



Application for Works Approval

Part V Division 3 of the *Environmental Protection Act 1986*

Works Approval Number	W6943/2024/1
Applicant	Fulton Hogan Construction Pty Ltd
ACN	010 240 758
File number	DER2023/000403
Premises	Rumah Baru Port Precinct Legal description Part Lot 100 on Deposited Plan 18500 Certificate of Title Volume 2103 Folio 109 As defined by the premises map attached to the issued works approval
Date of report	21 November 2024
Decision	Works approval granted

MANAGER WASTE INDUSTRIES

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, works approval W6943/2024/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Application summary and overview of premises

On 20 June 2023, the applicant submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986 (WA)(CKI)* (EP Act).

The application is to undertake construction works relating to a Materials Offloading Facility (MOF) at the Rumah Baru Port Precinct, Cocos (Keeling) Islands.

The premises relates to the category and assessed production / design capacity under Schedule 1 of the *Environmental Protection Regulations 1987 (WA)(CKI)* (EP Regulations) which are defined in works approval W6943/2024/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in works approval W6943/2024/1.

The Australian Department of Defence (DoD) is proposing to upgrade the Cocos (Keeling) Islands (CKI) Airfield. The CKI Airfield is a Commonwealth of Australia (Commonwealth) asset falling under the jurisdiction of the Department of Infrastructure, Transport, Regional Development and Communications and the Arts (DITRDCA) and managed by Toll Remote Logistics Pty Ltd (Toll). Upgrades to the CKI Airfield are required to enable the Royal Australian Air Force (RAAF) to support P-8A Poseidon capability on the runway, reduce the safety risks associated with operating Code D aircraft on the airfield and address non-compliances identified by the Civil Aviation Safety Authority. Fulton Hogan Construction Pty Ltd (Fulton Hogan) is acting as the principal party to the Integrated Managing Contractor (IMC).

To support delivery of the CKI Airfield Upgrade Project, enabling infrastructure will be required at the Rumah Baru Port Precinct. The current capacity and operational constraints of the existing Rumah Baru Port requires the construction of a new Materials Offloading Facility (MOF) to meet the CKI Airfield Upgrade Project needs and to minimise impact to local CKI operations. The proposed MOF will be a permanent structure with a design life of 50 years.

2.2.1 Materials Offloading Facility overview

The MOF design involves an incremental “end over” construction sequence, including:

- An abutment wall to be constructed approximately at high tide level, using driven sheet piles or revetment retaining wall and structural backfill suited for construction and operational loads.
- Piles will be spliced using full penetration butt welds in the laydown yard.
- Close ended circular piles will be driven to design set/refusal using hydraulic impact hammer supported by a 45 tonne crawler crane.
- Pile driving will be repeated to complete two bents or a “bay” of piles, which will be

prepared in readiness to receive headstocks.

- Headstocks and girders will be installed to complete a bay in readiness for deck plank installation.
- Precast deck planks will be installed to bays, including edge protection.
- Track crawler crane will be moved onto completed bay, pile driving will be repeated and bay assembly sequence for all subsequent bays.

The proposed shipping vessels will moor at CKI in a sheltered area off Direction Island, known as Port Refuge, where littoral operations will take place and the ships cranes will transfer the cargo from the vessel. The aggregates will be transferred to lightering (barges towed by tugs) for the 5.2 nautical mile journey to the MOF adjacent to the existing Rumah Baru Port facility.

170,000 tonnes of aggregate will be required to construct the CKI Airfield Upgrade Project. This aggregate will be sourced and transported to CKI from WA. Two barges will be used to transport up to 1000 tonnes of aggregate each per trip from the shipping vessels, across CKI Harbour to the MOF.

Once the loaded barges arrive at the MOF, two loaders will be used to unload each barge at the MOF, into 26 tonne articulated trucks. The loaders will alternate entering the barge using the roll-on roll-off (RORO) ramp, filling the bucket with aggregate and allowing the movement of material from the barge, back onto the MOF and through repeated action fill the truck. Once the loaded truck is full, it will drive to the Stilling Basin stockpile location for offloading into a dedicated area. The aggregate will remain at this location until it is progressively moved to the Quarantine Station for further stockpiling and use.

The Stilling Basin Compound adjacent to the Ramah Baru Port area is proposed to be used as a temporary stockpile and staging area and will include access from the proposed MOF to the stockpile area and an access road from the stockpile area to Ramah Baru Road. The Stilling Basin Compound is the first point of entry for materials being transported from the MOF on 19 m semitrailers on to the West Island of CKI. This compound will consist of the following facilities:

- Temporary Material Stockpile areas;
- Temporary Container Storage area;
- Reverse logistics cleaning zone including a washdown bay;
- Refuelling area;
- Site office; and
- MOF abutment.

2.2.2 Occupier status

The Department of Infrastructure, Transport, Regional Development and Communications and the Arts has provided the Department of Defence with access to the parcels of land required for the Airfield Upgrade Project, with a Memorandum of Understanding signed on 29 May 2024 by both parties.

2.3 EPBC Act

The MOF will provide berthing for transfer vessels to transfer cargo required for the CKI Airfield Upgrade Project between West Island (CKI) and moored ocean-going vessels moored.

As outlined in section 4.2.1 of the *Cocos (Keeling) Island Rumah Baru Enabling Works: Works Approval Supporting Documentation* (6 April 2023, Fulton Hogan Construction Pty Ltd), the DoD determined that referral of the CKI Airfield Upgrade Project under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was not deemed to be warranted as the

project is not likely to cause significant environmental impact.

