ATTACHMENT 5: STAKEHOLDER CONSULTATION REGISTER

Date	Stakeholder / Consultation type	Summary	Issues Raised	Outcomes
18/04/2023 01/06/2023	**DCCEEW** Email correspondence via 'Sea Dumping Inbox'	Clarify requirements for surveys.	Seeking advice regarding survey requirements.	DCCEEW requested a meeting.
02/11/2023	**DCCEEW (Sea Dumping Branch)** Meeting	Discussion of proposed sea dumping before submitting sea dumping permit application	• Proposed sea dumping at existing Spoil Ground E near Barrow Island, forecast timeframes and dredge footprint/disposal locations. • DCCEEW suggested this needs to align with the referral of the Proposal (EPBC 2022/9169) (which states land disposal of dredge spoil) and confirm its dredging strategy.	DCCEEW emphasised that Mardie Minerals needs to provide evidence of adequate stakeholder consultation, e.g. Port of Ashburton TACC (and possibly Community Consultation Committee).
02/05/2024	**DCCEEW (Assessments West)** Email correspondence	Initial comments on approvals required (Sea Dumping Permit) and potential impacts on MNES which will require separate referral of the activity under the EPBC Act.	• To dump controlled materials within waters regulated by the Sea Dumping Act, Mardie Minerals must apply for a permit. • If the offshore disposal has the potential to have significant impacts to MNES, Mardie Minerals will need to refer the activity separately under the EPBC Act. As previously flagged, offshore disposal was not part of the approval of the Original Proposal (EPBC 2018/8236), nor included in the Proposal (under assessment at the date of consultation) (EPBC 2022/9169). Options to consider may include:	• Noted. Mardie Minerals will submit an application for a Sea Dumping Permit to DCCEEW for assessment. • Noted. Mardie Minerals has considered its options, and given that EPBC 2022/9169 was granted on 9 September 2024, now submit this new referral for the proposed offshore disposal to DCCEEW.

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			○ submitting a variation request to the current assessment. The Minister must make a decision on whether to accept the variation request within 20 business days of receipt. When making this decision, consideration is given to whether the action as varied retains the same character as originally proposed, whether the impacts on MNES are the same or less than as originally referred, and whether the proposed change can be accommodated within the assessment process given we are at the end stages of the assessment process. Post the 20-day timeframe, if the variation is accepted our team would need to assess the potential impacts of the action on MNES to include with the Proposal assessment decision. ○ Alternatively, Mardie Minerals could consider submitting a new referral for the offshore disposal.	
03/05/2024	**DCCEEW (Sea Dumping Branch)** Meeting	Initial meeting to introduce proposal for offshore disposal at Spoil Ground E.	• Mardie Minerals presented its Proposed Action to dispose of dredge spoil to an existing spoil ground, Spoil Ground E which is approximately 70 NM from the Proposal in Commonwealth waters.	• DCCEEW strongly recommends Mardie Minerals completes stakeholder engagement prior to submission of the application for a sea dumping permit. • Mardie Minerals advised that following engagement with dredging contractors, it was found that onshore disposal would be technically challenging, due to the shallow water depths inshore and the associated long slurry pumping distance. None of the dredging contractors approached to tender for the dredging works were supportive of the proposed onshore disposal approach.

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			• Stakeholder consultation required to support and inform the application for a sea dumping permit. • DCCEEW sought clarification from Mardie Minerals why a change from land disposal, as per referral of the Proposal (EPBC 2022/9169), to sea disposal is being proposed, after Mardie Minerals advised in December 2023 that it no longer proposed sea dumping. • DCCEEW sought clarification if a sediment sampling and analysis plan (SAP) for Spoil Ground E was provided to DCCEEW by Mardie Minerals. • DCCEEW sought clarification if the SAP is based on the National assessment guidelines for dredging.	• Mardie Minerals has not provided a SAP to DCCEEW. Mardie Minerals decided that a sediment SAP was not required based on the extensive sediment studies that had already been completed for the Proposed Action (dredge footprint and proposed Spoil Ground E). Mardie Minerals' consultant put together a Mardie Sediment Quality Assessment to demonstrate the studies already undertaken, and the plan is to attach this to the sea dumping permit application. In the event the proposed spoil ground location changes, then additional sediment studies would be required in the new area. • In assessing a permit application under the Sea Dumping Act, the Determining Authority must also consider advice from the Commonwealth Environment Minister, if the action is likely to have a significant impact on the environment, including an impact within state or territory waters. In practice, an EPBC Act assessment is usually required for such actions, and the granting of a sea dumping permit is based on that assessment and any recommendations following from it. Where assessment is required under both the Sea Dumping Act and the EPBC Act, the assessment processes will be coordinated as much as possible.
24/05/2024	**TACC** Meeting	High-level introduction of possible offshore disposal options being investigated	• Assessment of the referral for the Proposal (EPBC 2022/9169) still in progress (at the time of consultation). The referral states that dredge spoil will be disposed on land on the Proposal site, but Mardie Minerals is investigating possible offshore locations for sea dumping. • Mardie Minerals advised that, based on the outcome of its investigations into possible offshore disposal sites, it may submit an application for a sea dumping permit after assessment of EPBC 2022/9169 has been completed and will engage further with	TACC noted the update provided by Mardie Minerals.

