



Marine Stewardship Council fisheries assessments

# Western Australia Peel Harvey Estuarine Fishery

# **Public Comment Draft Report**

Conformity Assessment Body (CAB)	bio.inspecta (mandated by q.inspecta)
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Fishery client	Western Australia Fishing Industry Council on behalf of the Mandurah Licensed Fishermen's Association and Recfishwest
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#### Glossary 2

ACDR	Announcement Comment Draft Report
BMSY	Biomass for maximum sustainable yield
CI	Confidence Interval
CMSY	Catch and Maximum Sustainable Yields
CPUE	Catch Per Unit (fishing) Effort
CSA	Consequence Spatial Analysis (a risk assessment method)
CW	Carapace width
DDG	Deputy Director General of DPIRD
DoF	Department of Fisheries (Western Australia)
DPIRD	Department of Primary Industries and Regional Development
DWER	Department of Water and Environmental Regulation (Western Australia)
ERA	Environmental Risk Assessment
EEZ	Exclusive economic zone
ETP	Endangered, Threatened and Protected species
EBFM	Ecosystem-based Fisheries Management
EPBC	Environmental Protection and Biodiversity Conservation (Act)
HCR	Harvest Control Rules, using contained with the Harvest Strategy.
IFM	Integrated Fisheries Management
FRDC	Fisheries Research and Development Corporation
FRMA	Fish Resources Management Act 1994
FRMA	Fish Resources Management Regulation 1995
GLM	Generalised linear model
HCR	Harvest control rule
LTL	low-trophic level
MLFA	Mandurah Licensed Fishermen's Association
MNES	Matters of National Environmental Significance
MSY	Maximum Sustainable Yields
OCP	Operational Compliance Plan
OCS	Offshore Constitutional Settlement 1995
PHE	Peel-Harvey Estuary
PI	Performance Indicator
PRI	Point of Recruitment Impairment
RECFISHWEST	Peak body for recreational fishing in Western Australia
RP	Reference Point
SAT	Western Australian State Administrative Tribunal
SEG	Stakeholder Engagement Strategy
SICA	Scale Intensity Consequence Analysis (a risk assessment method)
SLA	Service Level Agreement
SG	Scoring Guidepost
SPR	Spawning Potential Ratios
UoA	Unit of Assessment
UoC	Unit of Certification
VFAS	Voluntary fishery adjustment scheme
WA	Western Australia
WAFIC	WA Fishing Industry Council, peak body for commercial fishing in WA
WCB	West Coast Bioregion
WCEMF	west coast Estuarine Managed Fishery

# **3 Executive summary**

This report is the Public Comment Draft Report (PCDR) which outlines the MSC assessment process for the Western Australia Peel Harvey Estuarine Fishery. The assessment team consists of Dr Sabine Daume (Team Leader), Dr Klaas Hartmann (Principle 1), Dr Johanna Pierre (Principle 2) and Jo-Anne McCrea (Principle 3).

This report does not present a final scoring outcome or a certification decision. The site visit took place on the  $10^{th} - 11^{th}$  May 2021 when additional information was reviewed, and the views of stakeholders were requested. Additional documents were received with permission from stakeholders after the onsite meeting.

The scoring presented in this report has not been reviewed by stakeholders as this is part of the PCDR. These steps will all take place from here onwards. Stakeholders are encouraged to review the scoring presented in this assessment. If you have any comments you must use the <u>MSC Template for</u> <u>Stakeholder Input into Fishery Assessments'</u> to provide evidence to the team of where changes to scoring need to be considered.

bio.inspecta confirms that this fishery is "within scope" and eligible for MSC certification. The default assessment tree of MSC Fisheries Standard version 2.01 and the MSC Fisheries Certification Process version 2.2 is being used for this assessment.

#### **Fishery strengths**

- For both species, there is a prolonged history of stable catches and catch rates indicating that management arrangements are meeting their objectives.
- The exploitation rate for sea mullet is likely to be extremely low resulting in a very robust fishery.
- The stock assessment modelling for sea mullet is showing promising results that conform with other available information.
- The size limit for blue swimmer crab provides a minimum level of protection for egg production per recruit.
- The blue swimmer crab fishery independent surveys are providing promising indices to use in conjunction with the Catch Per Unit of Effort (CPUE) index.
- The substantial information base available on the Estuary ecosystem and its components and elements.
- The clear management approach documented in harvest strategy documents.
- The datasets on retained catch from commercial fishing activities.
- There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2
- There is no evidence of ongoing disputes or disagreements and there are transparent mechanisms in place for the resolution of legal disputes.
- Functions, roles and responsibilities of organisations involved in the fishery and its management are explicitly defined and well understood.

There are clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach.

#### Fishery weaknesses

• The sea mullet harvest strategy relies on a biomass indicator that is only updated every five years.

- Recreational catch estimates are infrequent and not comprehensive across gear types, consequently there is potential for unmonitored growth in this sector.
- The reduction in the commercial sector will reduce the reliability of CPUE indices.
- The response of the harvest control rules to indicators falling below threshold levels is not well defined.
- The limited information, including lack of recent catch information, available for the recreational fishery UoAs
- The lack of discard recording by commercial UoAs

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- Indeterminate timeframes for the implementation of management actions to reduce risks, after harvest strategy triggers are breached.
- Delays in implementing management responses as required by harvest strategies for Principle 2 elements.
- Ongoing non-compliance in the recreational blue-swimmer crab fishery has not been resolved and there is no evidence of a formal timeline or a clear process forward to determine and implement effective approaches to address this.

#### Draft determination

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bio.inspecta confirms that this fishery is "within scope" and eligible for MSC certification. On completion of the site visit and scoring and taking into consideration the peer reviewers comments, several PIs in each UoA scored less than the Scoring Guidepost (SG) of 80 and twentythree conditions were assigned. The average scores for the three Principles remained above SG80. Overall, the assessment team recommends that the fishery should be re-certified.

# 4 Report details

# 4.1 Authorship and peer review details

Together the team meets all competency requirements laid out in FCP v2.2 Section(s) 7.6, 7.14, Annex PC Table PC3.

#### Team Leader: Dr Sabine Daume

Dr Daume is the Managing Director of bio.inspecta Pty Ltd, Centre for Seafood Certification based in Melbourne Australia which covers MSC, ASC and Fisheries Improvement programs. Since 2009, Dr Daume has led numerous MSC evaluation audits including several large and controversial assessments, and many assessments in Australia.

Dr Daume led the WA rock lobster and Heard Island and McDonald Islands (HIMI) icefish annual surveillance and re-assessments as well as the HIMI and Macquarie Island toothfish full assessment in Australia, and numerous audits in the USA, Canada, Mexico and Japan. Dr. Daume led five full assessments in Western Australia between 2015 and 2018 (Peel Harvey Estuarine Fishery, West Coast Deep Sea Crab Fishery, Australian Silver-lipped Pearl Fishery, Western Australian Abalone Fishery, Western Australian Octopus Fishery). She has been trained by the MSC to use the Risk Based Framework (RBF) and the most recent MSC Certification Requirements (v2.0 Oct. 2015). She is a certified lead auditor under the ISO 9001:2008 standard.

She holds a PhD in marine biology from La Trobe University in Victoria, Australia and an MSc in Marine Biology and Marine Chemistry from Kiel University in Germany. Dr Daume has expertise in the biology and ecology of exploited marine resources. Dr Daume has over 25 years' experience working with the



fishing and aquaculture industry in Australia and worked as a Senior Research Scientist at the Research Division of the Department of Fisheries in Western Australia.

#### Team Member and Principle 1 Expert: Dr Klaas Hartmann

Dr Hartmann is a Senior Research Fellow and Mathematician at the Institute for Marine and Antarctic Studies (IMAS) University of Tasmania whose research involves bio-economic modelling across a broad range of fisheries. Throughout his career he has worked on resource and conservation management from a mathematical ecology and ecological economics perspective. After working in fisheries at CSIRO for two years, Klaas focused on prioritising resources for biodiversity conservation, particularly using phylogenetic information.

Since commencing work at IMAS in 2009, Klaas has returned to his initial interest in fisheries modelling. At IMAS Dr Hartmann works on bio-economic models and developing/evaluating novel management strategies in collaboration with fisheries managers and industry. This work has helped support large changes in several fisheries that have substantially increased their profitability whilst improving environmental outcomes. Klaas has been responsible for conducting or overseeing Southern Rock Lobster and Giant Crab assessments in Tasmania for over ten years and Victoria for five years. Klaas was responsible for producing the Tasmanian Scalefish assessment for three years and has overseen and/or advised the assessment process for a further five years. Klaas is a committee member of the Tasmanian Crustacean Fisheries Advisory Committee and the Status of Key Australian Fish Stocks Advisory Committee. Dr Hartmann has been the P1 expert on several confidential pre-assessments and the recent annual surveillance audits of WA fisheries including the Peel Harvey Estuarine Fishery.

#### Team Member and Principle 2 Expert: Dr Johanna Pierre

Dr Johanna Pierre has more than 15 years' experience working on commercial and recreational fishing, in marine and freshwater environments. Her work includes fisheries management, policy, regulation and monitoring. She also conducts sustainability assessments, audits and evaluations of fishery and environmental performance. Johanna has worked for government, academia, non-profit organisations and industry. She has a Ph.D. in environmental biology and ecology (University of Alberta, Canada), and a B.Sc. (Hons) (University of Canterbury, New Zealand) and completed post-doctoral studies at the University of Tokyo (Japan). Johanna has extensive experience working on fisheries and other fields of science in Canada, Japan, China, South Korea, Australia and New Zealand.

Johanna is a certified MSC fishery team member, Chain of Custody auditor, and member of the MSC Peer Review College and Technical Consultants Register. She is trained in the use of the MSC Risk Based Framework. Johanna's experience covers MSC peer reviews (P1, P2, P3), surveillance audits (P1, P2, P3, including as team leader (TL)), fishery assessments (P2, P3), and fishery pre-assessments (P1, P2, P3, and TL). Recent work includes longline, pole and line, trawl, purse seine and small-scale fisheries, both in fisheries under national jurisdiction and those managed by multilateral bodies (such as Regional Fisheries Management Organisations).

#### Team Member and Principle 3 Expert: Jo-anne McCrea

Jo-anne (Jo) is a marine scientist with 25 years of experience in the area of sustainable fisheries and aquaculture management across the private, government and environmental non-government sectors. Jo worked in the Government fisheries and aquaculture regulatory sector for over a decade, specialising in environmental management of seafood industries; and as an independent consultant for 6 years, advising Government, non-government and academic sectors. During this time Jo developed and implemented marine protection policies such as bycatch action plans for commercial fisheries,

protected species management measures, resource allocation, vulnerable habitat protection. Jo also led the Aquaculture and Pearling program of Western Australia where she was responsible for the development of policies to guide the development and sustainable management of these activities.

Most recently, Jo worked for the World Wildlife Fund for over 8 years, managing its Sustainable Seafood Program for the last 5 years. In this role, Jo was responsible for reviewing the environmental risk associated with the seafood supply chains of Australia's largest seafood companies, with the use of her deep understanding of sustainable harvesting and management of seafood. Jo also led the fisheries legislative and policy engagement work for WWF Australia. This included involvement in the development of commonwealth level fisheries policies and management approaches, including the Harvest Strategy Policy, Bycatch Policy, Climate Change Adaptation Tools and Australia Fisheries Standards. Over this period, she also represented the conservation sector on numerous fisheries and jurisdiction specific advisory groups, as well as national level committees.

#### Peer reviewer information

Two peer reviewers (Dr Ross Daley and Peter Trott) provided feedback on the report. The shortlist of peer reviewers can be found at the fisheries assessment page with a short biographies of the reviewers.

# 4.2 Version details

Table 1 – Fisheries program documents versions	
Document	Version number
MSC Fisheries Certification Process	Version 2.2
MSC Fisheries Standard	Version 2.01
MSC General Certification Requirements	Version 2.4.1
MSC Reporting Template	Version 1.2

# 5 Unit(s) of Assessment and Unit(s) of Certification and results overview

# 5.1 Unit(s) of Assessment and Unit(s) of Certification

bio.inspecta confirms that this fishery is "within scope" and eligible for MSC certification (FCP v2.2 7.4) as it:

- Does not operate under a controversial unilateral exemption to an international agreement, use destructive fishing practices or target amphibians, reptiles, birds or mammals.
- Does not include an entity that has been convicted for a forced or child labour violation in the last 2 years.
- Does not engage in shark finning, is not an enhanced fishery and is not based on an introduced species.
- Has a mechanism for resolving disputes and is not overwhelmed by disputes.