Due to the potential significance of the project, the department requested advice from the Department of Climate Change, Energy, the Environment and Water (DCCEEW) on 26 July 2023 on whether the project requires formal assessment and approval under the EPBC Act, and if the information is adequate to inform an assessment under the EPBC Act.

DCCEEW provided advice on 13 May 2024, confirming that:

- DoD has advised DCCEEW that it does not intend to refer the CKI Island Airfield Upgrade project to DCCEEW under the EPBC Act;
- DCCEEW has advised DoD that it considers the project should be referred under the EPBC Act to provide legal certainty; and
- DCCEEW has not received a referral from DoD for the CKI Island Airfield Upgrade project under the EPBC Act and is therefore unable to comment on the adequacy of the information.

The department notes that approvals under the Division 3 Part V of the EP Act (i.e. works approval W6943/2024/1) do not nullify any other legislative requirements required by the applicant. In the event that the proposal materially changes as a result of other legislative requirements, any approvals under Division 3 Part V of the EP Act may require amendment.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020).

To establish a risk event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction / operation which have been considered in this decision report are detailed in Table 1 below. Table 1 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Vehicle movements, earthworks and construction of the MOF	Air / windborne pathway	<ul style="list-style-type: none"> - Dust suppression control measures will be implemented in areas of high risk (e.g., exposed aggregate, soils, stockpiles) during dry and/or windy conditions. This includes suppression of vehicular traffic dust. - Cover on large areas with exposed soil (e.g., drains) will be established following construction. - Cover will be established on soil stockpiles that are stored at the Stilling Basin Compound for more than two weeks.

Emission	Sources	Potential pathways	Proposed controls
			<ul style="list-style-type: none"> - The primary method for controlling dust generated by construction operations and disturbed areas will be water sprayed by water tankers or similar methods. Water sources for dust suppression will be stipulated by the Integrated Managing Contractor (IMC). - Stockpiles of loose material and cover / wet stockpiles will be avoided, or their use minimised, during windy conditions. - Stockpile heights will be minimised as much as possible. Stockpiles are to be oriented and located in areas that limit exposure to adverse wind conditions. - Speed limits will be imposed on all roads and disturbed work area to minimise dust nuisance. - Travel on unsealed roads will be minimised and the use of water suppression on these tracks will be considered during dry windy conditions. Mobile plant movements will be restricted to designated routes and standing areas. - Trucks importing or removing fill from site will be covered at all times or watered prior to leaving the site. - Where practical, earthworks operations will be limited during unfavourable wind conditions. Dust producing activities during adverse weather conditions (e.g., dry, windy etc.) will cease when uncontrollable dust emissions are directed towards sensitive receptors. - All material (e.g., mud, sand etc.) spilled onto external and internal roads will be cleaned and removed.
Noise and vibration	Vehicle movements, earthworks and construction of the MOF	Air / windborne pathway	<ul style="list-style-type: none"> - Comply with the <i>Environmental Protection (Noise) Regulations 1997 (WA)(CKI)</i>. - A noise and vibration management plan will be prepared if impacts are identified to the local community. - Community engagement/consultation will be held regarding upcoming potentially impacting works. - Site works, including vehicle movements will be restricted to nominated hours of operation. Work outside these hours will be subject to the approval of the Project Manager / Contractor Administrator (PMCA). - Plant, equipment, and processes will be selected so as to limit construction related noise. - Appropriate mufflers will be fitted and maintained on machinery used on site. - Where possible equipment will be turned off until use/movement is required. - Site offices, compounds and sheds will be located so as to have no negative impact on the noise amenity of nearby receptors.

Emission	Sources	Potential pathways	Proposed controls
			<ul style="list-style-type: none"> - A regular inspection and maintenance checklist for all plant and equipment will be implemented to ensure construction plant is running optimally. - All construction plant will be serviced and maintained according to manufacturer's recommendations to ensure that exhaust noise from plant is kept to a minimum. - Complaints will be recorded and the Regional Environment & Sustainability Officer (RESO) is informed immediately if they are received. - Subsurface noise will be minimised through appropriate construction methodology taking into account the local environment. - Immediately prior to undertaking piling construction, a 30 minute pre-start monitoring assessment will be completed to determine if there is any marine fauna within the vicinity of the MOF. - During piling works, monitoring for marine fauna (cetaceans) will occur. If any cetaceans are observed within a 500 m radius of the piling works, works will cease until the individuals have left the area. Works will not restart until 20 minutes after the cetacean has left the area. - Turtles are not as sensitive to noise as cetaceans, therefore, monitoring for turtles during piling works will be undertaken within a 100 m radius. Turtles are also not likely to be sighted within a 500 m radius due to their cryptic nature. If any turtles are observed within a 100 m radius of the piling works, works will cease until the individuals have left the area. Works will not restart until 20 minutes after the turtle has left the area.
Sediment disturbance in benthic habitat	Construction of the MOF	Marine ecosystem	<ul style="list-style-type: none"> - <i>GHD Cocos Island Benthic Habitat Survey</i> (WA Marine Pty Ltd, October 2020) determined the following: <ul style="list-style-type: none"> - The nearshore corridor that makes up the majority of the zone of indirect impact area is predominantly inhabited by macroalgae dominant substrate, which is much more resilient to increases in total suspended sediment than other types of benthic communities and habitat. - Total suspended sediment impacts to coral will be minimal as they only exists in small scattered mixed assemblage colonies within the zone of indirect impact. - Ongoing visual and in-situ physiochemical water quality monitoring will be undertaken. - The provision of silt curtains as required around the piling activity - Any marine activities involved with the works will have no-go zones clearly delineated to prevent damage to seagrass and coral communities.