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			stakeholders on such application in due course.	
24/09/2024	**EPA Services / DWER** Meeting	Initial meeting to introduce proposal for offshore disposal (DMPA4)	Has Mardie Minerals undertaken stakeholder consultation with DPIRD regarding proposed sea dumping?	• Mardie Minerals initiated consultation with DPIRD on 13 November 2024, and DPIRD has identified its concerns regarding Bluespotted Emperor. • Mardie Minerals will continue to engage with DPIRD during assessment of the referral to address any concerns/issues raised in relation to the Proposed Action.
24/09/2024	**DCCEEW (Sea Dumping Branch)** Meeting	Initial meeting to introduce proposal for offshore disposal (DMPA4)	• Has Mardie Minerals undertaken sediment sampling to support the Sea Dumping Permit application? • Currently the EPBC 2018/8236 and EPBC 2022/9169 approvals only permit disposal of dredge material to an onshore location. Mardie Minerals will not only require a Sea Dumping Permit, but the current approvals will also need to be varied to allow for offshore disposal of the dredge materials.	• Mardie Minerals has undertaken sediment sampling of the DMPA4 location, as provided in Appendix A of the BCH Report (Att2_BCH Survey Report DMPA4 2024, Appendix A, Page 31). • Noted. Mardie Minerals will submit a referral to DCCEEW for the proposed offshore disposal of dredge material to determine if it is considered a Controlled Action. Mardie Minerals has also been in consultation with the DCCEEW Post Assessment Branch regarding the proposed variation of the EPBC 2018/8236 and EPBC 2022/9169 approvals.
25/09/2024	**PPA** Meeting	Initial meeting to introduce proposal for offshore disposal (DMPA4)	• Clarification to be provided if proposed DMPA4 is located within the PPA port boundary. • Suggest the proposed DMPA4 area needs to have a buffer (minimum of 50 m and up to 100 m) to ensure the material being dumped stays within the boundaries of DMPA4. • Mardie Minerals need to undertake a hydrographic survey of the proposed transport route for the vessels transporting the material for disposal, as this will be needed for the PPA-issued dredge licence.	• A portion of the transport route for the vessels going out to DMPA4 is located within the PPA port boundary, however, the DMPA4 location is outside and to the west of PPA port boundary. • Mardie Minerals will take this into consideration as the DMPA4 area is indicative, and subject to assessment by the Decision Making Authorities (DMAs). In addition, Mardie Minerals proposes to use satellite-based vessel monitoring systems on the dredge vessel and transport barges to ensure no disposal of dredge spoil occurs outside of the approved disturbance area. • Mardie Minerals will engage further with PPA regarding this requirement. • Noted. Mardie Minerals is yet to appoint a dredge contractor. • Noted. Mardie Minerals has developed a cyclone readiness and response plan.

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			• With the reduction in the volume of material to be dredged, the use of a backhoe dredge (BHD) is preferable over a cutter suction dredge (CSD), as the BHD would generate a smaller sediment plume and lower the risk of marine fauna interactions. • Mardie Minerals is to consider a cyclone readiness and response plan, given the location of the Proposal and likelihood of tropical cyclones over the Pilbara coast and encourages Mardie Minerals to engage with the Department of Biodiversity, Conservation and Attractions (DBCA) in this regard. • Consideration of lighting for the vessels traveling to the disposal location and potential impacts for marine turtles on the offshore islands.	• Noted. Operations will only be conducted during daylight hours, therefore, the operations will not result in any lighting impact to the marine turtles on the offshore islands. As per the current environmental approvals, Mardie Minerals is required to undertaking annual monitoring under the approved Marine Turtle Monitoring Program.
25/09/2024	**DJTSI** Meeting	Initial meeting to introduce proposal for offshore disposal (DMPA4)	No concerns were raised.	N/A
01/10/2024	**DPLH** Meeting	Initial meeting to introduce proposal for offshore disposal (DMPA4)	Has Mardie Minerals undertaken any Aboriginal heritage surveys of the proposed disposal area?	• Mardie Minerals has undertaken a desktop review of the Aboriginal Cultural Heritage Inquiry System which indicates there are no registered or other Aboriginal Cultural Heritage sites in the vicinity of the proposed DMPA4. • Based on legal advice obtained by Mardie Minerals, Native Title does not exist over the proposed DMPA4 area, as there is no evidence of connection to the marine environment and the Native Title Determination excluded any buffers around islands and the low water mark. • Mardie Minerals has an established and ongoing relationship with the Traditional Owners (Mardudhunera and Yaburara people) and will continue to

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				engage with the Traditional Owners during the construction and operations phases of the Proposal and Proposed Action.
02/10/2024	**Mineral Resources Limited** Meeting	Initial meeting to introduce proposal for offshore disposal (DMPA4)	• Background on the status of approvals for the Proposal, and the rationale for proposing to change from land disposal of dredge spoil to sea disposal at DMPA4. • Key findings of the field survey conducted and disposal plume modelling findings were presented, as well as the proposed management measures to avoid / mitigate potential direct and indirect impacts on the receiving environment.	No concerns were raised by Mineral Resources Limited regarding the proposed sea dumping.
07/11/2024	**DCCEEW (Post Approvals Branch, Assessments West, Sea Dumping Branch)** Meeting	Pre-referral Meeting under the EPBC Act.	• Referral of the proposed offshore disposal should only address the capital dredge campaign, and Mardie Minerals would need to submit a separate application for future maintenance dredge works. • Mardie Minerals is to give consideration to all other disposal options (including landside) with clear discussion and justification for the preferred location to be included.	• Noted. The current referral is for the capital dredge campaign and based on the operational requirements and frequency of tropical cyclones within the Proposal, at this stage Mardie Minerals can only estimate the maintenance dredge requirements to be once every 5 – 7 years. Mardie Minerals will apply for a Sea Dumping Permit for the maintenance dredge campaign in future and prepare a long-term DSDMP for assessment by DMAs, once the Proposal is operational. • Noted. The consideration of all other disposal options and justification for the DMPA4 location are provide in the s.45C Application Supporting Document.
13/11/2024	**DPIRD** Meeting	Initial meeting to introduce proposal for offshore disposal (DMPA4)	• Proximity of DMPA4 to the Sholl Island and Stewart Island which is considered important habitat for the Bluespotted Emperor. • What would be the frequency of the maintenance dredging disposal?	• Mardie Minerals has considered a number of alternative disposal locations. DMPA4 was identified as the preferred location, based on the distance from the Proposal and the modelled ZoHI and ZoMI. DMPA4 is located approximately 10.5 km (5.7 NM) from Sholl Island and 10 km (5.3 NM) from Stewart Island. Ongoing consultation will continue with DPIRD and commercial fisheries to resolve any issues raised regarding proposed offshore disposal of dredge spoil. The Proposed Action will require the direct impact of 30.26 ha of BCH, which forms a small part of the total nursery area of the Bluespotted Emperor. The relatively low cover and limited diversity of BCH