# 5.1.1Unit(s) of Assessment

Table 2 – Unit(s) of	Assessment (UoA)
UoA 1	Description
Species	Blue swimmer crab ( <i>Portunus armatus)</i>
Stock	South-Western Australia blue swimmer crab stock between Penguin Island and Cape Naturaliste, including the Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Crab pots
Client group	Mandurah Licensed Fishermen's Association and Recfishwest
Other eligible fishers	There are no other eligible fishers. All fishers are included in the Unit of Certification.
Geographical area	Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ
UoA 2	Description
Species	Blue swimmer crab ( <i>Portunus armatus)</i>
Stock	South-Western Australia blue swimmer crab stock between Penguin Island and Cape Naturaliste, including the Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Drop nets
Client group	Mandurah Licensed Fishermen's Association and Recfishwest
Other eligible fishers	There are no other eligible fishers. All fishers are included in the Unit of Certification.
Geographical area	Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ
UoA 3	Description
Species	Blue swimmer crab ( <i>Portunus armatus</i> )
Stock	South-Western Australia blue swimmer crab stock between Penguin Island and Cape Naturaliste, including the Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ.
Fishing gear type(s) and, if relevant, vessel type(s)	Scoop nets



Client group	Mandurah Licensed Fishermen's Association and Recfishwest
Other eligible fishers	There are no other eligible fishers. All fishers are included in the Unit of Certification.
Geographical area	Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ
UoA 4	Description
Species	Sea mullet ( <i>Mugil cephalus</i> )
Stock	South-Western Australia sea mullet stock extending North to Shark Bay Western Australia, Indian Ocean, within Australian EEZ.
Fishing gear type(s) and, if relevant, vessel type(s)	Haul nets
Client group	Mandurah Licensed Fishermen's Association and Recfishwest
Other eligible fishers	There are no other eligible fishers. All fishers are included in the Unit of Certification.
Geographical area	Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ
UoA 5	Description
Species	Sea mullet ( <i>Mugil cephalus</i> )
Stock	South-Western Australia sea mullet stock extending North to Shark Bay Western Australia, Indian Ocean, within Australian EEZ.
Fishing gear type(s) and, if relevant, vessel type(s)	Gill nets
Client group	Mandurah Licensed Fishermen's Association and Recfishwest
Other eligible fishers	There are no other eligible fishers. All fishers are included in the Unit of Certification.
Geographical area	Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ

# 5.1.2Unit(s) of Certification

Table 3 – Unit(s) of Certification (UoC)	
UoC 1	Description
Species	Blue swimmer crab ( <i>Portunus armatus</i> )
Stock	South-Western Australia blue swimmer crab stock between Penguin Island and Cape Naturaliste, including the Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ.



Fishing gear type(s) and, if relevant, vessel type(s)	Crab pots
Client group	Mandurah Licensed Fishermen's Association and Recfishwest
Geographical area	Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ
UoC 2	Description
Species	Blue swimmer crab ( <i>Portunus armatus)</i>
Stock	South-Western Australia blue swimmer crab stock between Penguin Island and Cape Naturaliste, including the Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ.
Fishing gear type(s) and, if relevant, vessel type(s)	Drop nets
Client group	Mandurah Licensed Fishermen's Association and Recfishwest
Geographical area	Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ
UoC 3	Description
Species	Blue swimmer crab ( <i>Portunus armatus)</i>
Stock	Blue swimmer crab within the Indian Ocean
Fishing gear type(s) and, if relevant, vessel type(s)	Scoop nets
Client group	Mandurah Licensed Fishermen's Association and Recfishwest
Geographical area	Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ
UoC 4	Description
Species	Sea mullet ( <i>Mugil cephalus</i> )
Stock	South-Western Australia sea mullet stock extending North to Shark Bay Western Australia, Indian Ocean, within Australian EEZ.
Fishing gear type(s) and, if relevant, vessel type(s)	Haul nets
Client group	Mandurah Licensed Fishermen's Association and Recfishwest
Geographical area	Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ



UoC 5	Description
Species	Sea mullet ( <i>Mugil cephalus</i> )
Stock	South-Western Australia sea mullet stock extending North to Shark Bay Western Australia, Indian Ocean, within Australian EEZ.
Fishing gear type(s) and, if relevant, vessel type(s)	Gill nets
Client group	Mandurah Licensed Fishermen's Association and Recfishwest
Geographical area	Peel-Harvey Estuary, together with the Murray, Serpentine, Harvey and Dandalup Rivers, Western Australia, Indian Ocean, within Australian EEZ

# 5.2 Assessment results overview

# 5.2.1 Determination, formal conclusion and agreement

On completion of the site visit and scoring and taking into consideration the peer reviewers comments, several PIs in each of the 5 UoAs scored less than the Scoring Guidepost (SG) of 80 and twentythree conditions were asigned the average scores for the three Principles of each of the 5 UoAs remained above SG80. The draft determination from the assessment team is a recommendation that the fishery is certified.

# 5.2.2 Principle level scores

Table 4 - Principle level scores							
Principle	UoA 1	UoA 2	UoA 3	UoA 4	UoA 5		
Principle 1 – Target species	83.3	83.3	83.3	80	80		
Principle 2 – Ecosystem impacts	90.7	85.3	87.7	88.7	86.3		
Principle 3 – Management system	97.5	91.7	91.7	97.5	97.5		

# 5.2.3 Summary of conditions

#### Table 5 – Summary of conditions Performa Carried Related Condition nce Exceptional over from to Condition Deadline number Indicator circumstances previous previous (PI) certificate condition By the third surveillance audit ensure that a regular review is conducted of alternative measures to reduce mortality of 1.2.1 Year 3 1,2,3 No No Yes unwanted catch of **blue** swimmer crab and any identified measures are implemented. (UoA 1,2,3) By the third surveillance audit obtain catch estimates for all components of **commercial** and recreational blue swimmer crab fisheries and 1.2.3 4,5,6 No No No demonstrate how this data will Year 3 be collected on a regular basis sufficient to meet the requirements of the harvest strategy. (UoA 1,2,3) By the 3rd annual surveillance audit provide evidence that the 7,8 harvest strategy for **sea mullet** 1.2.1 Year 3 No No Yes is meeting its objectives. (UoA 4,5) By the 4<sup>th</sup> Annual Surveillance Audit, demonstrate that main secondary species in the sea mullet fishery (UoA 4,5) are either: • highly likely to be above biologically based limits, or, 2.2.1 9,10 Year 4 No No No • if below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. By the 4<sup>th</sup> Annual Surveillance Audit, demonstrate some objective basis for confidence that the measures/partial strategy will work for managing 2.2.2 Year 4 11 No No No the yelloweye mullet (as a main secondary species used as bait), based on some information directly about the bait fishery

#### To be drafted at Client and Peer Review Draft Report stage

	and/or the <b>commercial blue</b> <b>swimmer crab fishery (UoA</b> <b>1)</b> and/or the species involved.					
12, 13	By the 4th Annual Surveillance Audit, provide: • some objective basis for confidence that the measures/partial strategy will work for managing main secondary species, based on some information directly about the <b>commercial sea mullet</b> <b>fishery (UoA 4 and 5)</b> and/or species involved, and, • some evidence that the measures/partial strategy is being implemented successfully, noting the ongoing issues with timelags in implementing management actions.	2.2.2	Year 4	Νο	Νο	Νο
14, 15	By the 4 <sup>th</sup> Annual Surveillance Audit, quantitative information is available to adequately assess the impact of the <b>commercial sea mullet</b> <b>fishery (UoA 4 and 5)</b> UoA on main secondary species, with respect to status.	2.2.3	Year 4	No	No	No
16	By the 4 <sup>th</sup> Annual Surveillance Audit, demonstrate that indirect effects of <b>the recreational</b> <b>blue swimmer crab fishery</b> <b>(UoA 3)</b> are thought to be highly likely to not create unacceptable impacts on ETP (migratory shorebirds).	2.3.1	Year 4	No	No	Yes
17	By the 4th Annual Surveillance Audit, demonstrate for <b>the</b> <b>recreational blue swimmer</b> <b>crab fishery (UoA 3)</b> that there is: • an objective basis for confidence that the measures/ strategy will work, based on information directly about the fishery and/or the species involved, and, • some evidence that the measures/ strategy is being implemented successfully.	2.3.2	Year 4	Νο	Νο	Νο
18, 19	By the 4th Annual Surveillance Audit, demonstrate that information is adequate to measure trends and support a strategy to manage impacts on ETP species <b>for UoA 2 and 5</b> .	2.3.3	Year 4	No	No	No

20	By the 4 <sup>th</sup> Annual Surveillance Audit, demonstrate that there is reliable information on the spatial extent of interaction or <b>the recreational blue</b> <b>swimmer crab fishery (UoA</b> <b>2)</b> and on the timing and location of use of the fishing gear.	2.4.3	Year 4	Νο	No	No
21, 22	By the 4 <sup>th</sup> Annual Surveillance Audit, demonstrate that adequate data continue to be collected to detect any increase in risk level presented by <b>UoAs</b> <b>2 and 5</b> .	2.5.3	Year 4	No	No	No
23	By the 4 <sup>th</sup> Annual Surveillance Audit determine and implement MCS mechanisms to demonstrably mitigate non- compliance for the or <b>the</b> <b>recreational blue swimmer</b> <b>crab fishery UoA 2 and 3</b> , including systematic non- compliance.	3.2.3	Year 4	No	No	No

# 5.2.4 Recommendations

**Recommendation 1** (1.2.4): The harvest strategy requires stock assessments for sea mullet to be conducted every 5 years. Since this was the first application of these stock assessment methods the assessment team recommend that these methods should continue to be developed well before the 5-year timeframe.

**Recommendation 2** (1.1.1 and 1.2.2): The assessment team recommends investigating the impact of the reduction in the number of commercial fishers on the CPUE index.

**Recommendation 3** (3.1.2): The assessment team recommends that DPIRD consider appropriate approaches to ensure that consultation processes provide opportunities and encouragement for all interested and affected parties to be involved in the fishery's management and facilitates their effective engagement.

**Recommendation 4** (3.2.4): The assessment team recommends that DPIRD formally consider mechanisms to ensure that the fishery-specific management system is evaluated and is also subject to at least regular internal and occasional external review.

# 6 Traceability and eligibility

# 6.1 Eligibility date

The target eligibility date for product from the fishery to bear the MSC label is 22 December 2021 which is the anticipated re-certification date.

# 6.2 Traceability within the fishery

This section is written for the commercial fishery sector only because only the product from that sector can bear the MSC logo, in the event that the fishery is re-certified. The client representative for the recreational sector, Andrew Rowland from Recfishwest, confirmed that none of the species taken in the recreational fishery is intended for commercial sale and therefore cannot carry the MSC logo.

Within the commercial fishery, all landings are recorded and reported via mandatory catch and disposal records (CDRs), where the amount of catch and the fishing area is recorded for each fishing trip.

Table 6 – Traceability within the fishery	
Factor	Description
<ul> <li>Will the fishery use gears that are not part of the Unit of Certification (UoC)?</li> <li>If Yes, please describe: <ul> <li>If this may occur on the same trip, on the same vessels, or during the same season;</li> <li>How any risks are mitigated.</li> </ul> </li> </ul>	<i>No, only baited pots for blue swimmer crab and haul and gill net for the finfish sector are permitted in the commercial fishery and no other gears are used.</i>
<ul><li>Will vessels in the UoC also fish outside the UoC geographic area?</li><li>If Yes, please describe: If this may occur on the same trip; How any risks are mitigated.</li></ul>	The risk of vessels fishing and landing catch from outside the permitted fishing area is low due to compliance checks. All product landed by individual license holders is transported in owner-operated and owned vehicles to local markets where it is sold, or it is sold to local wholesalers.
Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities. Transport Storage Processing Landing Auction	<i>No, all licence holders are included in the fishery. All product is landed at DPIRD approved landing ports. Product transported in owner-operated and owned vehicles. Therefore, there is minimal opportunity for substitution of certified with non-certified fish.</i>
Does transhipment occur within the fishery? If Yes, please describe: If transhipment takes place at-sea, in port, or both; If the transhipment vessel may handle product from outside the UoC; How any risks are mitigated.	<i>There is no transhipment in the fishery</i>
Are there any other risks of mixing or substitution between certified and non-certified fish? If Yes, please describe how any risks are mitigated.	<i>There is no other risks of mixing certified and non-certified product.</i>

# 6.3 Eligibility to enter further chains of custody

Ownership does not change during transport; therefore, chains of custody (CoC) starts at the first points of sale which are local wholesalers or retailers. Product may then enter further CoC. Some product is sold directly to the public from local boat ramps or from licensed fishermen. All sales are recorded via invoices, with this information required to be kept on the premise of the retailer.