Emission	Sources	Potential pathways	Proposed controls
Sediment laden stormwater	Vehicle movements, earthworks and construction of the MOF	Overland runoff	<ul style="list-style-type: none"> - Erosion and sediment control plans will be prepared (if required) by a suitably qualified practitioner and include procedures for regular and event-based monitoring to assess performance of Erosion and Sediment Control structures against defined objectives/targets. - Erosion and sediment controls will be implemented prior to commencement of topsoil stripping/earthworks and maintenance to be carried out when required. - Dust suppression control measures will be implemented particularly during dry and/or windy conditions. - Slope angles and lengths of cleared surfaces with exposed soils will be minimised. - Cover will be established on soil stockpiles at the Stilling Basin Compound that are stored for more than 2 weeks. - Sediment will be removed from all sediment controls or infiltration drains where the capacity is substantially reduced, and the infiltration rate is compromised. - All water will be tested prior to discharge from site to confirm compliance with the discharge criteria. - Sediment generation will be contained to minimise smothering or decreased photosynthesis of surrounding seagrass or coral communities. - If the piling method for the MOF requires dewatering of pile casings, treatment may be required in order to meet discharge criteria. - Physical barriers will be installed where feasible (e.g. silt curtains).
Hydrocarbons and chemicals	Vehicle movements, earthworks and construction of the MOF	Discharge to the marine environment	<ul style="list-style-type: none"> - Personnel handling hazardous substances will be adequately trained, including training on procedures to contain and clean up spills in coral sands with shallow groundwater tables. - Waste and/or hazardous chemicals will be stored in designated areas away from freshwater lenses. - Bunds constructed on site will have impermeable surfaces and appropriate impermeable protection between the banded areas and the groundwater. - Appropriate spill kits will be present, readily accessible and in working order during activities where spills may occur. Spill kits are to be adequate for the environment in which they are intended for (e.g., ensure marine spill kits of sufficient size are available adjacent to marine based works). - Oils and grease spills will be cleaned up immediately, where safety permits, and will be sent to an approved waste disposal facility in WA. Contaminated materials will be stored in an appropriate waste receptacle until such a time that it is transported off CKI.

Emission	Sources	Potential pathways	Proposed controls
			<ul style="list-style-type: none"> - Regular inspections of work areas will be undertaken to ensure waste and/or hazardous substances are appropriately managed. - Any waste or residual construction materials will be removed from site following construction. - Vehicles and machinery will be maintained according to manufacturer specifications. Equipment leaks to be immediately addressed. - All plant and equipment will be parked in designated hardstand areas where possible. - Sufficient marine spill response equipment and trained personnel will be available during any works including ship loading/unloading at the MOF. - Fuel trucks and/or refuelling plant and facilities will be maintained in accordance with the manufacturers specifications and be compliant with AS 2809:2008. - A chemical inventory will be maintained on site for all chemicals (storage location, volumes, types of chemicals, receipt date). - Where possible, biodegradable oils and greases will be utilised to protect against accidental spills into the marine environment.
Contaminated waste and asbestos	Mobilisation of contaminated land (including asbestos)	Air / windborne pathway	<ul style="list-style-type: none"> - Should any potentially contaminated material require reuse or disposal, an appropriately qualified person will be engaged to characterise it in accordance with National Environmental Protection Measure requirements. - In-situ treatments of contaminated land will be undertaken where practicable. - Stockpiles of impacted soils will be managed to prevent contaminants leaching to groundwater or adversely affecting surface water. - Sub-Contractors will submit all contaminated waste disposal records to Fulton Hogan. - During excavation works, soil will be monitored for signs of contamination. - If unexpected contamination is discovered, work will stop, and samples of suspected contaminated material will be collected and tested at a National Association of Testing Agencies accredited lab to determine type and concentration of contaminants present and advise appropriate management controls consistent with the requirements of the EMP. - Works will not recommence unless clearance provided by the RESO and Fulton Hogan's site supervisor. - In the event that unexpected contaminated soils are encountered or suspected, stop works and refer to the sites Emergency Response Plan and Incident and Emergency Response Flowchart – Encountering Contaminated Soil, and contact the

Emission	Sources	Potential pathways	Proposed controls
			<p>regional Environmental Manager.</p> <ul style="list-style-type: none"> - Asbestos-containing building materials that are likely to be disturbed by demolition works will be removed prior to the commencement of the works where practicable. - Asbestos containing materials will only be handled by a suitably licenced professional. - Personnel conducting excavation work, particularly in identified asbestos areas, will undergo site specific training - Air monitoring during the excavation of asbestos contaminated soil (if present) will be conducted by an occupational hygienist. - Asbestos contaminated soil will be disposed of at an approved location on the mainland. - Asbestos will only be removed/ transported from site by a suitably licenced waste removal contractor and in appropriate shipping containers. - Where asbestos is found or suspected, stop works and seek advice. Handling and Removing Asbestos - Process - Au will be followed in the event of finding or suspecting asbestos. - Asbestos will be transported and disposed of in accordance with the <i>Environmental Protection (Controlled Waste) Regulations 2004 (regulation 42-47)</i>.
Operation			
Dust	Unloading and stockpiling of bulk materials from vessels	Air / windborne pathway	<ul style="list-style-type: none"> - Dust suppression control measures will be implemented in areas of high risk (e.g., exposed aggregate, soils, stockpiles) during dry and/or windy conditions. This includes suppression of vehicular traffic dust. - Cover on large areas with exposed soil (e.g., drains) will be established following construction. - Cover will be established on soil stockpiles that are stored at the Stilling Basin Compound for more than two weeks. - The primary method for controlling dust generated by construction operations and disturbed areas will be water sprayed by water tankers or similar methods. Water sources for dust suppression will be stipulated by the IMC. - Water may be reused on site (e.g. for dust suppression) provided it is tested prior to use and meets the discharge criteria. - Stockpiles of loose material and cover / wet stockpiles will be avoided, or their use minimised, during windy conditions. - Stockpile heights will be minimised as much as possible. Stockpiles are to be oriented and located in areas that limit exposure to adverse wind conditions.