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				within the area for the Proposed Action compared to the BCH surrounding the nearshore islands and extending further offshore, suggests that the Proposed Action area is of low value to support fisheries production and biodiversity. Furthermore, impacts from offshore disposal are expected to have negligible effect on fisheries production and biodiversity in the region. • The current application is for the capital dredge campaign and based on the operational requirements and frequency of tropical cyclones within the Proposal, at this stage Mardie Minerals can only estimate the maintenance dredge requirements to be once every 5 – 7 years. Mardie Minerals will apply for a Sea Dumping Permit for the maintenance dredge campaign in future and prepare a long-term DSDMP for assessment by DMAs, once the Proposal is operational.
18/11/2024	**DPIRD** Email correspondence	Follow up queries from 13/11/2024 meeting.	• What consideration has been given to the level of development already undertaken on land as part of the Mardie development and alternative land-based dump sites away from the species of Minnie daisy (*Minuria tridens*) under current approvals. Based on the information provided, the footprint of 700 m by 430 m, in relation to the size of the land-based tenement is relatively small, has genuine consideration been given to finding a land-based site away from the Minnie Daisy to fit within the scope of the existing approvals for the dumping of dredged materials? And is there evidence of Minnie daisy in pond 0 and the evaporation ponds footprint? • As previously discussed in the meeting, DPIRD have concerns in relation to moving the dumping of capital and maintenance dredged materials from land to the ocean.	• The optimised design for the Proposal will result in limited vacant land within the approved development envelope that could be used for land disposal of dredge spoil. Possible locations closest to the dredging area are within the intertidal coastal zone and will be filled with seawater during 2025 as part of the evaporation ponds for the Proposal before the dredging campaign is forecast to commence on 1 April 2026. Minnie daisy has been recorded in Pond 1, but not in Pond 0. Pond 0 is already filled with seawater in accordance with the approved GMMP. Based on the spatial constraints within the approved development envelope and the technical challenges of pumping the dredge spoil on land and then having to double handle it to another location, the land-based disposal option is considered financially non-viable by Mardie Minerals. • Dredging may only be undertaken from 1 April to 30 September in accordance with current approvals granted by DWER and DCCEEW. Mardie Minerals forecasts that dredging may be completed between 1 April 2026 and early September 2026; based on the reduced volume of estimated dredge material and the preferred dredging methodology, the greatest period of productivity for dredging and disposal is expected to be from April 2026 to August 2026, which is before the spawning period of Bluespotted Emperor, i.e. from September (refer to Newman *et al*. 2002).

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			This relates to potential negative impacts on fish and fish resources (including habitats) if dumping was moved to an ocean location. As highlighted in the meeting, impacts when dumping at sea are within a three-dimensional environment, not limited to seafloor related habitats but also including the water column (important habitat for egg and larvae of fish (a vulnerable stage)). A key species of concern with respect to potential significant impacts regarding the probable change to sea-based dumping of dredge spoil is Bluespotted Emperor, a species that is endemic to WA and is the most valuable single species for the Pilbara demersal scalefish resource. This species has pelagic eggs and larvae that settle and recruit exclusively in the nearshore sargassum, and thus are highly susceptible to disturbance during these early life stages when they are most vulnerable. Looking at Mardie Minerals' request further, DPIRD notes that the Proposal assessment report have identified the Minnie daisy under the environmental management plan and monitoring. With this in mind, its recommended that further consideration be given to further investigate the option for alternative land-based dump locations.	• Mardie Minerals therefore considers it is unlikely that dredging / disposal activities would adversely impact the recruitment of the Bluespotted Emperor. Mardie Minerals will submit the DSDMP for assessment by DMAs, that includes specific management and monitoring activities to ensure the disposal plume does not extend beyond the area approved for sea dumping and to avoid / minimise potential impacts on Bluespotted Emperor. • Based on information from the Fisheries Research and Development Corporation (FRDC, 2023): ○ "*Recreational and charter catch are relatively low compared to the commercial catch, in the past 10 years where reliable catch estimates are available, the proportion of the total catch has averaged < 1%. Catch rates of Bluespotted Emperor are determined from the commercial trawl fishery. These catch rates have remained relatively stable from 2015 to 2020 but have declined in the last two years. The above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.*" • According to Babcock et al. (2017), juvenile individuals of Bluespotted Emperor, under 200 mm in length, were shown to be strongly associated with shallow depths with no individuals found in water of 10 m or greater depth. Individuals of 200-275 mm in length showed dispersal across all depths while larger individuals were strongly associated with greater depths. Information based solely on abundance or biomass estimates, as typically provided by studies using stereo-baited remote underwater video (BRUV), did not provide clear evidence of ontogenetic shifts with abundance not influenced by depth, however greater biomass was seen in deep waters suggesting that larger individuals had been recorded. This suggests that the preservation of shallow, low variance habitat, including macroalgal dominated habitats through fisheries and conservation management, are a priority for the continued protection of nursery grounds for Bluespotted Emperor. Continued exclusion of fisheries from shallow waters in the region will ensure that juvenile populations of Bluespotted Emperor remain relatively undisturbed by fishing

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				as well as conserving and maintaining recruitment of larger individuals into the adult population and active fishery zones. DMPA4 is located in waters with average depth of more than 16 m, and based on the field survey conducted during September 2024, it is not expected that juvenile Bluespotted Emperor would be strongly associated with water at depths of average 16 m.
14/11/2024 18/11/2024	**Recfishwest** Email correspondence	Provision of background material via email (14/11/2024). Recfishwest Response (18/11/2024)	• The general area is commonly accessed by recreational fishers from Karratha and Onslow, with the nearby islands and habitats of the Great Sandy Island Nature Reserve providing unique wilderness fishing experiences. In this regard, Recfishwest are interested in understanding any risk assessments that have been undertaken on those important islands and habitats. • In addition, while threatened and migratory species have been cited as being potentially affected by reduced marine environmental quality, have impacts on fish assemblages been considered as part of this? • It is noted that disposal of the dredged materials was originally intended to occur on land. Request for Mardie Minerals to clarify why there has been a change to dumping at sea. • Does environmental monitoring continue after 12 months for a longer term? • Will more dredging campaigns be required in future to maintain the depth of the berth pocket and shipping channel?	• Mardie Minerals conducted disposal plume modelling at two possible spoil grounds, i.e. DMPA1 and DMPA4; DMPA1 is in proximity to DMPA4 but closer to the nearshore islands. Based on the modelling results for DMPA1, potential impacts on environmental values at the nearshore islands were predicted, hence Mardie Minerals does not consider DMPA1 to be a suitable site for sea dumping and eliminated it as a potential disposal site. The modelling results for DMPA4 did not predict potential impacts on environmental values at the nearshore islands. • The Proposed Action will require the direct impact of 30.26 ha of BCH, which forms a small part of the total nursery area of the Bluespotted Emperor. The relatively low cover and limited diversity of BCH within DMPA4 compared to the BCH surrounding the nearshore islands and extending further offshore, suggests that DMPA4 is of low value to support fisheries production and biodiversity. Furthermore, impacts from offshore disposal are expected to have negligible effect on fisheries production and biodiversity in the region. • After dredging / disposal has been completed, Mardie Minerals proposes to continue monitoring of marine environmental water quality for at least 30 days. In addition, Mardie Minerals proposes to monitor replicate quadrats of BCH at DMPA4 within six months after dredging / disposal has been completed, which quadrats will be assessed for percent cover, relative abundance and composition and compared to baseline information collected prior to the commencement of disposal activities. In the event that the management targets for BCH, to be set by DMAs in its assessment of the application for approvals were not met, then Mardie Minerals proposes to continue monitoring until the management targets are met, or until impacted BCH as a result of disposal in the Zone of Impact are considered to have recovered to