The eligible points of landings are around the Peel-Harvey Estuary (PHE), in Mandurah Western Australia. There are six main boat ramps used by license holders with Nairns, Novara, Dawesville, Parkridge, Port Bouvard Marina and Yunderup being the main boat ramps. One license holder also has access from his property. Other ramps may be used used as required but due to the very shallow shores of the estuary access is limited.

# 7 Scoring

	Component	ent Performance Indicator (PI)		UoA 1	UoA 2	UoA 3	UoA 4	UoA 5
	Outcomo	1.1.1	Stock status	90	90	90	80	80
	Outcome	1.2.1	Harvest strategy	75	75	75	70	70
One		1.2.2	Harvest control rules & tools	85	85	85	80	80
	Management	1.2.3	Information & monitoring	75	75	75	80	80
		1.2.4	Assessment of stock status	85	85	85	90	90
		2.1.1	Outcome	90	90	100	100	100
	Primary species	2.1.2	Management strategy	95	85	85	95	95
	•	2.1.3	Information/Monitoring	95	85	80	95	95
	Secondary species	2.2.1	Outcome	90	100	100	75	75
		2.2.2	Management strategy	75	85	85	65	65
		2.2.3	Information/Monitoring	85	80	80	75	75
Two		2.3.1	Outcome	100	80	70	95	95
IWO	ETP species	2.3.2	Management strategy	80	80	70	80	80
		2.3.3	Information/Monitoring	80	70	80	80	70
		2.4.1	Outcome	100	100	100	100	100
	Habitats	2.4.2	Management strategy	90	90	90	90	90
		2.4.3	Information	95	75	95	95	95
	Ecosystem	2.5.1	Outcome	100	100	100	100	100
	LUSYSLEIN	2.5.2	Management	85	85	85	85	85

# 7.1 Summary of Performance Indicator level scores

		2.5.3	Information	100	75	95	100	75
Governance and policy Three Fishery specific management system		3.1.1	Legal & customary framework	100	95	95	100	100
	3.1.2	Consultation, roles responsibilities	100	100	100	100	100	
		3.1.3	Long term objectives	100	100	100	100	100
		3.2.1	Fishery specific objectives	100	100	100	100	100
	Fishery specific	3.2.2	Decision making processes	100	100	100	100	100
	management system	3.2.3	Compliance & enforcement	100	60	60	100	100
		3.2.4	Management performance	80	80	80	80	80

# 7.2 Principle 1

# 7.2.1 Principle 1 background

This section is largely based on DPIRD 2020a, DPIRD 2020b, DPIRD 2020c, DPIRD 2020d, DPIRD 2020e and Johnston et. al. 2015. As with the initial assessment report, in some sections the Principle 1 background draws directly on text from Johnston et al. 2015.

# **Fishing activities**

#### The commercial fishery

The commercial finfish net fishery in the PHE was first established in the mid-1800s. This fishery is one of the oldest in Australia, with up to 150 fishers historically operating in family-based fishing units to supply fresh fish to the local Perth and Fremantle markets. Blue swimmer crab were initially largely ignored as there was no demand for them with sea mullet and yelloweye mullet dominating catches.

The commercial crab fishery began in the late 1950s with fishers targeting blue swimmer crabs with the same gillnets they were using for finfish species. During the 1970s and early 1980s, a number of changes to the PHE were introduced including limited entry and gear restrictions on net length and mesh size. These changes resulted in a decline in fishing effort, with further declines in sea mullet caught in the late 1980s due to reduced demand (Figure 7). A voluntary fishery adjustment scheme (VFAS) resulted in an initial reduction in the number of commercial licenses to 11 in 2015 and through a second phase to 7 licenses in 2020. Fishers are restricted to operating from vessels less than 6.5m in length.

Trials of commercial crab traps were allowed in the mid-1990s, resulting in higher efficiency, bycatch reduction and reduction in environmental impact. By 2000 the majority of blue swimmer crabs were caught by crab traps. Haul netting has become the most common method for targeting finfish species.

The commercial fishing sector operating in the PHE is managed as part of the West Coast Estuarine Managed Fishery (WCEMF; Figure 1). The fishery is split into three management areas:

- Area 1 encompasses the Swan-Canning Estuary in the Perth metropolitan area;
- Area 2 encompasses the PHE; and
- Area 3 encompasses the waters of the Hardy Inlet.

Blue swimmer crab is predominantly caught with purpose designed 'hourglass' crab traps with defined dimensional limitations (Figure 2). The nets used to construct the traps vary between fisher and are subject to innovation (Johnston et al. 2015). Since 2000 the traps have included escape gaps, however this measure is voluntary (DPIRD 2020e). License holders can operate up to 42 traps and these can be pulled once every 24 hours. As part of the resource sharing arrangement commercial fishing is prohibited on weekends (DPIRD 2020d).

Contemporary commercial finfish fishing for sea mullet in the PHE is primarily conducted using haul nets. Fishing is conducted by visually identifying a school of fish of the desired size composition and species. This school is then encircled with the haul net. As the net is pulled in any undesired catch can be quickly returned to the water and if needed the other end can be detached letting the bulk of the encircled school free.

Gillnets are typically set overnight and left unattended in areas where fish are likely to be caught. Gillnets tend to be used primarily during the winter months owing to the lower abundance of blue swimmer crabs in the estuary during this time. This method is typically used to capture more demersal species, such as cobbler and whiting (MLFA 2008).

#### The recreational fishery

The recreational fishery is highly popular due to the proximity to the large population centres of Mandurah and Perth. The majority of fishing is conducted from boats or overhanging structures using baited drop nets (Figure 3). A smaller proportion of fishing takes place from the shore and uses both drop nets and scoop nets (Figure 3). A maximum of ten drop nets can be used per vessel or person.

The most recent catch estimate for the boat based PHE recreational sector was conducted in 2017/18 and determined a catch of 36t (Ryan et al. 2019). Previous studies have found that the majority ( $\sim$ 70%) of the recreational catch is typically boat based (Johnston et al. 2015).

There is limited interest by the recreational sector in catching sea mullet and the most recent catch estimate (2015/16) indicated a catch of <1t.

#### Input controls affecting both sectors.

Both sectors are prohibited from catching blue swimmer crabs below 127mm carapace width and are not permitted to retain berried females. There are a number of spatial closures in place as well as seasonal closures.

# **Blue Swimmer Crab**

#### Distribution

Blue swimmer crab (*Portunus armatus*) have broad distribution throughout the Indo-West Pacific region ranging from East Africa to New Zealand. The distribution is temperature limited along the Southern Australian coast with some populations in warmer gulfs (Kailola et al. 1993).

In Western Australia, blue swimmer crabs are broadly distributed along the coastline primarily from Dunsborough to Port Hedland. Blue swimmer crabs are likely to form multiple overlapping stocks with ocean currents playing a strong role in connectivity (Sezmiş 2004). Genetic studies have shown that the Peel-Harvey Estuary population and other south-west populations are genetically distinct from the more northerly populations in Cockburn sound and the Swan-Canning estuary (Chaplin and Sezmiş 2008). The UoA is at the southern limit of the species environmental and temperature range and is likely to be susceptible to effects of climate change (DPIRD 2020d).

#### **Biological characteristics**

The PHE is towards the southern limit of this species temperature tolerance, consequently, reproduction is limited to warmer months (Kangas 2000; de Lestang et al. 2010). Mature males moult some weeks before the maturing females, and each male carries a female clasped beneath him for 4 -10 days until she moults and mating occurs. This happens in late summer. Female crabs store the sperm for a number of months until eggs are fertilised and spawned (Penn 1977; Smith 1982). Incubation takes 10 to 18 days, depending upon water temperature, and the larval phase extends for up to six weeks (Kangas 2000). Females produce between 180,000 and two million eggs. In crab stocks exposed to the open ocean, larvae can drift as far as 60 km out to sea, before returning to settle inshore (Kangas 2000). At approximately 10 months they reach a size of ~ 95 mm carapace width (CW) (late spring) and as growth increases over summer, they reach a legal size of  $\sim 130$  mm CW by early autumn. Maturity is reached within one year at between 80 and 100 mm CW and coincides with copulation. Females retain sperm over the winter months until they spawn in the following spring. Individuals attain commercial size at around 12 – 15 months of age, with the minimum legal size (127 mm CW) set sufficiently above the mean size at maturity allowing females to spawn at least once before being available for retention. Blue swimmer crab may live for three years but most animals will have died through natural or fishing mortality by 20 months of age in WA.

The diet of crabs includes small bivalves, gammarid amphipods and polychaetes but varies with shell size and state. Blue swimmer crab is not a low-trophic level (LTL) species as defined by the MSC and therefore specific requirements for LTL species do not apply.

#### **Stock Assessment Approach**

The primary indicator used for assessing blue swimmer crab is the standardised CPUE index which is calculated using data obtained from the commercial fishing fleet (Figure 4). Factors included in the standardisation include fishing season, month and vessel. Correcting data for spatial shifts is not possible due to the limited spatial resolution of the reported data.

A fishery independent trapping survey has been conducted since 2007 across 15 sites. The key use of this data has been the development of a November legal size index which provides a good prediction of the following season's commercial catch (Figure 6).

A fishery independent trawl survey has been conducted since 2016 across 10 sites. This provides a recruitment index that appears promising but has been in place for too few years to understand its reliability and utility.

The annual commercial catch is monitored against a tolerance range based on a reference period of 2000/01 - 2016/17. This tolerance level has been proportionately reduced to take into account the reduction of vessels under the VFAS.

#### **Stock Status**

Over 90% of the commercial blue swimmer crab catch taken in the West Coast Estuarine Managed Fishery (WCEMF) is from the PHE fishery (DPIRD 2020d). Catches have been consistently in or close to the target range for 20 years (Figure 7). During this same period, the commercial catch rate has fluctuated within its target range.

The lower bound of the CPUE target range is referred to as the threshold level and is considered a proxy for  $B_{MSY}$ . The accuracy of this as a  $B_{MSY}$  proxy remains uncertain as this low level of CPUE has only been observed once in twenty years and there is no evidence that maximum sustainable yields (MSY) catches could be obtained from stock in this state. Nevertheless, given the stability of CPUE and

catches, the target range of CPUE in which the stock has been oscillating is likely to correspond to a level at or above  $B_{MSY}$ .

There is potential for the standardised CPUE index to be biased through time due to several factors including spatial shifts of fishing and changing environmental factors. These are addressed through the fishery independent surveys and consideration of environmental indices as part of the weight of evidence approach required in the harvest strategy.

#### Harvest Control Rule

The harvest control rule is based on a comparison of the standardised CPUE against threshold and limit reference points derived from a reference period. The threshold reference point is the lowest CPUE observed during the reference period and is considered a proxy for  $B_{MSY}$  whilst the limit threshold RP is 70% of this and is considered the point at which recruitment may be impaired.

If CPUE falls below the threshold RP, it is considered to be approaching the limit RP and a review is triggered which must develop a management response within three months to reduce catch by up to 50%. If CPUE falls below the limit RP a review with the same timeframe is triggered but this must develop a management response that reduces catch by 50-100%. The process by which the required catch reduction is determined and how it is implemented remains undefined.

# Sea Mullet

#### Distribution

Sea mullet have a worldwide tropical distribution and occur almost entirely between the latitudes of ~ 42 °N and 42 °S (Thomson 1963; Rossi et al. 1998). In Australia, this species appears to be most abundant from approximately 25 °S to 35 °S along the eastern and western coastlines. Sea mullet occur in marine, estuarine and fresh waters, tolerating salinities of 0 – 80 ppt (Thomson 1963).

Sea mullet stocks are broad due to the dispersal of eggs and larvae by currents and adult prespawning migrations. For the UoA stock, from an analysis of length-frequency data and observed migrations, it is understood that juvenile sea mullet inhabit the PHE before migrating northwards to spawn; an increase in the proportion of older fish is observed in samples from oceanic waters further north (DPIRD 2020a). The south-west WA stock is considered to extend to Shark Bay (DPIRD 2020e) and the homogeneity of this stock is supported by genetic evidence (Johnston et. al. 2015).

#### **Biological characteristics**

Sea mullet have been well studied and a broad range of information is available. Sea mullet is not a low-trophic level species as defined by the MSC.

Sea mullet grows to a maximum size of ~ 600 mm total length (TL) and attain a maximum age of 12 years (Gaughan et al. 2006). When sea mullet reach sexual maturity at approximately 3 – 4 years of age (Chubb et al. 1981; Virgona et al. 1998), they typically undergo a migration from estuaries to open waters to spawn during late summer and autumn. At 20 – 30 mm TL, juveniles typically enter estuaries where they remain until the onset of maturity.

