlines may also discharge inhibited seawater to the ocean during commissioning.		
Decommissioning		
At the end of the proposed Browse to NWS Development life, all subsea infrastructure will be decommissioned in accordance with good oilfield practice and relevant legislation and practice at the time. This is likely to include well suspension, plugging and abandoning wells and removing the subsea infrastructure. All infrastructure installed above the seabed will be designed to allow removal.		

Other elements which affect extent of effects on the environment		
Proposal time	Maximum project life	Until 2070
	Construction phase	Well construction and subsea installation activities may occur at any time during the operations phase. First activity to occur no earlier than 2027.
	Operations phase	Until 2070
	Decommissioning phase	5 years, prior to 2070

Attachment 2: Browse to NWS Development (State component)