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				baseline conditions based on the DMAs review of the outcomes of the monitoring program. • Maintenance dredging is expected to be undertaken to ensure the berth pocket and navigation channel remain at operating depths for the Proposal. It is proposed to dispose of dredge spoil from maintenance dredging at DMPA4, and a long term DSDMP will be submitted for assessment by DMAs in due course.
29/11/2024	**TACC** Meeting	Initial meeting to introduce proposal for offshore disposal (DMPA4)	• Background on the status of approvals for the Proposal, and the rationale for proposing to change from land disposal of dredge spoil to sea disposal at DMPA4. • Key findings of the field survey conducted and disposal plume modelling findings were presented, as well as the proposed management measures to avoid / mitigate potential direct and indirect impacts on the receiving environment. • DPIRD clarified if Mardie Minerals received DPIRD's further comments / concerns on the Proposed Action and requested its strong preference for disposal of dredge spoil to land be recorded and further considered by Mardie Minerals. DPIRD is concerned about the potential impact from sea dumping on endemic fish species. • PPA enquired whether Mardie Minerals considers the indicative size of DMPA4 to be adequate for the expected volume of dredge spoil as it appears too small.	• Mardie Minerals advised it was preparing its response to the comments and concerns received from DPIRD (refer to 18/11/2024 above). • Mardie Minerals undertook to review the proposed size of DMPA4 in view of PPA comments.

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03/12/2024	**WAFIC**
	Meeting
		Initial meeting to introduce proposal for offshore disposal (DMPA4)	• Background on the status of approvals for the Proposal, and the rationale for proposing to change from land disposal of dredge spoil to sea disposal at DMPA4.
			• Key findings of the field survey conducted and disposal plume modelling findings were presented, as well as the proposed management measures to avoid / mitigate potential direct and indirect impacts on the receiving environment.
			• WAFIC enquired what the expected sedimentation depth at DMPA4 is.
			• WAFIC enquired if Mardie Minerals has engaged with any commercial fisheries regarding the Proposed Action.
			• WAFIC enquired whether Mardie Minerals has considered potential impact from sea dumping on prawn fisheries.
			• WAFIC suggested that there appeared to be endangered coral communities within the berth pocket and that salvage of the coral by a third party prior to dredging should be considered.
			• Has Mardie Minerals conducted sampling of sediment for contaminants in the berth pocket and navigation channel, and if so, were any contaminants identified?
			• WAFIC requested its concern of potential impacts from sea dumping at DMPA4 on fisheries activities be recorded, and that it
				• The disposal plume modelling conducted by Mardie Minerals predicts that the sedimentation depth at DMPA4 could have a maximum height of 1.85 m after an assumed dredging campaign of 98 days.
				• Mardie Minerals has not engaged directly with commercial fisheries operators regarding the Proposed Action.
				• Based on the field survey conducted, the relatively low cover and limited diversity of BCH within DMPA4 compared to the BCH surrounding the nearshore islands and extending further offshore, suggests that DMPA4 is of low value to support prawn fisheries production.
				• As per Assessment Report No 1740 (EPA, 2023), prepared by the EPA, the coral communities mapped in the study area for the Proposal were generally of low diversity and abundance, representing less than 2% of the mapped BCH in the study area. No subtidal BCH in the study area (for dredging) is considered to be locally or regionally significant. Mardie Minerals considers that the issue raised by DPIRD applies to dredging at the berth pocket and navigation channel, and not at the proposed disposal site.
				• Mardie Minerals conducted detailed site investigation of the berth pocket and navigation channel between December 2018 and February 2019 (Att11_Baseline Marine Sediment Assessment 2019). Key findings made during the investigation include:
				  ○ The 95% UCL of metal concentrations were below the ANZG default guideline level (DGV)-low level screening guidelines for all CoPCs with exception of Nickel and Arsenic. However, these were deemed to be lithographically occurring exceedances supported by previous marine sediment sampling in the Pilbara and normalisation to Aluminium;
				  ○ Organics including organotins (TBT etc.), TRH, TPH, and BTEXN contaminant concentrations were all below ANZG DGVs (if available) and the vast majority of organic analytes were non-detections below the laboratory Limit of Reporting;