Juvenile sea mullet typically inhabit estuaries, where they associate with shallow weed beds and bare substrate, while adults are found in estuaries, shallow coastal waters and marine embayments (Chubb et al. 1981; Harrison & Senou 1999; Smith 2006). Due to the tolerance of this species to a wide range of salinities, sea mullet can occur in the upper reaches of estuaries (Chubb et al. 1981).

#### Stock Assessment Approach

A new stock assessment modelling approach has been developed on the basis of an improved understanding of stock structure and movement (DPIRD 2020b). The new approach recognises that the PHE mostly contains juveniles and a pre-spawning migration occurs northwards to Shark Bay. Consequently, standardised CPUE in Shark Bay is used as an abundance index and standardised CPUE in the PHE is considered an index of recruitment. Three modelling approaches were initially trialled consisting of a Catch-MSY model and two Schaefer production models (DPIRD 2020c, Duffy et al. 2021).

As this is the first application of assessment models to this fishery, substantial scope remains for a more comprehensive investigation of modelling approaches and sensitivity analyses.

#### **Stock Status**

The CPUE indicator for the PHE remains above the threshold level (Figure 5) indicating ongoing high levels of recruitment.

The model based biomass estimates produced consistently high stock states. This is consistent with the fishery having reduced from much higher historic levels of catch (Figure 8) due to management changes and demand as opposed to a reduction in abundance. The Schaefer model estimated B/  $B_{MSY}$  at 1.80 (Duffy et al. 2021). These models were applied to data up to 2020. However, the model outputs are consistent with the expected stock state given the low exploitation rate and the healthy recruitment index.

#### Harvest Control Rule

The HCR detailed in the harvest strategy (DPIRD 2020e) uses the model-based biomass estimate on a five yearly basis and compares this against threshold and limit reference points (RPs). The threshold RP is  $B_{MSY}$  whilst the limit threshold RP is 50% of this and is considered the point at which recruitment may be impaired.

If the biomass estimates fall below the threshold RP, it is considered to be approaching the limit RP and a review is triggered which must develop a management response within three months to reduce catch by up to 50%. If the biomass estimates fall below the limit RP a review with the same timeframe is triggered but this must develop a management response that reduces catch by 50-100%. This meets the requirement at both SG 60 and SG 80 for the exploitation rate to be reduced as the limit RP is approached. As the threshold RP is considered an MSY proxy the HCR is expected to main the stock at a target level above MSY.





Figure 1: Extent of the Blue Swimmer Crab Resource of South West WA. Note that the harvest strategy considers the Swan-Canning Estuary and the Peel-Harvey Estuary stocks as separate. From DPIRD 2020d.





Figure 2: Commercial blue swimmer crab trap. From Johnston et al. 2015



Figure 3: Recreational blue swimmer crab fishing equipment, Left: drop net, Right: Scoop net. From Johnston et al. 2015.



Figure 4: Annual standardised commercial catch rate (kg/traplift,  $\pm 95\%$  CIs) of blue swimmer crabs in the Peel-Harvey Estuary fishery relative to target (green range), threshold (orange line) and limit (red line) reference levels. From DPIRD 2020b.





Figure 5: Time series of annual standardised commercial catch rate (top: kg/fishing day; bottom: kg/100 m netting hour) for sea mullet in the Peel-Harvey Estuary net fishery, relative to the target (green range), threshold (orange line) and limit (red line) reference levels. Due to changing fishing practices the top indicator is now considered the more reliable index. From: DPIRD 2020b.

Year

 


Nov Legal CPUE (crabs/potlift)

Figure 6: Relationship between the fishery independent trapping based CPUE index and the commercial catch in the subsequent season. From DPIRD 2020b.



# 7.2.2 Catch profiles

Figure 7: Commercial blue swimmer crab catches in the PHE. From DPIRD 2020b





Figure 8: Long term time series of annual commercial catch (t) of sea mullet in the WCEMF Area 2. From Johnston et al. 2015.



Figure 9: Annual commercial catch (tonnes) of sea mullet in the Peel-Harvey Estuary haul and gillnet fishery relative to the target (green range) and threshold (orange lines) reference levels. From DPIRD 2020b.

# **7.2.3 Total Allowable Catch (TAC) and catch data**

# Blue Swimmer Crab – commercial

Table 7 – Total Allowable Catch (TAC) and catch data				
ТАС	Year		Amount	NA
UoA share of TAC	Year		Amount	NA
Total green weight catch by UoC	Year (most recent)	2019/20	Amount	57t
Total green weight catch by UoC	Year (second most recent)	2018/19	Amount	66.5t

#### **Blue Swimmer Crab – recreational**

Table 8 – Total Allowable Catch (TAC) and catch data				
ТАС	Year		Amount	N/A
UoA share of TAC	Year		Amount	N/A
Total green weight catch by UoC	Year (most recent)	2019/20	Amount	Not estimated
Total green weight catch by UoC	Year (second most recent)	2018/19	Amount	Not estimated
Total green weight catch by UoC	Year (most recent estimate)	2017/18	Amount	36t (95% CI 30-42t)*

\* Boat-based catch from whole Metropolitan zone of West Coast bioregion for 2017/18 (derived from Ryan et al. 2019)

#### Sea Mullet – commercial

Table 9 – Total Allowable Catch (TAC) and catch data				
ТАС	Year		Amount	N/A
UoA share of TAC	Year		Amount	N/A
UoA share of total TAC	Year		Amount	N/A
Total green weight catch by UoC	Year (most recent)	2019	Amount	81.5t (PHE)
Total green weight catch by UoC	Year (second most recent)	2018	Amount	103t (PHE) 141t*

\* Total catch from whole West Coast bioregion of which ~60% are taken in the Peel-Harvey Estuary.

### Sea Mullet – recreational

Table 10 – Total Allowable Catch (TAC) and catch data				
ТАС	Year		Amount	N/A
UoA share of TAC	Year		Amount	N/A
Total green weight catch by UoC	Year (most recent)	2019	Amount	Not estimated
Total green weight catch by UoC	Year (second most recent)	2018	Amount	Not estimated
Total green weight catch by UoC	Year (most recent estimate)	2015/16		0.7 t*

\* Boat-based catch from whole Metropolitan zone of West Coast bioregion for 2015/16 (derived from Ryan et al. 2017)

# **7.2.4 Principle 1 Performance Indicator scores and rationales**

# Blue Swimmer Crab (UoA 1,2 & 3)

# PI 1.1.1 – Stock status

PI 1.1.	tivity and has a low			
Scoring Issue		SG 60	SG 80	SG 100
	Stock s	tatus relative to recruitn	nent impairment	
а	Guide post	It is <b>likely</b> that the stock is above the point where recruitment would be impaired (PRI).	It is <b>highly likely</b> that the stock is above the PRI.	There is a <b>high degree of</b> <b>certainty</b> that the stock is above the PRI.
	Met?	Yes	Yes	Yes
Ratior	ale			

The primary indicator used to assess the state of the blue swimmer crab stock is the standardised catch rate (CPUE) using fisheries dependent logbook data from the commercial trap fishery (DPIRD 2020d). Standardised CPUE has continuously remained above the threshold level which the harvest strategy considers "a proxy for the stock level at which Maximum Sustainable Yield (MSY) can be achieved" (Figure 4). The ongoing fluctuation of the stock within this conservative target range is a good indicator that recruitment has not been impaired during this period.

The species is short-lived, consequently, there is a high reliance on annual recruitment and there would be minimal lag between a period of reduced recruitment and the subsequent impact on the stock. Hence current high CPUE is a good indicator that recent recruitment has not been impaired.

Undersize abundance indices are also calculated based on the fishery independent trawl survey and trap survey. Associated reference points have not yet been developed, however, both indices show similar trends with a notable rise in recruitment in 2020 (trap) and 2018-2019 (trawl) (DPIRD 2020b).



There are some opportunities for improving the monitoring program. However the ongoing long term stability of CPUE and undersize abundance coupled with a recent rise in the undersize abundance indices provides a high degree of certainty that the stock is above the PRI, meeting the requirements of SG100.

	Stock s	tatus in relation to achie	vement of Maximum Sus	stainable Yield (MSY)
b	Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is <b>a high degree of</b> <b>certainty</b> that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		Yes	Νο
Ratior	nale			

Standardised CPUE has been above the threshold level since 1995/96 (the year in which the CPUE index commenced). The harvest strategy considers the threshold level a proxy for MSY, however, there is limited evidence to confirm the suitability of this assumption. Given the stability of the stock with consistently high catches, we consider it highly likely that the target range in which CPUE has been fluctuating corresponds to a level consistent with or higher than MSY. Consequently, the requirement of SG80 is met.

It appears likely that the stock has been fluctuating at a level exceeding MSY. However, the lack of clear evidence linking the threshold level to MSY means that the high degree of certainty required by SG100 is lacking and therefore SG100 is not met.

#### References

DPIRD (2020a). Western Australian Marine Stewardship Council Report Series West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery Addendum 4 November 2020.

DPIRD (2020b). Peel Harvey Estuarine Crab Fishery: Research Update November 2020. Presentation pp. 38.

DPIRD (2020c). Preliminary sea mullet modelling and associated diagnostics. pp. 10.

DPIRD (2020d). Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0. Fisheries Management Paper No. 304. DPIRD November 2020, pp. 35. Retrieved from http://www.fish.wa.gov.au/Documents/management\_papers/fmp304.pdf

Sezmiş, E. (2004). *The population genetic structure of* Portunus pelagicus *in Australian waters*. PhD thesis. Murdoch University, Perth, Australia. Retrieved from https://researchrepository.murdoch.edu.au/id/eprint/301/

Stock status r	elative to reference poin	nts
		Current stock status

Type of reference point

Value of reference point

Current stock status relative to reference point



Reference point used in scoring stock relative to PRI (SIa)	B <sub>PRI</sub> proxy, based on standardised CPUE during the reference period	0.49	kg / traplift	1.07 kg / traplift (2019/20)
Reference point used in scoring stock relative to MSY (SIb)	B <sub>MSY</sub> proxy, based on standardised CPUE during the reference period	0.7kg	) / traplift	1.07 kg / traplift (2019/20)
Draft scoring range			≥80	
Information gap indicator			Information suffic	ient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	90
Condition number (if relevant)	ΝΑ

# PI 1.1.2 – Stock rebuilding

Thin	DT	f ~ 14	atadi	mahuilding	. : -	not	~~~~d	hassisse	+	atadi	:~	not	400	latad
Ins	PL	TOF	SLOCK	renuncinc	15	1101	Scored	Decause	ine	SLOCK	IS.	TIOI	nen	ierea.
	• •		000010	rebuilding			000.00	becauce		000010			αup	.ccca.

PIWhere the stock is reduced, there is evidence of stock rebuilding1.1.2specified timeframe					
Scoring Issue		SG 60	SG 100		
	Rebuildi	ng timeframes			
а	Guide post	A rebuilding timeframe is specified for the stock that is the <b>shorter of 20</b> <b>years or 2 times its</b> <b>generation time</b> . For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed <b>one generation</b> <b>time</b> for the stock.	
	Met?	NA		NA	
Ratior	nale				

This PI for stock rebuilding is not scored because the stock is not depleted.

	Rebuilding evaluation								
b	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is <b>evidence</b> that the rebuilding strategies are rebuilding stocks, <b>or it</b> <b>is likely</b> based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the <b>specified timeframe</b> .	There is <b>strong evidence</b> that the rebuilding strategies are rebuilding stocks, <b>or it is highly</b> <b>likely</b> based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the <b>specified</b> <b>timeframe</b> .					



Rationale

This PI for stock rebuilding is not scored because the stock is not depleted.

#### References

The CAB shall list any references here, including hyperlinks to publicly-available documents.

Draft scoring range	60 / 60-79 / ≥80		
Information gap indicator	More information sought / Information sufficient to score PI If more information is sought, include a description of what the information gap is and what is information is sought		

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	ΝΑ
Condition number (if relevant)	

PI 1.2.1 – Harvest strategy

# Blue Swimmer Crab (UoA 1,2 & 3)

PI 1	2.1	There is a robust and precautionary harvest strategy in place						
Scoring Issue		SG 60 SG 80		SG 100				
Harve		t strategy design						
а	Guide post	The harvest strategy is <b>expected</b> to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy <b>work together</b> towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is <b>designed</b> to achieve stock management objectives reflected in PI 1.1.1 SG80.				
	Met?	Yes	Yes	Νο				
Rationale								

The objectives in the harvest strategy (DPIRD 2020d) related to P1 are to:

- maintain the biomass of the target species "at a level where the main factor affecting recruitment is the environment"
- "provide commercial fisheries with reasonable opportunities to maximise their livelihood", and
- "provide fishing participants with reasonable opportunities to maximise cultural, recreational and lifestyle benefits of fishing".