Emission	Sources	Potential pathways	Proposed controls
			<ul style="list-style-type: none"> - Speed limits will be imposed on all roads and disturbed work area to minimise dust nuisance. - Travel on unsealed roads will be minimised and the use of water suppression on these tracks will be considered during dry windy conditions. Mobile plant movements will be restricted to designated routes and standing areas. - Trucks importing or removing fill from site will be covered at all times or watered prior to leaving the site. - Where practical, earthworks operations will be limited during unfavourable wind conditions. Dust producing activities during adverse weather conditions (e.g. dry, windy etc.) will cease when uncontrollable dust emissions are directed towards sensitive receptors. - All material (e.g. mud, sand etc.) spilled onto external and internal roads will be cleaned and removed.
Noise and vibration	Operation of unloading equipment and vehicles	Air / windborne pathway	<ul style="list-style-type: none"> - Comply with the <i>Environmental Protection (Noise) Regulations 1997 (WA)(CKI)</i>. - Plant, equipment, and processes will be selected so as to limit construction related noise. - Appropriate mufflers will be fitted and maintained on machinery used on site. - Where possible equipment will be turned off until use/movement is required. - A regular inspection and maintenance checklist for all plant and equipment will be implemented to ensure construction plant is running optimally. - Complaints will be recorded and the Regional Environment & Sustainability Officer (RESO) is informed immediately if they are received.
Accidental discharge of building materials (sands, aggregate)	Unloading and stockpiling of bulk materials from vessels	Direct discharge to the marine environment	<ul style="list-style-type: none"> - Transfer from barge undertaken by two loaders into 26 tonne articulated trucks. - The loaders will alternate entering the barge using the roll-on roll-off (RORO) ramp, filling the bucket with aggregate and allowing the movement of material from the barge, back onto the MOF. - The proposed unloading method results in a short transit time. - Kerbing along the MOF edge will stop water flowing into the lagoon and assist with containment of any displaced aggregates on the MOF, which will be picked up and removed at the end of each shift.
Sediment laden stormwater	Unloading and stockpiling of bulk materials from vessels	Overland runoff	<ul style="list-style-type: none"> - Erosion and sediment control plans will be prepared (if required) by a suitably qualified practitioner and include procedures for regular and event-based monitoring to assess performance of Erosion and Sediment Control structures against defined objectives/targets. - Dust suppression control measures will be

Emission	Sources	Potential pathways	Proposed controls
			<p>implemented particularly during dry and/or windy conditions.</p> <ul style="list-style-type: none"> - Slope angles and lengths of cleared surfaces with exposed soils will be minimised. - Cover will be established on soil stockpiles at the Stilling Basin Compound that are stored for more than 2 weeks. - Sediment will be removed from all sediment controls or infiltration drains where the capacity is substantially reduced, and the infiltration rate is compromised. - All water will be tested prior to discharge from site to confirm compliance with the discharge criteria. - Physical barriers will be installed where feasible (e.g. silt curtains).
Light emissions	Plant/vehicle use and from stationary sources at the MOF	Direct emission	<ul style="list-style-type: none"> - Lighting will only be required for safety reasons and will be directed downward. - Lights will be positioned to directly focus on the intended target. - Light spill will be minimised without impacting on the legal requirement to provide a safe working environment. - Lighting with beam characteristics will be used when applicable to the specific task at hand. - Lighting will be switched off when deemed not essential to personnel safety and when not in use. - Lighting will not be directed into surrounding native vegetation areas or into the wider marine area of the MOF, ensuring impacts to fauna species are minimized.
Hydrocarbons and chemicals	<p>Temporary storage of hydrocarbons</p> <p>Operating of plant and equipment</p>	Discharge to the marine environment	<ul style="list-style-type: none"> - Personnel handling hazardous substances will be adequately trained, including training on procedures to contain and clean up spills in coral sands with shallow groundwater tables. - Waste and/or hazardous chemicals will be stored in designated areas away from freshwater lenses. - Bunds constructed on site will have impermeable surfaces and appropriate impermeable protection between the bunded areas and the groundwater. - Regular inspections of work areas will be undertaken to ensure waste and/or hazardous substances are appropriately managed. - Vehicles and machinery will be maintained according to manufacturer specifications. Equipment leaks to be immediately addressed. - All plant and equipment will be parked in designated hardstand areas where possible. - Fuel trucks and/or refuelling plant and facilities will be maintained in accordance with the manufacturers specifications and be compliant with AS 2809:2008.