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			prefers that dredge spoil be dumped on land instead.	○ All analytes in Organochlorine Pesticides and Phenoxyacetic Acid Herbicides suites were at non-detection levels below the Limits of Reporting. Herbicides were identified early as a CoPC due to their extensive use on Mardie Station. This investigation found no evidence of herbicides in the marine sediments sampled; and ○ None of the samples failed the acid sulphate soil (ASS) screening test and, as such, the sediments within the dredging area are considered to pose a low ASS / Potential ASS risk. • For DMPA4, Mardie Minerals conducted a site investigation (Att2_BCH Survey Report DMPA4 2024, Appendix A, Page 31) and the sample results recorded from the four sites at the DMPA4 Detailed Study Area generally reflect sediment characteristics expected from an offshore greenfield site in the Pilbara. The majority of the contaminants (metals, hydrocarbons, TBT and BTEXN) were either below the laboratory Limits of Reporting, below the NAGD (2009) ISQG-low screening levels, or comparable to concentrations along the Pilbara coast as documented in DEC (2006). These results are also comparable to the six dredge footprint sediment samples collected in 2023. Based on both the contaminant and PSD results, sediment characteristics between the dredge footprint and DMPA4 were found to be similar, and as such, it is unlikely that any biological impacts will result from placing dredge material at DMPA4.
08/01/2025	**WAFIC** Email	Additional questions to BCI re research of fisheries and status of approvals	• Has BCI undertaken any research regarding the fisheries that will be impacted by the offshore dredge disposal? • Does BCI have a timeline for the marine investigations that will be conducted (i.e. plume modelling)? • Further clarify the approval process for this proposed change, including the relevant regulator responsible for assessment and approval?	• A fisheries assessment was completed for the Original Mardie Project; please refer to Mardie Project - Fisheries and aquaculture impact study Final 210803.pdf More recently, O2 Marine (consultants) has completed Fish and Fisheries desktop assessment and impact assessments for other projects along the Pilbara coastline. These reports looked at fisheries that operate over a large scale, including the waters of and around DMPA4. A summary of this desktop assessment and other known fisheries research in the area is included as **Appendix 1**. • March 2025 to March 2026.

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			• At what stage of the approval processes is BCI currently at? • Regarding dredging impacts to coral, WAFIC notes that even though the coral communities represent less than 2% of mapped BCH, given the large scale of the project, the 2% correlates to 189 ha of coral, which is a significant amount. • Can BCI confirm how the coral under the jetty structure is impacted. Is it removed completely? Are pylons driven through it, or is there some other way of securing the structure to the sea floor? • What is the estimated volume of coral being removed (in tonnes) as part of the (a) jetty construction and (b) the channel dredging, as well as what happens to the coral once it is removed?	• Referral under the EPBC Act was submitted to DCCEEW in mid-November 2024 – current status is validation of the referral. Application to amend Ministerial Statement (MS) 1211 was submitted to DWER in mid-December 2024 – current status is under assessment. Application for a Sea Dumping Permit was submitted to DCCEEW in mid-December 2024 – current status is validation of the application. • Disturbance of the area for the jetty structure, berth pocket and navigation channel was approved in accordance with the clearing limitations set in MS 1175 (superseded) and MS 1121, and EPBC 2018/8236 and EPBC 2022/9169. • Coral under the jetty structure will be impacted in a restricted manner by piling activities; coral that forms part of piling spoil is side-cast to the ZoHI within the approved Development Envelope for the project. The jetty structure is secured to the sea bed through piles. • In accordance with MS 1211, BCI has been granted approval to directly disturb no more than 65 ha within the dredge development envelope. It is estimated that approximately 44 ha of coral/macroalgae may be directly disturbed during dredging. Disturbed coral will form part of dredge spoil material which is to be disposed by BCI in accordance with the approvals granted by DWER and DCCEEW.
14/01/2025	**WAFIC** Email	Further information re dredging	Questions on behalf of a potentially impacted licence holder: • GPS coordinates for DMPA4. • What are the expected dredging start and finish dates? Are these different from the dates outlined in the dredging and disposal program? • What dredging method will be used? • Provide details on the transport of dredged material to the proposed disposal site, including the size of each dredge load. Are	• Provided locality plan with coordinates on 24/01/2025. • The expected dredging dates are from 1 April 2026 to 30 September 2027; the period is to allow for availability of dredge equipment and any unforeseen delays/interruptions in the dredge schedule. Note that dredging is only allowed in accordance with the approvals for the Project from 1 April to 30 September each year. • Conventional marine dredging plant and equipment, such as a BHD and a split hull hopper barge (to transport the material to DMPA4) will be used. • A split hopper barge will be used to transport dredged material to DMPA4; it is estimated there will be an average of 3 loads of 1,200 m^3 each per day being disposed. Due to the nature of the dredging and being in the vicinity of the already constructed jetty, dredge volumes may be reduced on certain days

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			these quantities different from those in the dredging and disposal program? • Will there be any rock content in the sediment to be disposed of? If so, what is the predicted size of the rock material?	which may lead to different volume of dredge material to be transport to / disposed of at DMPA4. • Yes, based on geotechnical investigations undertaken there are sections of the dredging area that consist of a mixture of cohesive and non-cohesive material including gravel, cobble, and rock; the predicted size of the rock material to be disposed of is subject to BCI engaging the dredging contractor and determining the suitably sized equipment to be used to perform the dredging work (inter alia looking at the necessary abrasion rates, production rates and material settlement rates).

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APPENDICES

Appendix 1: BCI – Fisheries summary and response to WAFIC comment.

BCI – Fisheries summary and response to WAFIC comment

BCI is currently undertaking stakeholder engagement activities to support its recent Sea Dumping Permit application. In response to this, WAFIC has enquired whether BCI Minerals have undertaken any research regarding the fisheries that will be impacted by the offshore dredge disposal.

A fisheries assessment was completed for the original BCI project: Mardie Project - Fisheries and aquaculture impact study Final 210803.pdf

More recently, O2M has completed Fish and Fisheries desktop assessment and impact assessments for other Projects along the Pilbara coastline. These reports looked at fisheries that operate over a large scale, including the waters of and around DMPA4. A summary of this desktop assessment and other known fisheries research in the area is presented below.