This is operationalised by a requirement to maintain the resource above the threshold level (MSY proxy). As such the objectives of the harvest strategy aim to maintain the stock at a higher level of abundance than required by PI 1.1.1 SG80.

The harvest control rule is based on standardised CPUE and is expected to keep the biomass above MSY (see PI 1.2.2.a). For a short-lived species like blue swimmer crab, a constant effort strategy is highly appropriate and ensures that the catch is responsive to the state of the stock. The tools that are used to implement the effort and catch required by the HCR are effective as demonstrated by a long history of stability.

The harvest strategy aims to meet the stock management objectives in PI 1.1.1 SG80 and the HCR and the management measures used to implement it are expected to work. This meets the requirements of SG60.

The harvest strategy supports the HCR through a number of mechanisms, including strict limitations on fishing equipment and reduced turn-over in vessels (due to limited entry) to maintain a consistent CPUE time series. Coupled with reporting requirements and compliance processes these elements of the harvest strategy aim to ensure that CPUE data is reliably, and accurately reported and sufficient information is available to conduct a standardisation.

The harvest strategy also articulates size limits which ensure females can spawn at least once before reaching the size limit. Measures that limit the handling time for undersize catch support the size limit through reducing post release mortality.

The key elements of the harvest strategy, including HCRs, limited entry, technical measures, handling practices and size limits work together to make the strategy responsive to the state of the stock, thus meeting the requirements of SG80.

Individual elements of the harvest strategy such as size limits, the HCR, gear regulations and spatial restrictions have not been designed and considered collectively. Consequently, SG100 is not met.

	Harvest	t strategy evaluation				
b	Guide post	The harvest strategy is <b>likely</b> to work based on prior experience or plausible argument.	The harvest strategy may not have been fully <b>tested</b> but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been <b>fully evaluated</b> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.		
	Met?	Yes	Yes	Νο		
Rationale						

Whilst the harvest strategy was updated in 2020 (DPIRD 2020d), this represents a refinement of the previous harvest strategy (DoF 2015a). Consequently, data from the intervening period provides evidence of the harvest strategy's performance. Furthermore, many of the elements of the harvest strategy have been in place for an extended period of time, consequently the performance of the fishery in earlier years also provides some indication of the effectiveness of key elements of the harvest strategy.


The fishery has a long history of stability with CPUE in the target range for the last twenty years. The ongoing active recreational and commercial fisheries provide some evidence that the harvest strategy is meeting its objectives for these sectors.

Overall, we consider that available evidence indicates that the harvest strategy is clearly achieving its objectives, thus meeting SG80.

The performance of the harvest strategy has not been fully evaluated. In particular, the loosely defined process for reducing catches from sectors has not been triggered and consequently requires evaluation to ensure that, if triggered, it will be effective and be able to maintain the fishery at target levels. As a result of this, the requirements for SG100 are not met.

	Harvest	strategy monitoring
С	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.
	Met?	Yes
Ratior	nale	

The HCR uses standardised CPUE as its key indicator. The data required to calculate this is reliably collected. The harvest strategy aims to maintain this indicator within its corresponding target range, hence this data is suitable for determining whether the HCR component of the harvest strategy is working.

Commercial catches are evaluated annually against catch tolerance levels to ensure that the other elements of the harvest strategy are working to control commercial catch. The same process is applied for boat based recreational catches on a triennial basis.

Fishery independent surveys are conducted, in part to provide independent indices of stock abundance and recruitment which can be used to ascertain whether the harvest strategy is working. At present, these indicators are used annually as ancillary evidence, however, they may be formally incorporated in a future harvest strategy. These elements satisfy the requirement of SG60.

	Harvest strategy review			
d	Guide post		The harvest strategy is periodically reviewed and improved as necessary.	
	Met?		Yes	
Ratior	nale			

The harvest strategy is reviewed regularly with each version covering a five-year period (DoF 2015a, DPIRD 2020d) with the most recent revision in 2020. This meets the requirements of SG100.

0	Shark f	Shark finning				
e	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.		



	Met?	NA	NA	NA
Ratior	ale			

Scoring Issue is NA as sharks are not a target species.

	Review of alternative measures			
f	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	Yes	Νο	Νο
Ratior	nale			

UoA related mortality of unwanted catch of the stock has been considered through time and through the management regulations and fishing practices that have evolved is now assessed by DPIRD as being negligible. For UoA 1, the amount of unwanted catch (almost exclusively undersize crabs) is reduced through the use of escape gaps on commercial pots. For UoA 2 and UoA 3, recreational gear limitations and prevailing fishing practices help ensure reduced catches of undersize and lower mortality thereof through reduced handling time. There are additional gear limitations to minimise gear induced injury, including restrictions on hoop net size and requirements to use mesh that will prevent crab entanglement.

The implemented measures are likely to have considerably reduced mortality of unwanted catch. However discard rates are not well quantified in either sector, and post-release mortality rates including potential changes through time have not been studied.

Despite **mortality of unwanted catch** being considered negligible, there was insufficient evidence for all UoAs that **unwanted catch** itself was sufficiently low to be considered negligible. Hence it is necessary to assess this scoring issue.

The discussed measures have been developed through a range of reviews over time and thereby meet the requirements of SG60.

However regular reviews are not held for any of the UoAs, consequently, SG80 is not met.

#### References

DoF (2015a) Blue Swimmer Crab Resource of the Peel-Harvey Estuary Harvest Strategy 2015 – 2020 Version 1.0 West Coast Estuarine Managed Fishery (Area 2) and the Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Fishery Management Paper No. 273. Department of Fisheries, Perth. https://www.fish.wa.gov.au/Documents/management\_papers/fmp273.pdf



DPIRD (2020d). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0.* Fisheries Management Paper No. 304. DPIRD November 2020, pp. 35. http://www.fish.wa.gov.au/Documents/management\_papers/fmp304.pdf

Draft scoring range	60-79
Information gap indicator	More information sought Information on estimates of mortality of unwanted catch for both sectors will be requested at the onsite meeting (scoring issue f)

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	75
Condition number (if relevant)	1,2,3

## PI 1.2.2 – Harvest control rules and tools

## Blue Swimmer Crab (UoA 1,2 & 3)

PI 1.2.2 There are well defined an		There are well defined a	nd effective harvest contro	ol rules (HCRs) in place
Scoring Issue		SG 60	SG 80	SG 100
	HCRs d	esign and application		
a	Guide post	<b>Generally understood</b> HCRs are in place <b>or</b> <b>available</b> that are <b>expected</b> to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock <b>fluctuating at or above</b> a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, <b>most</b> of the time.
	Met?	Yes	Yes	Νο
Detionals				

#### Rationale

The HCR detailed in the harvest strategy uses the standardized commercial catch rate (CPUE) as its primary indicator and compares this on an annual basis against threshold and limit reference points (RPs).

The threshold RP is considered a proxy for  $B_{MSY}$  whilst the limit threshold RP is 70% of this and is considered the point at which recruitment may be impaired.



If CPUE falls below the threshold RP, it is considered to be approaching the limit RP and a review is triggered which must develop a management response within three months to reduce catch by up to 50%. If CPUE falls below the limit RP a review with the same timeframe is triggered but this must develop a management response that reduces catch by 50-100%. This meets the requirement at both SG 60 and SG 80 for the exploitation rate to be reduced as the limit RP is approached. As the threshold RP is considered an MSY proxy the HCR is expected to maintain the stock at a target level above MSY.

For the commercial sector, the catch reduction is relative to the last three years of catch. The recreational sector lacks regular reliable catch estimates; hence a revision of input controls likely to achieve the required percentage reduction will be implemented.

In parallel to the CPUE component of the HCR, the annual catches for both sectors are evaluated against a specified range to ensure that the input controls are still appropriate at achieving the desired catch.

The HCR has well defined thresholds, indicates the broad range of required catch reduction and the likely management instruments that will be used to implement the catch reduction. The HCR does not provide an indication of the review or the review process that will be used if CPUE falls below the RP, however, it does specify the timeframe within which the management response will need to recover the stock to the target range. The HCR also does not provide guidance on the proportion of the catch reduction that each sector will have to implement.

Despite these aspects, the detail provided in the harvest strategy is sufficient to consider the HCR strategy well defined as required for SG 80.

The above evidence shows that the HCR meets the requirements of both SG60 and SG80.

Due to uncertainty in the appropriateness of the threshold RP for an MSY proxy, it is possible that the CPUE corresponding to MSY may be somewhat higher. Despite this possibility, the long-term stability of the fishery indicates that the target range meets the SG80 requirement for the stock to fluctuate around a target level consistent with MSY. However, the uncertainty in the MSY proxy choice means that it cannot be said that the target range ensures that the stock remains at or above a level consistent with MSY most of the time. Consequently, the requirements for SG100 are not met.

	HCRs robustness to uncertainty			
b	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a <b>wide</b> range of uncertainties including the ecological role of the stock, and there is <b>evidence</b> that the HCRs are robust to the main uncertainties.
	Met?		Yes	Yes
Ratior	nale			

The HCR depends on standardised CPUE providing a reliable indicator of biomass. Comparisons between the CPUE index and the fishery independent surveys show a strong relationship between CPUE and biomass.

Long term changes in fishery activity and efficiency are of concern for any HCR that is reliant on CPUE. This is addressed through the CPUE standardisation process. Furthermore, due to the simplicity of the fishing operation, the limited spatial scope and the regulation of gear type, it is thought that the key issues affecting fisher efficiency have been captured in the CPUE standardisation process.

Uncertainty in the human response to management controls and changes in both commercial and recreational fleets results in uncertainty regarding the response of the catch / exploitation rate to the management controls. This is dealt with through a catch tolerance system which is assessed annually, to ensure that the implemented management controls are producing the catch required by the HCR.

The above evidence demonstrates that by design the HCR is likely to be robust to the main uncertainties, satisfying SG80.

Blue swimmer crab are susceptible to environmental conditions and climate change, particularly as this fishery is at the southern end of the species' geographic and temperature range. This is taken into account by examining rainfall and temperature annually to provide additional insight to changes in the primary CPUE indicator (e.g. DPIRD 2020b).

The fishery independent surveys provide additional data sources that are taken into consideration to account for any other possible factors impacting recruitment and ensure that the CPUE index remains a reliable indicator.

The stable operation of the fishery since the development of the initial HCR in 2015, the consistent advice provided by the HCR and the fishery independent validation of the CPUE index provides evidence that the HCR is robust to the main uncertainties.

The breadth of the uncertainties considered by the HCR and the evidence that it is robust meet the requirements of SG100.

	HCRs e	HCRs evaluation				
с	Guide post	There is <b>some evidence</b> that tools used <b>or</b> <b>available</b> to implement HCRs are appropriate and effective in controlling exploitation.	<b>Available evidence</b> <b>indicates</b> that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	<b>Evidence clearly</b> <b>shows</b> that the tools in use are effective in achieving the exploitation levels required under the HCRs.		
	Met?	Yes	Yes	Νο		
Ratior	nale					

A comprehensive set of measures are used to regulate the exploitation level as defined in DPIRD 2020d. For the commercial blue swimmer crab fishery these tools include:

- Limited entry
- Gear restrictions
- Limited pot numbers
- Temporal closures
- Size limits

For the recreational fishery these measures include:

- Gear restrictions
- Size limits
- Bag limits



#### • Temporal closures

These measures have been largely in place for an extended period predating the first harvest strategy in 2015. From a long-term perspective, the fact that the blue swimmer crab UoA remains in a healthy state after 60 years of targeted fishing provides some evidence that these measures have effectively controlled exploitation. There is further evidence of the appropriateness and effectiveness of these tools from examples of their application to other fisheries under the control of DPIRD.

In more recent years commercial exploitation has been actively monitored and compared against the commercial catch required by the HCR. This is implemented through an initial prediction of the expected commercial catch for the season based on the fishery independent trap survey. This allows variations in annual commercial catch to be examined in the context of fluctuating biomass (which is expected for a short-lived species that is sensitive to environmental conditions). Formally the HCR also evaluates changes in commercial catch as outlined in 1.2.2.b.

The above evidence indicates that these tools are appropriate and are effectively achieving the exploitation rates required under the HCR, meeting the requirements of SG60 and SG80.

Due to the changing nature of both sectors (including VFAS and changing recreational participation) and the inherent difficulty of controlling a complex fishery with input controls, it cannot be said that evidence clearly shows that the tools are effective in achieving the exploitation rates required under the HCR. Particularly in the situation where the HCR requires a substantial catch reduction as this remains untested. Consequently, SG100 is not met.