Emission	Sources	Potential pathways	Proposed controls
			<ul style="list-style-type: none"> - A chemical inventory will be maintained on site for all chemicals (storage location, volumes, types of chemicals, receipt date). - Where possible, biodegradable oils and greases will be utilised to protect against accidental spills into the marine environment. - In the event of a spill, all works will cease until such a time that the spill is cleaned up and remediated. Spill kits will be made available and be suitable for marine environments. - Contaminated soil (and other solid wastes), groundwater and wastewater will be correctly identified and stored before disposal in WA. For example, spill clean-up materials will be stored in an appropriate receptacle until such a time that it can be exported off CKI for appropriate disposal on the mainland. - The Stilling Basin will have a variety of different hardstand areas which require different pavement designs to handle the static and live loading that each area will have to withstand dependent on the function of the area and the vehicles that will be traversing over these areas. - The access roads pavement design will consist of a 170 mm Type 2.1 granular material with a 10 mm spray seal with C320 binder. The existing topsoil will be removed at a depth of 100 mm and the existing subgrade will be rolled and compacted prior to the installation of the new 170 mm granular pavement layer. - The Stilling Basin general access areas (internal roads) and stockpile areas pavement design will consist of a 170 mm Type 2.1 granular material. The existing topsoil will be removed and the existing subgrade will be rolled and compacted prior to the installation of the new 170 mm granular pavement layer. - The MOF abutment pavement design will consist of a 170 mm Type 2.1 granular material with a geofabric layer in accordance with AS3705 specifications. The subgrade will consist of excavated site won compacted sand with CBR10%.

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 2 and Figure 1 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental Siting* (DWER 2020)).

Table 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
West Island Town - Residential dwellings and holiday accommodation noise sensitive premises. Approximately 100 permanent residences.	3.2 km south of the premises.
Environmental receptors	Distance from prescribed activity
Cocos (Keeling) Island (CKI) Marine Park	The premises is located 300 m north of the CKI Marine Park within North Lagoon and 1.2 km north of the CKI Marine Park within main Lagoon.
Green Turtle (<i>Chelonia mydas</i>) and Hawksbill Turtle (<i>Eretmochelys imbricata</i>) The Green and Hawksbill Turtle are listed as Vulnerable under the EPBC Act.	Studies indicate that the West Island supports a high density of resident Green and Hawksbill Turtles although nesting activities of Green Turtles only occur occasionally, and not considered to occur for the Hawksbill turtle.
Hydrology - Freshwater lenses	Freshwater lenses (2.3 km south-west and 4.0 km south)
Surface water – Indian Ocean	Surrounding CKI
Seven migratory bird species Not recorded during recent field surveys, however they have been historically recorded on West Island (either as residents, annual migrants, or vagrants). CKI is the only seabird breeding area within a radius of 900 kilometres.	Some suitable habitat (nesting and foraging) is present within the prescribed premises boundary.

Figure 1: Distance to sensitive receptors



Note: Figure supplied by the applicant

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IR-T13 Decision report template (short) v3.0 (May 2021)

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

Works approval W6943/2024/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises i.e. Category 58 activities. A risk assessment for the operational phase has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence application.

Table 3: Risk assessment of potential emissions and discharges from the premises during construction and operation

Risk events					Risk rating ¹	Applicant controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
Construction								
Vehicle movements, earthworks and construction of the Stilling basin and the MOF	Dust from the use of vehicles and mobile plant, and from stockpiles and exposed areas	Air/windborne pathway causing impacts to health and amenity	Vegetation (habitat)	Refer to Section 3.1	C = Minor L = Possible Medium Risk	Yes	Condition 5 <u>Conditions 1, 2, 3 and 4</u>	The delegated officer considers dust emissions are effectively regulated by the general provisions of the EP Act and the applicant's controls.
	Noise and vibration from construction activities	Air/windborne pathway and vibration through soils and underlying rock causing fauna disturbance and amenity impacts to residents	Residents 3.2 km south of the premises Terrestrial and marine fauna	Refer to Section 3.1	C = Minor L = Likely Medium Risk	Yes	Condition 5 <u>Conditions 1, 2, 3 and 4</u>	Refer to Section 3.3.2.
	Sediment disturbance in benthic habitat	Marine pathway causing impacts to be benthic community habitat	Benthic community	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	Yes	Condition 5 <u>Conditions 1, 2, 3 and 4</u>	Refer to Section 3.3.3.
	Sediment laden stormwater from construction activities, stockpiles and exposed areas	Overland runoff potentially impacting surface water quality causing ecosystem disturbance and impacts on surrounding vegetation (habitat) due to smothering	Benthic community Vegetation (habitat)	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	Yes	Condition 5 <u>Conditions 1, 2, 3 and 4</u>	Refer to Section 3.3.1.

Risk events					Risk rating ¹	Applicant controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
	Hydrocarbons and chemicals	Direct discharge causing contamination of surface water causing ecosystem disturbance. Direct discharge causing contamination of coastal areas causing impacts on biological health and amenity	Terrestrial and marine fauna	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Yes	Condition 5 <u>Conditions 1, 2, 3 and 4</u>	The delegated officer considers hydrocarbon and chemical emissions are effectively regulated by the general provisions of the EP Act and the applicant's controls.
Operation (including time-limited-operations operations)								
Unloading and stockpiling of bulk materials from vessels	Dust from unloading operations and stockpiles	Air/windborne pathway causing impacts on vegetation health due to smothering Air/windborne pathway causing impacts on the benthic community health due to reduced light emissions in the surrounding surface water	Vegetation (fauna habitat) Benthic community	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	Yes	Condition 5 and 10 <u>Conditions 1, 2, 3, 4, 6, 7, 15 and 16</u>	Particle size distribution results of the 20 mm concrete aggregate to be unloaded at the premises demonstrates 1% passing at 9.5 mm. The delegated officer considers that the large particle size presents a reduced risk for dust emissions. The delegated officer considers that the risk dust impacting the marine environment during transfer is likely to be localized. The Environmental Compliance Report required by conditions 5 and 6 will confirm the adequacy of the constructed infrastructure for time-limited operations.