1. Summary of relevant or potentially relevant fisheries

1.1. Demersal Scalefish Resource

- Commercial fisheries: Northern Demersal Scalefish Managed Fishery (NDSMF) in the Kimberley subregion and the Pilbara Demersal Scalefish Fisheries (PDSF) in the Pilbara subregion. The Pilbara Demersal Scalefish Fisheries includes Pilbara Trap Managed Fishery (PTMF), Pilbara Fish Trawl (Interim) Managed Fishery (PFTIMF) and Pilbara Line Fishery (PLF) (Figure 3).
- DMPA4 is located within the Pilbara Inshore Closed Waters (Trap), no trap fishing or trawl fishing occurs in the waters around DMPA4.
- The PLF has had reported fishing effort in the waters adjacent to DMPA4, and commercial fishers may use the waters near DMPA4 however recent catch data has not been published.
- Indicator species for the PDSF include the bluespotted emperor, Rankin cod, and red emperor
    - Bluespotted emperor: juvenile phase is directly associated with inshore shallow macroalgal beds and may be vulnerable to their loss. Whereas adults are generally found in offshore waters (in waters up to 150 m) around coral reefs, rubble/sand substrate and seagrass beds.
    - Rankin cod: adults inhabit mid-shelf reefs, lagoons, and limestone sand/gravel habitats in depths up to 180 m. Commercial catch of this species in the Pilbara primarily occurs in offshore waters in the PFTIMF operational area, which does not overlap DMPA4 (Figure 3 Areas 1,2,4,5).
    - Red emperor: inhabits mid-shelf waters often found around reefs and limestone sand/gravel in depths up to 180 m. In the Pilbara, they are predominantly caught offshore around the north-west side of Barrow Island, around the Montebello Islands, and offshore from the Dampier Archipelago (Newman et al. 2024). Fishing within and around DMPA4 is unlikely.

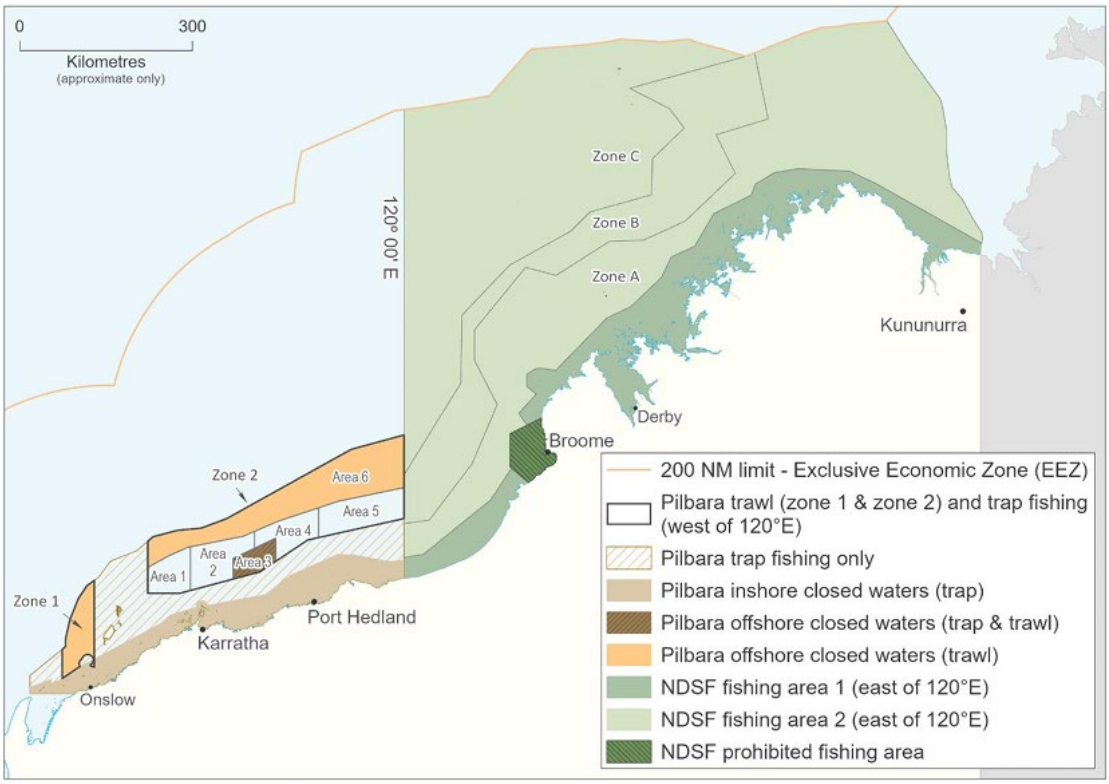

Figure 1: Demersal scalefish fisheries of the North Coast bioregion of WA. In the Pilbara subregion: Areas 1 to 6 refer to the management regions in Zone 2 of the trawl fishery. Zone 1 has been closed to trawling since 1998. In the Kimberley subregion: Zones A, B and C lie in Area 2 of the NDSMF (Newman et al. 2024).

1.2. Statewide Large Pelagic Finfish Resource

- Mackerel Managed Fishery (MMF): the commercial fishery is operational in the waters adjacent to the proposed DMPA4, with catch sporadically reports around the Great Sandy Island (DPIRD 2023), however catch in the region is generally concentrated around and offshore of Barrow Island and Cape Preston. Likely that commercial fishing in this area represent a small portion of the statewide operation. The primary fishing season for the MMF is May to November (Lewis and Rynvis 2024). The key species targeted by the MMF are the Spanish mackerel and grey mackerel, with Spanish mackerel being the most commonly caught species.
- Commercial (MMF) recorded in the vicinity of the Proposal. However, it is not restricted to the Proposal area with the resources utilised across the Pilbara and Kimberley.
- Adult Spanish mackerel utilise offshore waters often around coral reefs, shoals and headlands, critical habitat for the species are reef and island in the inshore and offshore pelagic zones (Lewis 2020). The waters of the DMPA4 is not expected to support commercial fishing for the Spanish Mackerel (Figure 1).
- Grey mackerel inhabit rocky headlands, reefs and muddy sandy substrates. Often found in turbid tropical and subtropical waters, and have a high tolerance (Lewis 2020)