#### References

DPIRD (2020b). Peel Harvey Crab Fishery: Research Update November 2020. Presentation pp. 38.

DPIRD (2020d). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0.* Fisheries Management Paper No. 304. DPIRD November 2020, pp. 35. http://www.fish.wa.gov.au/Documents/management\_papers/fmp304.pdf

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	85
Condition number (if relevant)	ΝΑ

PI 1.2.3 – Information and monitoring

## Blue Swimmer Crab (UoA 1,2 & 3)

PI 1.2.3	Relevant information is	collected to support the	harvest strategy
Scoring Issue	SG 60	SG 80	SG 100

	Range of information				
а	Guide post	<b>Some</b> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	<b>Sufficient</b> relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A <b>comprehensive range</b> of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.	
	Met?	Yes	Yes	Νο	
Ratior	nale				

As described in the background, information a broad range of data is available on the stock structure, stock productivity and other biological parameters. The commercial fleet is well characterised and the gear well understood. The recreational fleet and the range of gear types used are also well understood. Consequently, the requirements of SG60 and SG80 are met.

The environmental impacts on blue swimmer crab productivity and CPUE have begun to be examined (Johnston et al. 2020) but are not comprehensively understood. The recreational fleet is diverse and some aspects, including less common practices such as hand collection are not fully understood. Therefore, SG100 is not met.

	Monitor	ing		
b	Guide post	Stock abundance and UoA removals are monitored and <b>at least one</b> <b>indicator</b> is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are <b>regularly</b> <b>monitored at a level of</b> <b>accuracy and coverage</b> <b>consistent with the</b> <b>harvest control rule</b> , and <b>one or more</b> <b>indicators</b> are available and monitored with sufficient frequency to support the harvest control rule.	<b>All information</b> required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent <b>uncertainties</b> in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Yes	Yes: UoA 1 No: UoA 2, 3	No
Ratio	hale			

The harvest strategy requires annual catch levels from the commercial sector and triennial estimates from the recreational boat sector. Commercial removals are monitored with a high level of accuracy. Recreational surveys are based on a sample of fishing activity (as is widely the case for recreational fishing estimates) and the harvest strategy is designed around the level of accuracy inherent in those estimates (DPIRD 2020d).

The harvest control rule requires i) an annual CPUE index to determine if the fishery is within target range and ii) catch estimates as detailed above to ensure that the implemented measures are



effectively restraining catch. These indicators are collected and available as required. Furthermore, the fishery independent surveys provided additional indicators that are used for cross-checking purposes.

#### UoA 1:

The UoA removals are well monitored and the suitable indicators to support the harvest control rule are available, hence SG60 and SG80 are met.

The uncertainties in the collected data are not fully understood and issues like the impact off the reduction in the commercial fleet on the CPUE index remain unclear. Consequently, SG100 is not met.

#### UoA 2 and 3:

Stock abundance and removals are monitored, and an indicator is available to support the harvest control rule. This meets SG60.

Recreational catches are only estimated on a triennial basis and do not have a high degree of certainty associated with them. The smaller shore based recreational catches are not regularly assessed. Particularly given the reported high frequency of change in the recreational sector, we consider this coverage inconsistent with the requirements of the harvest control rule. Consequently, SG80 and SG100 are not met.

	Compre	Comprehensiveness of information		
с	Guide post	There is good information on all other fishery removals from the stock.		
	Met?	No: UoA 1 Yes: UoA 2, 3		
Ratio	nale			

Commercial catches across the remainder of the stock are well monitored and reported. Recreational catches are estimated using the same approach as in the PHE.

#### UoA 1:

Shore based recreational catches have not been estimated since 2007/08. In comparison with recreational removals in other regions, this is more important for assessing the stock due to the magnitude of catches in the PHE. Consequently, SG80 is not met.

#### UoA 2, 3:

Commercial catches are well monitored and otherwise, there are no other known removals from the stock. Consequently, SG80 is met.

Note that this SI relates to fishery removals by "vessels outside or not covered by the unit of assessment" (GSA2.6.1). Consequently lack of information regarding shore based recreational catches affects the commercial UoA (UoA 1); not the recreational UoAs.

#### References



DPIRD (2020d). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0*. Fisheries Management Paper No. 304. DPIRD November 2020, pp. 35. http://www.fish.wa.gov.au/Documents/management\_papers/fmp304.pdf

Johnston, D., Yeoh, D., Harris, D. 2020. Environmental drivers of commercial blue swimmer crab (*Portunus armatus*) catch rates in Western Australian fisheries, *Fisheries Research* 235:105827, https://doi.org/10.1016/j.fishres.2020.105827

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	75 (All UoAs)
Condition number (if relevant)	4,5,6

### PI 1.2.4 – Assessment of stock status

## Blue Swimmer Crab (UoA 1,2 & 3)

PI	1.2.4	There is an adequate assessment of the stock status			
Scorin	ng Issue	SG 60	SG 80	SG 100	
	Approp	riateness of assessment to stock under consideration			
а	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.	
	Met?		Yes	Yes	
Ratio	nale				

The assessment relies on the calculation of an annual standardised CPUE index. The harvest control rule has been explicitly developed to utilise this indicator. This assessment method is appropriate for a stock of this nature that exhibits a high degree of correlation between biomass density and CPUE. The above evidence meets the requirements of SG80.

Environmental conditions (water temperature and rainfall) are regularly examined to aid in understanding stock variations. There is good agreement between the CPUE based assessment and both the legal and undersized indices calculated from the fishery independent surveys. Furthermore, the catch prediction derived from the fishery independent survey has performed well in predicting commercial catches (DPIRD 2020b).

On the basis of the broad data collection program and the integrated view across the different indices and environmental parameters, we consider that the requirements of SG100 are met.

#### **b** Assessment approach

	0		MSC Full Ass	21_390EN sessment Reporting Template
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	Yes	Yes	
Ratior	nale			

bioninspecta qoinspecta

Reference points have been derived from a historical reference period. The choice of these reference points is appropriate for this stock and is a conservative management decision. As the reference points are based on the primary indicator the stock status relative to these reference points can be readily calculated. This meets the requirements of SG60 and SG80.

	Uncertainty in the assessment				
с	Guide post	The assessment identifies major sources of uncertainty.	The assessment <b>takes</b> uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a <b>probabilistic</b> way.	
	Met?	Yes	Yes	Νο	
Ratior	nale				

The CPUE standardisation approach used by the assessment explicitly takes into account major uncertainties including temporal changes in fishing and changes in operator. Other factors that could bias CPUE or increase uncertainty are minimised by design through a well-defined logbook data collection system and restriction of fishing to operators using gear that is consistent and well understood.

All indicators considered in the assessment (CPUE, trawl based juvenile index, trap based juvenile and legal-size index) are presented with confidence intervals. Whilst these correspond to variability across samples in each season, with the exception of CPUE they do not indicate the potential uncertainty from changes unrelated to biomass through time (e.g. changes in fishing behaviour).

The above methods have identified the major sources of uncertainty (meeting the requirement of SG60) and have taken this uncertainty into account, thereby meeting SG80.

The assessment presents confidence intervals for yearly CPUE estimates. However, the current point estimate of CPUE is simply compared against the point estimate of CPUE for the reference year. This evaluation is not probabilistic and does not take into account the uncertainty in the most recent estimate (which may vary from one assessment to the next). Consequently, SG100 is not met.

	Evaluat	tion of assessment
d	Guide post	The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.



Met	?	No
Rationale		

Alternative hypotheses are being explored through the use of the fishery independent indices and examination of environmental drivers (Johnston et al. 2020). The complementary perspectives provided by the fishery independent indices support the current assessment approach, however the time series are still considered too short to incorporate into the harvest strategy (DPIRD 2020d).

Despite the promising work that continues to be undertaken, we consider that this has not yet met the requirement of SG100 for rigorous exploration of alternative assessment approaches.

е	Peer review of assessment			
	Guide post	The assessment of stock status is subject to peer review.	The assessment has been <b>internally and</b> <b>externally</b> peer reviewed.	
	Met?	Yes	No	
Ratior	nale			

The assessment is regularly internally peer reviewed through the annual production of the DPIRD "State of the Fisheries and Aquatic Resources Report" (Gaughan et al. 2020). It is also currently under internal review as part of the production of a resource assessment report. These reviews meet the requirements of SG80.

Some elements of the assessment report have been externally reviewed, including a recent review of environmental drivers of CPUE (Johnston et al. 2020). However, an external review of the whole assessment has not been undertaken, consequently, SG100 is not met.

#### References

DPIRD (2020b). Peel Harvey Crab Fishery: Research Update November 2020. Presentation pp. 38.

DPIRD (2020d). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0.* Fisheries Management Paper No. 304. DPIRD November 2020, pp. 35. http://www.fish.wa.gov.au/Documents/management\_papers/fmp304.pdf

Gaughan, D.J. and Santoro, K. (eds). 2020. *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2018/19: The State of the Fisheries.* Department of Primary Industries and Regional Development, Western Australia.

Johnston, D., Yeoh, D., Harris, D. 2020. Environmental drivers of commercial blue swimmer crab (*Portunus armatus*) catch rates in Western Australian fisheries, *Fisheries Research* 235:105827, https://doi.org/10.1016/j.fishres.2020.105827

Draft scoring range	≥80	
Information gap indicator	Information sufficient to score PI	



## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	85
Condition number (if relevant)	

## Sea Mullet (UoA 4 & 5)

### PI 1.1.1 – Stock status

PI 1.1.	1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing			
Scorin	ng Issue	SG 60 SG 80 SG 100			
	Stock s	tatus relative to recruitn	nent impairment		
а	Guide post	It is <b>likely</b> that the stock is above the point where recruitment would be impaired (PRI).	It is <b>highly likely</b> that the stock is above the PRI.	There is a <b>high degree of</b> <b>certainty</b> that the stock is above the PRI.	
	Met?	Yes	Yes	No	
Rationale					

Standardised CPUE was the primary indicator in the 2015-2020 sea mullet harvest strategy (DoF 2015b). In response to changing fishing characteristics, the CPUE indicator method was revised to consider kg per day instead of kg per netting hour. Both indices were monitored in 2019 and were well above their lower threshold values (Figure 5).

Breaches of the upper catch and catch rate threshold levels have triggered further investigation of the risk to the sustainability of the broader sea mullet stock. Representative samples of the age structure of sea mullet stock in the West Coast Bioregion (WCB) and Shark Bay have been collected to enable a Level 3 (catch curve and per-recruit) assessment (DPIRD 2020c). This found mostly juvenile fish were caught in the WCB Peel-Harvey Estuary, with an increase in the proportion of older fish in samples from oceanic waters further north. This is in agreeance with other reports that sea mullet undergo a northward migration to spawn (DPIRD 2020a). Consequently, the conclusion was reached that CPUE in northern areas provides a better indication of stock abundance, whilst PHE CPUE is an index of recruitment.

The current modelling approach used (DPIRD 2020a; DPIRD 2020b; DPIRD 2020c; Duffy et. al. 2021) uses combined catch data from across the stock and CPUE data from Shark Bay. Three independent modelling approaches were initially applied to this data consisting of catch-MSY (applied to catch only) and two implementations of a Schaefer production model.

CPUE in the PHE and WCB is considered an indicator of recruitment and remains well above the respective established MSY proxies. The three models indicate high levels of biomass well above  $B_{MSY}$ . Recent catches are well below those previously supported. Based on these lines of evidence it is highly likely that the stock is above the PRI, meeting the requirements of SG60 and SG80.

Due to the new understanding of stock structure, the assessment approaches used remain under development. Consequently, there is insufficient certainty to satisfy the requirements of SG100.

### **b** Stock status in relation to achievement of Maximum Sustainable Yield (MSY)



	Guide post	The stock is at or fluctuating around a level consistent with MSY.	There is <b>a high degree of</b> <b>certainty</b> that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?	Yes	Νο
Ratior	nale		

As outlined in 1.1.1.a, the CPUE indicators are above their MSY proxies and the modelling indicates a level of biomass well above  $B_{MSY}$ . This meets the requirements of SG80.

Due to the new assessment approaches which remain under development, SG100 is not met.

#### References

DoF (2015b). Finfish Resources of the Peel-Harvey Estuary Harvest Strategy 2015 - 2020 Version 1.0 West Coast Estuarine Managed Fishery (Area 2). Fishery Management Paper No. 274. Department of Fisheries, Perth. https://www.fish.wa.gov.au/Documents/management\_papers/fmp274.pdf

DPIRD (2020a). Western Australian Marine Stewardship Council Report Series West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery Addendum 4 November 2020. Department of Primary Industries and Regional Development, Western Australia.

http://www.fish.wa.gov.au/Documents/wamsc\_reports/wamsc\_report\_no\_3\_addendum\_4.pdf

DPIRD (2020b). Peel Harvey Crab Fishery: Research Update November 2020. Presentation pp. 38.