Risk events					Risk rating ¹	Applicant controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
	Accidental discharge of building materials (sands, aggregate)	Direct discharge causing reduced light emissions resulting in impacts to the benthic community Direct discharge causing a detrimental affect on the surrounding water quality causing impacts on marine fauna	Benthic community Marine fauna	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	Yes	Condition 5 and 10 <u>Conditions 1, 2, 3, 4, 6, 7, 15 and 16</u>	Refer to Section 3.3.1.
	Noise and vibration from operating unloading equipment and vehicles	Air/windborne pathway causing impacts to health and amenity	Residents 3.2 km south of the premises Terrestrial Fauna	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	Yes	Condition 5 and 10 <u>Conditions 1, 2, 3, 4, 6, 7, 15 and 16</u>	Refer to Section 3.3.2.
Unloading and stockpiling of bulk materials from vessels	Sediment laden stormwater from stockpiles, jetty (spills) and disturbed areas	Overland runoff potentially causing impacts on surrounding vegetation (habitat) due to smothering Overland runoff and direct discharge potentially causing reduced light emissions resulting in impacts to the benthic community	Vegetation (fauna habitat) Benthic community	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	Yes	Condition 5 and 10 <u>Conditions 1, 2, 3, 4, 6, 7, 15 and 16</u>	Refer to Section 3.3.1.
Unloading and stockpiling of bulk materials from vessels	Light emissions from plant/vehicle use and from stationary sources at the	Direct emission causing disorientation and attracting terrestrial and marine fauna	Terrestrial and marine fauna	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Yes	Condition 5 and 10 <u>Conditions 1, 2 and 3, 5, 6, 14</u>	The delegated officer considers impacts from light emissions are effectively regulated by the general provisions of the EP Act. In making this decision, the delegated officer has considered the effective

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Risk events					Risk rating ¹	Applicant controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
	MOF						<u>and 15</u>	application of the applicant's controls at the premises.
Temporary storage of hydrocarbons Operating of plant and equipment	Accidental discharge of hydrocarbons and chemical	Direct discharge causing contamination of surface water causing ecosystem disturbance Direct discharge causing contamination of coastal areas causing impacts on biological health and amenity	Terrestrial and marine fauna	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Yes	Conditions 5, 10, 11, 12, 13 and 14 <u>Conditions 1, 2, 3, 4, 6, 7, 15 and 16</u>	The delegated officer considers the risks from hydrocarbon discharge are effectively regulated through the regulatory controls within the works approval. Groundwater monitoring at the Stilling basin will provide verification of applicant controls.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk Assessments* (DWER 2020).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

3.3 Detailed risk assessment for marine ecosystem impacts

3.3.1 Benthic communities and habitats (BCH)

Widespread seagrass loss has been recorded in the Cocos Lagoon which has been attributed to several factors including the development and operation of the Rumah Baru ferry terminal, high water temperatures and overgrazing by turtles¹. There is a high level of community concern about seagrass loss in the lagoon which has attracted media attention and initiated a seagrass restoration program (Project 4.11 - Marine and Coastal Hub (nеспmarinecoastal.edu.au)).

Given the potential impacts to the marine ecosystem, the application and accompanying supporting documentation was referred to the department's Marine Ecosystems Branch (MEB), Science and Planning, for technical advice.

The MOF facility will be constructed and operated close to areas of seagrass mapped as >50% cover and areas of mixed seagrass and macroalgae. Given the history of seagrass loss at Cocos Island, it is essential that there is a robust monitoring programme which monitors both water quality and benthic communities during the construction and operational phases of the project. Water quality should be monitored against established criteria that are protective of seagrass in accordance with the EPA (2021) *Environmental Impact assessment of marine dredging proposals*. It is recognised that the proposal does not involve dredging, however, the EPA (2016) document identifies water quality criteria to protect seagrass from increased turbidity which are derived from scientific research. The provided Environmental Management Plan (EMP) was determined to be not sufficiently robust: there is low confidence that the water quality criteria and monitoring will protect seagrass health, there is no commitment for seagrass monitoring, the management actions in the event of exceedance are inadequate and there is a lack of commitment for reporting.

Following recommendations from MEB, the applicant provided a revised (EMP) to the department on 7 October 2024. The updated EMP addressed the MEB recommendations to some extent. However, concerns remain, particularly in relation to the monitoring of water quality and benthic communities and habitats, and the EMP requires further revision to provide confidence that seagrass will not be impacted from the construction and/or operation of the proposed MOF.

A meeting was held on 28 October 2024 between the department and the applicant to discuss further recommendations to amend the EMP. Due to logistical constraints, it was decided that the completion of the EMP would be conditioned in the works approval to allow for the construction of the Stilling basin to progress prior to the construction of the MOF. These enabling works will allow the overall project to commence while limiting impact to the marine environment. Submission of the EMP to the department and subsequent review by the department will be required prior to works commencing on the MOF. The department considers environmental risks associated with the contents of the EMP are mitigated through the hold-point associated with the EMP requiring departmental approval prior to MOF construction commences.