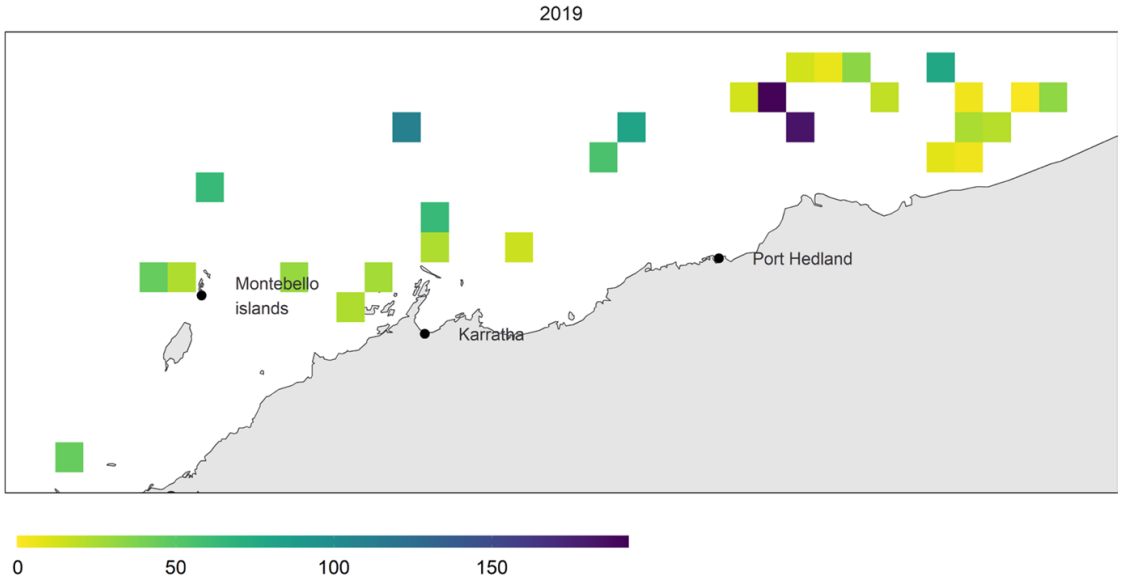

Figure 2: Maps showing distributions of catch by number (for fish measured) for Spanish Mackerel (*Scomberomorus commerson*) from Western Australian waters, from biological samples collected between 2018 and 2021. (Crisafulli et al. 2024)

1.3. North Coast Prawn Resource

- There are four commercial fisheries managed under the North Coast Prawn: the Onslow Prawn Managed Fishery (OPMF), the Nickol Bay Prawn Managed Fishery (NBPMF), the Broome Prawn Managed Fishery and Kimberley Prawn Managed Fishery. The NBPMF is the one relevant to the Proposal area
- The inshore aspects of the Proposal overlap with the NBPMF Size Management Fish Ground (SMFG)- the Fortescue SMFG, an area designated as a prawn recruitment and nursery area for the fishery. The disposal site and associated plume from disposal are not expected to enter this area closure.
- Historically (2021) catch by the OPMF has been recorded in the waters around the Great Sandy Islands which could include DMPA4 (DPIRD 2023)
- Commercial catch has not been recorded in the waters of or around DMPA4, with catch concentrated to Nickol Bay (Figure 2; Koefoed et al. 2024).

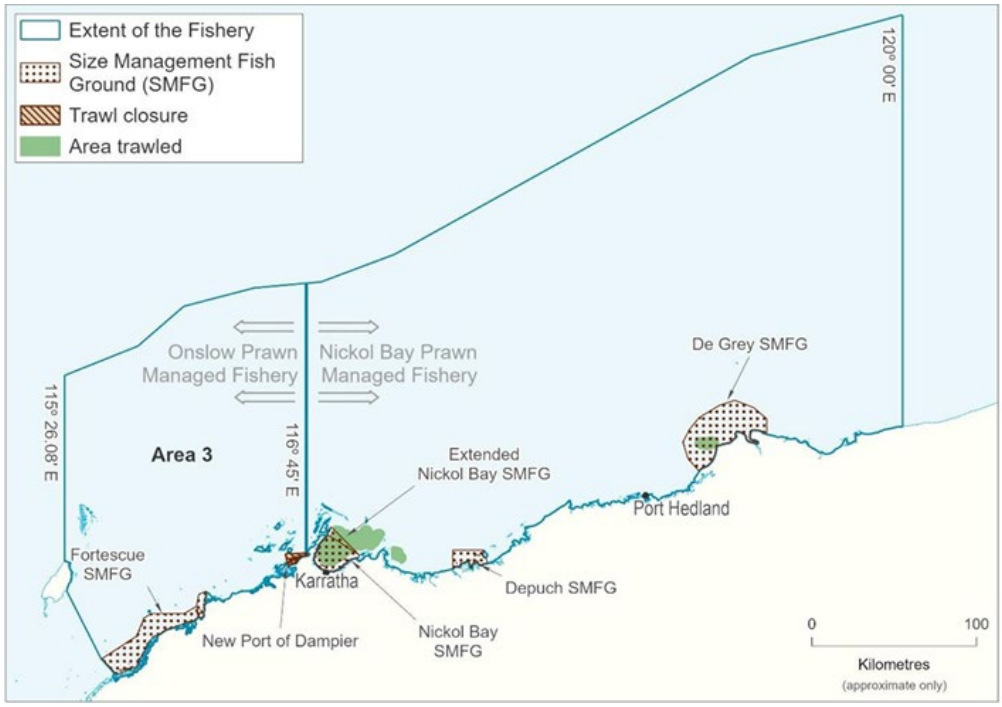

Figure 3: Boundaries of the Nickol Bay Prawn Managed Fishery and areas fished in 2023 (Koefoed et al. 2024)

1.4. North Coast Crab Resource

- There are two commercial fisheries which are managed within the North Coast Crab Resource, they are the Pilbara Crab Managed Fishery (PCMF) and the Kimberley Crab managed Fishery (KCMF). The PCMF is relevant to the Proposal area.
- PCMF generally operates from March to November, and represents ~5% of the statewide catch of blue swimmer crabs
- Blue swimmer crabs are generally found in shallow inshore waters, juveniles in shallow seagrass beds, and adults over seagrass beds, sandy, muddy or algal areas, normally in water depths <20 m but can be found in water depths up to max 50 m. Unlikely the area represents suitable area for blue swimmer crabs and no commercial fishing has been recorded in the waters of or adjacent to DMPA4.