DPIRD (2020c). Preliminary sea mullet modelling and associated diagnostics. pp. 10.

Duffy, R., Harris, D., Fisher, E., Smith, K., Johnston, D., Denham, A. and Hesp, S.A. (2021). South-West Estuarine and Nearshore Finfish Resource. Resource Assessment Report. Department of Primary Industries and Regional Development, Western Australia. 136pp.

Stock status relative to reference points					
	Type of reference point	Value	e of reference point	Current stock status relative to reference point	
Reference point used in scoring stock relative to PRI (SIa)	<u>Blim</u>	<i>0.5</i> B	MSY	1.80 B <sub>MSY</sub>	
Reference point used in scoring stock relative to MSY (SIb)	Вму	2032	t	3658t	
Draft scoring range			≥80		
Information gap indicator		Information suffic	ient to score PI		

#### **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	80
Condition number (if relevant)	ΝΑ

## PI 1.1.2 – Stock rebuilding

This PI for stock rebuilding is not scored because the stock is not depleted.

PI 1.1.	IWhere the stock is reduced, there is evidence of stock rebuilding within specified timeframe			ock rebuilding within a
Scoring Issue		SG 60	SG 80	SG 100
	Rebuildi	ng timeframes		
а	Guide post	A rebuilding timeframe is specified for the stock that is the <b>shorter of 20</b> <b>years or 2 times its</b> <b>generation time</b> . For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed <b>one generation</b> <b>time</b> for the stock.
	Met?	NA		NA
Rationale				

This PI for stock rebuilding is not scored because the stock is not depleted.

	Rebuildi	ng evaluation		
b	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is <b>evidence</b> that the rebuilding strategies are rebuilding stocks, <b>or it</b> <b>is likely</b> based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the <b>specified timeframe</b> .	There is <b>strong evidence</b> that the rebuilding strategies are rebuilding stocks, <b>or it is highly</b> <b>likely</b> based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the <b>specified</b> <b>timeframe</b> .
	Met?	NA	NA	NA
Rationale				

This PI for stock rebuilding is not scored because the stock is not depleted.

#### References

The CAB shall list any references here, including hyperlinks to publicly-available documents.



Draft scoring range	<60 / 60-79 / ≥80	
Information gap indicator	More information sought / Information sufficient to score PI If more information is sought, include a description of what the information gap is and what is information is sought	

#### **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	ΝΑ
Condition number (if relevant)	

## PI 1.2.1 – Harvest strategy

## Sea Mullet (UoA 4 & 5)

<b>PI</b> 1	.2.1	There is a robust and precautionary harvest strategy in place				
Scoring Issue		SG 60	SG 80	SG 100		
	Harvest	t strategy design				
а	Guide post	The harvest strategy is <b>expected</b> to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy <b>work together</b> towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is <b>designed</b> to achieve stock management objectives reflected in PI 1.1.1 SG80.		
	Met?	Yes	Yes	No		
Ratior	nale					

The notable change from the previous harvest strategy (DoF 2015b) is that there has been an improved understanding of stock structure. Consequently, the Shark Bay CPUE is monitored as an index of overall abundance and the PHE CPUE provides an estimate of recruitment. A model-based biomass estimate using the Shark Bay CPUE data provides the primary indicator for the harvest strategy. The reference points for the biomass estimate have been explicitly chosen to maintain the fishery above BMSY. Coupled with management measures that have been effectively limiting effort and thus catch it is expected that the harvest strategy will achieve the objectives reflected in PI 1.1.1 SG 80. This meets the requirements of SG 60.

The model-based biomass indicator for the harvest control rule is only expected to be updated every five years (Table 1, DPIRD 2020e). Given the low exploitation rate, history of stability and the moderate age of the species, this frequency of responsiveness may be appropriate. In this situation, changes in the commercial or recreational sector that might change the exploitation rate are potentially of greater concern and these are monitored through the annual assessment of commercial catch levels against the commercial catch tolerance range. Consequently, SG80 is met.



The elements of the harvest strategy have not been collectively designed to meet the management objectives, consequently, SG100 is not met.

	Harves	t strategy evaluation		
b	Guide post	The harvest strategy is <b>likely</b> to work based on prior experience or plausible argument.	The harvest strategy may not have been fully <b>tested</b> but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been <b>fully evaluated</b> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	Yes	Νο	Νο
Rationale				

The harvest strategy utilises widely used assessment methods that are well understood and suitable for this species. The assessment methods are supported by appropriate data collection and consideration of other sources of information in a weight of evidence approach. The limitations put in place on both sectors are appropriate and ensure that the required exploitation rates are maintained. These factors indicate that the harvest strategy is likely to work, thus meeting SG60.

Elements of the harvest strategy have been in place for an extended period, including the previous harvest strategy (DoF 2015b). A prolonged period of stability in this fishery provides evidence that the elements that have been in place have worked. The new harvest strategy (DPIRD, 2020e) changes the HCR to use more comprehensive biomass estimates on a much less frequent basis (every five years). This change has not been tested and as it has only just been implemented there is no evidence available that it will work. Furthermore, the loosely defined process for reducing catches has not been triggered and consequently requires evaluation to ensure that if triggered it will be effective and be able to maintain the fishery at target levels. Consequently, the requirements of SG80 are not met.

с	Harves	Harvest strategy monitoring		
	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Yes		
Ratior	nale			

The indices and model-based biomass estimates discussed in 1.2.1.a is used to assess whether the harvest strategy is working and are considered reliable for this species and fishery. Consequently, SG60 is met.

d	Harvest strategy review			
	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Yes
Rationale				

The harvest strategy is reviewed regularly with each version covering a five-year period (DoF 2015b, DPIRD, 2020e). This meets the requirements of SG100.

e	Shark finning			
	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Rationale				

Scoring Issue is NA as sharks are not a target species.

	Review	of alternative measur	es	
f	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA- related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	ΝΑ	NA	ΝΑ
Rationale				

UoA related mortality of unwanted catch of the stock has been considered and assessed as being negligible. Almost all catch is retained, and net mesh sizes have been regulated in part to reduce catch of less desirable sizes. The handling time of haul net is minimal to ensure high rates of post release survival. Depredation, primarily by pelicans occurs but this does not generally relate to unwanted catch.

The above demonstrates that unwanted catch of the target stock is negligible and consequently scoring of this issue is not required.

#### References

DoF (2015b). *Finfish Resources of the Peel-Harvey Estuary Harvest Strategy 2015 – 2020 Version 1.0 West Coast Estuarine Managed Fishery (Area 2)*. Fishery Management Paper No. 274. Department of Fisheries, Perth. https://www.fish.wa.gov.au/Documents/management\_papers/fmp274.pdf

DPIRD (2020e). *Estuarine and Nearshore Finfish Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0.* Fisheries Management Paper No. 303. DPIRD November 2020, pp. 33. http://www.fish.wa.gov.au/Documents/management\_papers/fmp303.pdf

Draft scoring range	60-79	
Information gap indicator	<ul> <li>More information sought</li> <li>Clarification if existing indices remain a formal component of the HCR and if they fall below the</li> </ul>	



previous thresholds would trigger a catch reduction (scoring issue b)

 Further information regarding mortality of unwanted catch (scoring issue f)

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	70
Condition number (if relevant)	7,8

### PI 1.2.2 – Harvest control rules and tools

## Sea Mullet (UoA 4 & 5)

<b>PI 1.2.2</b> There are well defined and effective harvest control rules (HCRs) i			ol rules (HCRs) in place	
Scoring Issue		SG 60	SG 80	SG 100
	HCRs d	esign and application		
а	Guide post	<b>Generally understood</b> HCRs are in place <b>or</b> <b>available</b> that are <b>expected</b> to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock <b>fluctuating at or above</b> a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, <b>most</b> of the time.
	Met?	Yes	Yes	Νο
Rationale				

The HCR detailed in the harvest strategy (DPIRD 2020e) uses a model based biomass estimate on a five-year basis and compares this against threshold and limit reference points (RPs). The threshold RP is  $B_{MSY}$  whilst the limit threshold RP is 50% of this and is considered the point at which recruitment may be impaired.

If the biomass estimates fall below the threshold RP, it is considered to be approaching the limit RP and a review is triggered which must develop a management response within three months to reduce catch by up to 50%. If the biomass estimates fall below the limit RP a review with the same timeframe is triggered but this must develop a management response that reduces catch by 50-100%. This meets the requirement at both SG 60 and SG 80 for the exploitation rate to be reduced as the limit RP is approached. As the threshold RP is considered an MSY proxy the HCR is expected to main the stock at a target level above MSY.



For the commercial sector, the catch reduction is relative to the last three years of catch. The recreational sector lacks regular reliable catch estimates; hence a revision of input controls likely to achieve the required percentage reduction will be implemented.

The annual catch of the commercial sector is evaluated against a specified range to ensure that the input controls are still appropriate at achieving the desired catch.

The HCR has well defined thresholds, indicates the broad range of required catch reduction and the likely management instruments that will be used to implement the catch reduction. The HCR does not provide an indication of the review or the review process that will be used if CPUE falls below the RP, however, it does specify the timeframe within which the management response will need to recover the stock to the target range. The HCR also does not provide guidance on the proportion of the catch reduction that each sector will have to implement.

Overall, we consider the detail provided in the harvest strategy is sufficient to consider the HCR strategy well defined and expected to keep the stock well above MSY. Thus, SG80 is met.

The HCR utilises an indicator that is likely to be available only every five years. With the current low level of exploitation this likely to be adequate and keep the stock fluctuating at a level well above MSY. However higher exploitation rates are permitted under the HCR. In this circumstance, whether the HCR with its slow rate of responsiveness would be sufficient to ensure the stock remains at its target level most of the time remains unclear. Consequently, the requirements for SG100 are not met.

	HCRs r	obustness to uncertainty	,	
b	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a <b>wide</b> range of uncertainties including the ecological role of the stock, and there is <b>evidence</b> that the HCRs are robust to the main uncertainties.
	Met?		Yes	Νο
Ratior	nale			

The primary indicator utilised by the HCR is a model based biomass estimate. The exact nature of this estimate is not defined, however as discussed in 1.2.4.b and 1.2.4.c the most recent model estimates of biomass took into account a broad range of uncertainties and were found to produce consistent biomass estimates (Duffy et al. 2021).

The harvest strategy recognises the fluctuating nature of the resource and the inherent uncertainty in biomass estimates and their associated reference points. Consequently, to ensure the HCR is robust precautionary reference points have been chosen with  $B_{MSY}$  used as a threshold reference point. Through the use of robust assessment approaches and a cautionary reference points the HCR is likely to be robust to the main uncertainties, thereby meeting SG80.

The HCR in the new harvest strategy is a substantial change from the previous HCR, consequently, evidence is not yet available that the HCR is robust to the main uncertainties. Furthermore, the process by which the HCR has to reduce catches if the threshold is breached is not well described and this has not been tested under the previous version of the harvest strategy. Consequently, SG100 is not met.

	HCRs evaluation			
с	Guide post	There is <b>some evidence</b> that tools used <b>or</b> <b>available</b> to implement HCRs are appropriate and effective in controlling exploitation.	<b>Available evidence</b> <b>indicates</b> that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	<b>Evidence clearly</b> <b>shows</b> that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Yes	Yes	No
Ratior	nale			

A comprehensive set of measures are used to regulate the exploitation level as defined in DPIRD 2020e. For the commercial sea mullet fishery these tools include:

- Limited entry
- Gear restrictions
- Temporal closures

For the recreational fishery these measures include:

- Gear restrictions
- Bag limits

These measures have been largely in place for an extended period predating the first harvest strategy in 2015. From a long term perspective, the fact that the sea mullet has remained at high biomass for an extended period of time provides some evidence that these measures have effectively controlled exploitation. There is further evidence of the appropriateness and effectiveness of these tools from examples of their application to other fisheries under the control of DPIRD.

Commercial catches are monitored annually through comparison with a catch tolerance range to ensure that the measures in place are achieving the desired exploitation rates.

The above evidence indicates that these tools are appropriate and are effectively achieving the exploitation rates required under the HCR, meeting the requirements of SG60 and SG80.

Due to the changing nature of both sectors and the inherent difficulty of controlling a complex fishery with input controls, it cannot be said that evidence clearly shows that the tools are effective in achieving the exploitation rates required under the HCR. Particularly for the as yet untested situation where a substantial catch reduction would be required by the HCR. Consequently, SG100 is not met.