The EMP states "*An additional benthic habitat survey will be undertaken prior to works and with this CEMP to be updated with any findings accordingly. The updated benthic habitat survey will provide the basis for ongoing monitoring during construction activities. Assessment shall inform monitoring requirements during construction activities. The Benthic Habitat Assessment should identify key flora and fauna types and extents within the vicinity of the MOF*".

¹ Buckee, J., Hetzel, Y., Nyegaard, M., Evans, S., Whiting, S., Scott, S., Ayvazian, S., van Keulen, M., Verduin, J. 2021. Catastrophic loss of tropical seagrass habitats at the Cocos (Keeling) islands due to multiple stressors. *Marine Pollution Bulletin*. doi.org/10.1016/j.marpolbul.2021.112602

The updated BCH survey will provide useful information on BCH distribution which may have changed since the initial survey. A robust BCH monitoring program should be included in the EMP which clearly states the monitoring design, the quantitative methods for monitoring change, the use of reference and impact sites, frequency of monitoring, the statistical power and statistical analyses. The monitoring and reference sites should be identified in the EMP based on the existing habitat mapping, with consideration to adjusting the locations if the updated mapping indicates the BCH distribution has changed.

Key Findings:

1. There has been significant historical seagrass loss within the Cocos lagoon and it is critical that the applicant implement a robust water quality monitoring program during both construction and operations to ensure that the MOF facility does not contribute to further loss.
2. An additional benthic habitat survey must be undertaken prior to works to inform the updated EMP. The updated benthic habitat survey will provide the basis for ongoing monitoring during construction activities
3. The EMP is required to be expanded to include details of the water quality monitoring program, inclusive of the monitoring methodology, appropriate (evidence-based) water quality indicators and corresponding criteria (triggers and thresholds) in accordance with technical guidance for dredging. The monitoring locations should be identified for the construction and the operational phase of the project. In the event that water quality thresholds are exceeded, monitoring of seagrass should be undertaken to ensure there are no unacceptable impacts.
4. The EMP is required to be expanded to include details of benthic habitat monitoring, inclusive of the monitoring methodology, appropriate seagrass health indicators and corresponding criteria (triggers and thresholds) in accordance with technical guidance, and management measures to ensure actual seagrass loss and health declines do not exceed those expected/approved. This monitoring and management plan should cover both construction and operational phases. Ideally, an appropriate reference site is determined and monitored in accordance with EPA (2022) Technical Guidance, which will assist the cause of any adverse impacts to be determined.
5. Due to logistical constraints, the completion of the EMP will be conditioned in the works approval to allow for the construction of the Stilling basin to progress prior to the construction of the MOF. These enabling works will allow the overall project to commence while limiting impact to the marine environment. Submission of the EMP to the department and subsequent review by the department will be required prior to works commencing on the MOF. The department considers environmental risks associated with the contents of the EMP are mitigated through the hold-point associated with the EMP requiring departmental approval prior to MOF construction commences.

3.3.2 Noise and vibration

The construction of the jetty involving 64 piles of 710 mm diameter to a depth of 24m using a hydraulic impact hammer, is estimated to complete 2 piles every six days, taking a total of six months. The number pile strikes is estimated to between 500 to 1250 strikes per day.

The methodology used in the Consolidated Noise Impact Assessment Study (Fulton Hogan Construction Pty Ltd, 2024) appears robust and involved the following:

- The assessment established the marine environmental conditions for bathymetry, temperature, salinity and geotechnical data.
- Characterised the noise characteristics (such as the source level, the frequency content and the temporal characteristics, etc.) for major noise-generating construction operations during the construction phase of the Project, as well as for vessel movements during the operational phase of the Project, based on the equipment and operational specifications.
- Identified marine fauna species to be potentially impacted.
- Established noise expose assessment criteria for identified marine fauna species based on applicable regulatory requirements/standards/guidelines.
- Undertook underwater noise modelling predictions, using suitable numerical underwater noise modelling algorithms, for major noise-generating operations during the construction phase of the Project, and for the marine vessel movements during the operational phase of the Project.
- Compared the noise modelling predictions to the established assessment criteria to determine zones of impact, considering the baseline ocean noise environment, the cumulative noise predictions, and the schedules of the assessed activities, as well as the ecological characteristics of assessed marine fauna species.
- The assessment for acceptable exposure levels to marine fauna from underwater noise is based on relevant guidelines and published research on acceptable exposure levels for fauna to underwater noise.
- The project also assesses the impact of underwater vibration and established relevant vibration criteria.
- The assessments were based on the highest and lowest number of pile driving strikes per day.

The underwater noise modelling prediction and assessment results show that impulsive noise emissions from construction activities (piling) are likely to lead to zones of impact for Permanent threshold shift (PTS) and Temporary threshold shift (TTS) onset thresholds. Shutdown and observation zones have been recommended to minimise the potential for adverse impacts.

The key control measure to control underwater noise from pile installation involves the use of a sleeve/shroud around each pile with a big bubble curtain resulting in a 17dB reduction in noise. Other control measures include the use of soft starts, a dedicated marine fauna spotter stationed during piling works, with an observation zone of 500m and an exclusion zone, of 120m applies for turtles, cetaceans and shark species and a separate exclusion zone of 850m for low frequency cetaceans (based on the worst-case scenario of 1250 strikes per day).

The management plan states that underwater noise monitoring will be undertaken pre-construction to obtain baseline data and during construction to verify noise modelling and validate the efficacy of controls.