2. Other fisheries

Fisheries such as the Western Australia Sea Cucumber Fishery (WASCF), Marine Aquarium Fish Managed Fishery (MAFMF), Specimen Shell Managed Fishery (SSMF), Pearl Oyster Wild stock Fishery and the Hermit Crab Fishery (HCF) are thought to be minor in the area, however Customary fishing may occur, particularly for silver-lipped pearl oyster

- The HCF targets a land-based species not relevant to DMPA4
- The MAFMF efforts are concentrated to Exmouth Gulf and around Dampier. The fishery targets a variety of species (fish, invertebrates, coral, live rock, algae, and seagrass) is active around islands of the Dampier Archipelago.
- WASCF catch has historically been recorded around the Barrow Island and the Montebello Islands, and the Dampier Archipelago. The fishery is unlikely to be active within or around DMPA4 as does not represent suitable habitat for the species

(seagrass beds, adjacent to mangroves, inner reefs and lagoons, reef flats, estuaries, lagoons, seagrass, rubble, depths <20 m)

- SSMF is concentrated to population centres such as Broome, Exmouth, Shark Bay, Geraldton, Perth, Mandurah, the Capes area, Albany, and Esperance.
- Pearl Oyster Wild stock Fishery not operational leases nearby, not relevant to DMPA4

The Statewide Abalone Resource has two fisheries that operate within WA waters: Abalone (Roe's) Managed Fishery and Abalone (Greenlip/Brownlip) Managed Fisheries. These fisheries extend across the entire waters of WA, with abalone mostly occurring in the West Coast Bioregion and the South Coast Bioregion (Hart et al. 2017). Area 4 (Busselton Jetty to NT/WA border) of the fishery. Management Area 4 has no quota allocated and does not form part of the functional fishery (Hart et al. 2017).

The South Coast and West Coast Crustacean Resource manage the West Coast Deep Sea Crustacean Managed Fishery, which operate off the west coast of WA. The fishery is operational on the seaward side of the 150 m isobath and extends out to the Australian Exclusive Economic Zone (200 nm boundary) (How et al. 2015). The fishery targets the crystal crab (deep-water species), occurring in water depths of 300 to 1200 m (How et al. 2015). This fishery does not operate within the vicinity of the Proposal.

3. Impact pathways

Disposal of dredge disposal can result in increased turbidity, elevated TTS, reduced light from dredging and loss of BCH, which in turn may lead to:

- Direct and indirect impacts to fish species
  - Injury or reduced fitness
  - Loss of BCH and associated fish habitat.

Direct effects of suspended solids on fishes and suspension-feeding organisms can occur through mechanical abrasion that physically damages the gills and reduces feeding rates (Lowe et al.2015) or clogs the filtering apparatus (Ayukai and Wolanski 1997). This can result in interfering with ingestion and respiration, with potentially adverse effects on growth, reproduction and/or mortality (Wilber and Clarke 2001; Fraser et al. 2017; Hess et al. 2017).

Predicted indirect impacts to BCH outside of the dredging footprint within the ZoMI, from increased turbidity, reduction in available light and localised increase in sedimentation, are all sub-lethal and recoverable. No permanent loss of any macroalgae or seagrass beds is expected due to dredge disposal at DMPA4. The lack of important habitat for important fisheries species within the ZoMI for the disposal site indicates it is unlikely that fisheries and their key target species will be impacted.

4. Fisheries publication

Recent work completed by DPIRD scientists in relations to species potentially found in the waters around DMPA4 are presented below in Table 1.

Table 1: Recent studies completed near DMPA4

Title	Study effort and location	Summary	Reference
Seascape effects on the nursery function of macroalgal habitats	13 sites shallow within the Dampier Archipelago were survey for juvenile bluespotted emperor abundance from January 2021 to 2023. In February 2021, juvenile bluespotted emperor were collected from shallow macroalgae beds using baited traps and small spearguns with pronged heads.	The study found that juvenile bluespotted emperor snappers abundance, biomass, productivity and size-at-age exhibited significant spatial variation, although each pattern was best explained by different factors. Juvenile bluespotted emperor was most abundant in macroalgae-rich seascapes. Biomass and productivity peaked at sites where macroalgal cover and water temperatures were high. The fish were found to have the greatest average daily growth at sites located near coral reefs. Overall, the results suggest that habitat and resource availability constrains bluespotted emperor abundance and productivity, while size-at-age is influenced by size-selective mortality and prey quality.	Moustaka M, WD Robbins, SK Wilson, C Wakefield, MVW Cuttler, MJ O'Leary and RD Evans (2024) Seascape effects on the nursery function of macroalgal habitats, *Marine Environmental Research,* 202(106767):1-13. doi: 10.1016/j.marenvres.2024.106767
Otolith growth chronologies reveal distinct environmental sensitivities between and within shallow- and deep-water snappers	Red emperor and Bowen's snapper (giant ruby snapper) long-term growth patterns were investigate using samples collected across the northwestern Australia's coastal shelf waters; red emperor 1950-2020, Bowen's snapper 1973-2013.	The results from annually-resolved otolith growth chronologies showed that there is a distinct environmental sensitivity present within (juveniles vs adults) and among (shallow- vs deep water habitats) species. Within species, juveniles and adults responded differently to shared environmental stimuli, highlighting the importance of understanding the impacts of environmental effects and sensitivities for different life-history stages. Red emperor results showed that variable growth appears to be tied to local climate signals such as sea surface temperature and rainfall. The results highlight potential vulnerabilities of shallow-water species to future environmental perturbations compared to species residing at depth, as they are likely to encounter more extreme climate variability under future oceanic conditions.	Widdrington JB, P Reis-Santos, JR Morrongiello, JI Mcdonald, CB Wakefield, SJ Newman, SJ Nicol and BM Gillanders (2024) Otolith growth chronologies reveal distinct environmental sensitivities between and within shallow- and deep-water snappers, *Review in Fish Biology and Fisheries,*. doi: 10.1007/s11160-024-09898-4
Population genomics informs the management of harvested snappers across north-western Australia	Sampling occurred on research and commercial fishing vessels between 2012 and 2018 across the north western and northern coastline from Shark bay to the Gulf of Carpentaria, including samples from red emperor at Cape Preston to explore the population structure of the red emperor, saddletail snapper and goldband snapper.	The results found similar pattern in genetic structure across the three species, despite the differences in the species biology and ecology. Low levels of genetic subdivision were reflected isolation by distance relationship where genetic connectivity increased with geographic proximity. This result shows extensive but not unlimited dispersal occurs across the north-western Australia shelf. The study shows that the species do not form multiple independent stocks as was previously thought.	Payet SD, J Underwood, O Berry, T Saunders, MJ Travers, CB Wakefield, K Miller and SJ Newman (2024) Population genomics informs the management of harvested snappers across north-western Australia, *Scientific Reports,* 14(26598):1-13. doi: 10.1038/s41598-024-77424-4

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