Key Findings:

6. The management of marine noise is based on Standard Operating Procedures including a shutdown zone within which the observation of marine megafauna would trigger piling activities to cease. The shutdown zones are sized based on the potential for a TTS and the Noise Modelling report identifies several distances based on the sensitivity of different marine fauna species and either 500 or 1250 pile strikes per day. These different shutdown distances confound management (e.g. shutdown decisions) when piling operations are underway.
7. It is recommended to simplify the management approach by adopting a shutdown distance based on the worst case scenario of 1250 strikes per day and the most sensitive MNES known to inhabit the Cocos lagoon.
8. All other mitigation and management measures appear appropriate.

3.3.3 Erosion and sedimentation

Studies undertaken to determine potential impacts of the MOF construction on the surrounding marine environment were provided in the *Benthic Habitat Survey* (O2 Marine, 2020), which indicated the following:

- Construction-related excess suspended solids were not predicted to greatly alter the underwater light climate of the benthic community habitats except in the very nearshore waters within approximately 100-200 m from the proposed MOF site to the northern tip of West Island.
- Minimal indirect impacts on benthic community habitats from sedimentation were predicted, which is limited to within approximately 100 m of the proposed MOF site.
- During construction of the MOF, it would be likely that less hardy species of coral, sponges and seagrass in the direct impact and indirect impact zone would be the most susceptible environmental receptors. However, most species found in these nearshore environments (where most of the elevated construction related suspended sediment is predicted) are fairly resilient to high level of suspended sediments which are naturally present.

The *Littoral Drift Study* (Bluecoast Consulting Engineers, 2021) accompanying the application states that the piled MOF design will allow most of the sand to move under the structure, with an estimated reduction in alongshore sediment transport of only 5-10% during operation. This is anticipated to have a minimal impact on sediment supply to the south of the beach area and the associated shoreline change. In addition, wrack accumulation is not expected to be a significant issue due to the piled MOF design.

In a letter to DWER dated 14th June 2024, the applicant states that sediment plumes are not generally considered likely from the piling construction activities, due to the construction methodology employed and the typical seabed conditions. The construction methodology allows for construction from the landward side in an incremental end-over method, eliminating any requirements for seabed disturbance other than the pile driving itself.

Geotechnical testing of materials within the Stilling Basin, considered generally representative of local conditions, demonstrated a particle size distribution primary dominated by sand (70-90%), which is less likely to create turbidity plumes than smaller fractions.

Surrounding vegetation, flora and fauna habitats may be impacted by increased sedimentation, especially during a high rainfall event, however, sedimentation and erosion during construction is expected to be temporary.

The revised EMP identifies an area of High Ecological Protection for the marine environment for the whole of Cocos Lagoon including the project location. It is considered unlikely that the High level of Ecological Protection can be reached around the MOF facility once it is operational. It is recommended the applicant consider designating a localised area of Moderate Ecological Protection, around the MOF facility and the ferry terminal to allow for changes in water and sediment quality, which result in only small changes in abundance and biomass of marine life and in the rates, but not types of ecosystem processes.

Key Findings:

9. The department does not have concerns that the pile driving activities will generate significant turbidity plumes. It is recommended, however, that there is water quality monitoring in place, with management controls available (e.g. silt curtains) ready to implement if required.
10. The water quality and benthic communities and habitats monitoring should be clearly defined within the Environmental Management Plan to be submitted to the department prior to the commencement of construction, clearly identifying the location, timing, frequency and methodology of monitoring.
11. The applicant should consider the identification of Moderate Areas of Ecological Protection around the MOF and ferry terminal. The EMP should include an Environmental Quality Plan, which spatially identifies the different areas of Ecological Protection.
12. The EMP should clearly identify the zones of impact associated with construction of the piled MOF design in accordance with the EPA (2021) Environmental Impact assessment of marine dredging proposals.

4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website until 7 August 2024	None received	N/A
Shire of Cocos (Keeling) Islands advised of proposal on 17 July 2024	None received	N/A
LINX Port Services (Indian Ocean Territories) advised of proposal on 17 July 2024	Correspondence received on 15 August 2024 confirming that the organisation does not support the proposal in the form as initially applied for.	<p>The department acknowledges that the application included information that the original design of the MOF was a solid structure, constructed from sandbags filled with dredge material and local materials.</p> <p>The Littoral Drift Study (Blue Coast Consulting Engineers, Technical Memo 32021) was based on solid MOF structure and a piled jetty design</p> <p>Modelling identified that this solid design would generate large sediment plumes and significantly impede local circulation. Consequently, the design was shifted to a jetty structure with 64 circular piles.</p> <p>The Marine Modelling Report (GHD 2020) did not state the MOF design as either solid or piled. This report showed significant impacts of marine sediment dispersion and it is assumed this is related to the alternative (and rejected) option of a solid MOF design. Thus this report does not appear to be relevant to the current proposal.</p>
Applicant was provided with draft documents on 15 November 2024	<p>The applicant provided a response on 18 November 2024, noting the following:</p> <ul style="list-style-type: none"> Amendment required to align cross-referencing of conditions; and Amendment to the production/design capacity for category 58. 512.5 tonnes per day is based on an average 	<p>The department has corrected the cross-referencing in the works approval, and has amended the design capacity for category 58. This is considered to be a clarification of a the category description and does not affect the assumptions used for the risk assessment.</p>

	throughout the MOF operational phase. The actual capacity is 1,200 tonnes per day based on the barge capacity and clamshell grab design capacity.	
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5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.