#### References

DPIRD (2020e). *Estuarine and Nearshore Finfish Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0*. Fisheries Management Paper No. 303. DPIRD November 2020, pp. 33. http://www.fish.wa.gov.au/Documents/management\_papers/fmp303.pdf

Duffy, R., Harris, D., Fisher, E., Smith, K., Johnston, D., Denham, A. and Hesp, S.A. (2021). *South-West Estuarine and Nearshore Finfish Resource. Resource Assessment Report.* Department of Primary Industries and Regional Development, Western Australia. 136pp.



Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	80
Condition number (if relevant)	ΝΑ

## PI 1.2.3 – Information and monitoring

## Sea Mullet (UoA 4 & 5)

PI 1.2.3		Relevant information is collected to support the harvest strategy			
Scoring Issue		SG 60	SG 80	SG 100	
	Range	of information			
а	Guide post	<b>Some</b> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	<b>Sufficient</b> relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A <b>comprehensive range</b> of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.	
	Met?	Yes	Yes	No	
Rationale					

As described in the background information a broad range of data is available on the stock structure, stock productivity and other biological parameters. The commercial fleet is well characterised, and the gear well understood. The recreational fleet and the range of gear types used are also well understood. Consequently, the requirements of SG60 and SG80 are met.

New hypotheses have recently arisen on stock structure of the sea mullet fishery (DPIRD, 2020b; Duffy et al., 2021). This aspect is critical to management but not comprehensively understood. Therefore, SG100 is not met.

	Monitor	ring		
b	Guide post	Stock abundance and UoA removals are monitored and <b>at least one</b> <b>indicator</b> is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are <b>regularly</b> <b>monitored at a level of</b> <b>accuracy and coverage</b> <b>consistent with the</b> <b>harvest control rule</b> , and <b>one or more</b> <b>indicators</b> are available	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent <b>uncertainties</b> in the

DIO	<b>O</b> mspe	ecta qomspecta	MSC Full A	21_390EN Assessment Reporting Template
			and monitored with sufficient frequency to support the harvest control rule.	information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Yes	Yes	No
Ratior	nale			

Commercial catch removals are well defined with sufficient accuracy to support the HCR in the monitoring of the catch tolerance levels and for supporting the catch reduction analysis (if required). Removals from the recreational fishery are monitored less frequently and with less accuracy, however, the HCR acknowledges this and describes a process for taking this into account if catch reductions are required. The biomass estimate is only produced every five years; however, this is the frequency stipulated by the HCR. The other CPUE indicators are not formally part of the HCR but provide additional information on the fishery's performance in intervening years (DPIRD 2020e). This meets the requirements of SG60 and SG80.

The key indicator for the HCR is the biomass estimate which is only updated every five years, which cannot be considered a high frequency. Consequently, SG100 is not met.

	Comprehensiveness of information		
с	Guide post	There is good information on all other fishery removals from the stock.	
	Met?	Yes	
Rationale			

Commercial catches from other bioregions are well reported. Recreational catches in other regions are reported with a similar level of accuracy and frequency through the same statewide recreational fishing survey. This meets the requirements of SG80.

#### References

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DPIRD (2020b). Peel Harvey Crab Fishery: Research Update November 2020. Presentation pp. 38.

DPIRD (2020e). *Estuarine and Nearshore Finfish Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0.* Fisheries Management Paper No. 303. DPIRD November 2020, pp. 33. http://www.fish.wa.gov.au/Documents/management\_papers/fmp303.pdf

Duffy, R., Harris, D., Fisher, E., Smith, K., Johnston, D., Denham, A. and Hesp, S.A. (2021). South-West Estuarine and Nearshore Finfish Resource. Resource Assessment Report. Department of Primary Industries and Regional Development, Western Australia. 136pp.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 



Overall Performance Indicator score	80
Condition number (if relevant)	ΝΑ

## PI 1.2.4 – Assessment of stock status

## Sea Mullet (UoA 4 & 5)

PI	1.2.4	There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
	Approp	riateness of assessment	to stock under consider	ation
а	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		Yes	Yes
Ratio	nale			

The assessment consists of a Schaefer production model applied to a standardised CPUE time series and a time series of catch (DPIRD, 2020d; Duffy et al., 2021). This assessment is standard and appropriate for this stock and the HCR is designed around the assessment. Consequently, SG80 is met.

The new assessment process has only been conducted once and is still in development. Some aspects require further refinements such as improving the understanding of stock structure and appropriate choice for recruitment and adult biomass indices. Given separate indices are available for different age classes, an aged based model could also be considered.

However, the assessment takes into account the current understanding of movement patterns of sea mullet. It draws on an index of adult abundance and uses modelling approaches that are suitable to the biology of the species. Consequently, we consider that the assessment takes into account the major features relevant to the biology of the species and SG100 is met.

	Assessr	Assessment approach				
b	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.			
	Met?	Yes	Yes			
Rationale						

The reference points are based on  $B_{MSY}$  which the model estimates and which are completely appropriate for the stock. Hence SG60 and SG80 are met.

с	Uncerta Guide post	inty in the assessment The assessment identifies major sources of uncertainty.	The assessment <b>takes</b> uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a <b>probabilistic</b> way.
	Met?	Yes	Yes	Yes
Ratior	nale			

The assessment modelling to produce the biomass estimates required by the HCR is newly developed with three model approaches trialled including a Catch-MSY model and two Schaefer production models (Duffy et al., 2021).

The production models take into account uncertainty in the input CPUE time series through a standardisation approach that considers increasing fisher efficiency. Structural model uncertainty is examined through the parallel implementation/application of all three models which demonstrated good agreement. Model based biomass estimates include 95% confidence limits. This meets the requirements of SG60 and SG80.

The model-based estimates of biomass relative to the  $B_{MSY}$  reference point are reported with confidence limits. Consequently, SG100 is met.

	Evaluation of assessment			
d	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			No
Ratior	nale			

Whilst different model structures have been compared (see 1.2.4.c), this cannot be considered a rigorous exploration. Sensitivity analyses of the broad range of parameters have not been conducted. Model structures that are substantially different such as age or size based models, have not been applied. Consequently, SG100 is not met.

	Peer review of assessment				
е	Guide post		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.	
	Met?		Yes	Νο	
Ratior	nale				

The assessment is regularly internally peer reviewed through the annual production of the DPIRD 'State of the Fisheries and Aquatic Resources Report' (Gaughan et al., 2020). This meets the requirements of SG80.



The assessment is not externally reviewed, hence SG100 is not met.

#### References

DPIRD (2020c). Preliminary sea mullet modelling and associated diagnostics. pp. 10.

Duffy, R., Harris, D., Fisher, E., Smith, K., Johnston, D., Denham, A. and Hesp, S.A. (2021). *South-West Estuarine and Nearshore Finfish Resource*. Resource Assessment Report. Department of Primary Industries and Regional Development, Western Australia. 136pp.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	90
Condition number (if relevant)	

## 7.3 Principle 2

bio

### 7.3.1 Principle 2 background

### The aquatic ecosystem

The Peel-Harvey Estuary is a natural inland water body near Perth, in the southwest of Western Australia. It is one of four significant estuarine systems in the West Coast Bioregion. It is approximately 136 km<sup>2</sup> in area with a mean depth of around 0.9 m and maximum depths of around 2 m in parts of both Peel Inlet and Harvey Estuary. The Estuary drains the Serpentine, Murray and Harvey Rivers. Point Grey Sill connects the Peel Inlet and the Harvey Estuary, and two channels provide connectivity between the Estuary and the Indian Ocean: the Mandurah Channel (a natural feature located in the northern Peel Inlet) and the Dawesville Channel (anthropogenic, located in the northern Harvey Estuary). The Dawesville Channel was opened in 1994 to improve water exchange in the estuary. These two channels are dredged regularly (Johnston et al., 2015).

Nutrient inputs to the Estuary are strongly affected by surrounding land use (which includes agriculture), and the Dawesville Channel was created to ameliorate the negative impacts of high nutrient loads (such as blooms of toxic algae). The salinity of estuarine waters varies due to tidal and riverine inputs (the latter affected in turn by rainfall in catchments upstream, which is reported to have decreased during the last decade) (Fisher et al., 2020; and references therein). Fish-kill events have been reported from the Estuary, e.g. following a rainfall event in 2017, which delivered a high organic load and poor quality brackish water into the Estuary and depleted oxygen levels (Thomson, 2019). Runoff and climate change remain significant risks to the ecosystem.

Over time, an extensive dataset on water quality of the Estuary has been accumulated (e.g. through a programme of monthly monitoring of salinity, temperature, dissolved oxygen, pH, turbidity, water clarity, nitrogen and phosphorus concentrations, chlorophyll a, phytoplankton densities and taxa (Thomson 2019)). A hydrological-biogeochemical model has been developed to explore the effects of the Dawesville Channel and climate change on the Estuary.

The habitats surrounding the Peel-Harvey Estuary comprise shallow intertidal flats, samphire flats and marshes. In the shallow estuarine waters, macroalgae, seagrass and phytoplankton proliferate, and the high levels of primary production support large populations of invertebrates, finfish, birds and mammals. Macroalgae and seagrass have an important role in nutrient and carbon cycling. The Estuary (which is part of the Peel-Yalgorup Wetland System) was Ramsar-listed in 1990 as a wetland of international importance. More than 26,000 hectares is covered by the Ramsar designation (Johnston et al., 2015; Fisher et al., 2020).

Seventy-one species of fish have been recorded in the Peel-Harvey system. Many of these are marine species that are estuarine opportunists as juveniles (Johnston et al., 2015, and references therein). Located on the East Asian-Australasian flyway, the Estuary provides important habitat for migrant and resident shorebirds (Graff, 2019). Indo-Pacific bottlenose dolphins (Tursiops aduncus) also occur (Fisher et al., 2020).

Overall, ecosystem impacts of the UoAs result from harvesting the target species, including accessing fishing sites. Ecosystem modelling (conducted to investigate the ecosystem effects of the creation of the Dawesville Channel) explored the impacts of increasing and decreasing fishing effort on functional groups. Few negative impacts of increasing fishing effort were identified, and most functional groups were predicted to increase in biomass under the increased effort scenarios explored (Fretzer, 2013). A legal-size requirement on landed blue swimmer crab catch facilitates the retention of juveniles in the population and ecosystem. Similarly, the legal requirement to return berried females to the water is Approval Date: 19.10.2020 05:53:29

expected to contribute to stock maintenance and therefore mitigate ecosystem impacts of target species removal. Fishing mortality of blue swimmer crabs is considered to affect a small proportion of the total biomass in the south-west region (Johnston et al., 2015). For sea mullet, a tolerance level for the commercial fishery has been set based on catch in periods the fishery is considered to have operated sustainably (i.e. catch below MSY) (DPIRD, 2020a). Disturbance due to foot and boat traffic has been considered specifically with respect to habitat and ETP impacts (see below). A simplified Estuary food web is shown in Figure 10.

There is a closed season for commercial crab pot fishing, which was extended from two to three months in 2019 after a management review and is now set for 1 September – 30 November. Fishing using this method is prohibited at weekends. Recreational fishing is also prohibited from 1 September – 30 November. There are spatial closures encompassing the Dawesville Channel, Mandurah Entrance Channel, and rivers that enter the Estuary, as well as in adjacent marine areas. Closures to commercial fishing cover 14% of the Estuary (Fisher et al., 2020).

At a system level, the impacts of climate change are apparent, for example, in terms of rainfall inputs, weather events resulting in fish kills, and distributions of some fish stocks (Thomson 2019; Fisher et al. 2020).

An ecological risk assessment has been prepared by DPIRD, and this provides a framework to consider the impacts of the fishery on the ecosystem, its components, and elements. Risk in that context is defined as the '*uncertainty associated with achieving a specific management objective or outcome'* (Fisher et al., 2020). The risk assessment followed a likelihood–consequence approach and considers fishing methods (as reflected by the assessment UoAs) separately. For the management agency, Medium or lower risks are considered acceptable. High risks are deemed not desirable, requiring further strong management actions, and likely invoking increased management. Severe risks would be unacceptable and would require increased management as a matter of urgency. Reporting and monitoring actions are also linked to the level of risk identified (Fisher et al., 2020).



Figure 10. A simplified food web of the Peel-Harvey Estuary. (From Hale and Butcher, 2007).

Ecosystem-level risks considered by the 2020 risk assessment covered trophic interactions (removal of retained species, discarding and provisioning), translocation of pests and diseases, and ghost fishing by lost/abandoned gear. These risks were found to be Low or Negligible (Fisher et al., 2020). Key considerations when evaluating these risks included (Fisher et al., 2020):

- Removal of retained species and discarding of unwanted catch and bait have the potential to affect the ecosystem and its components (e.g. trophic dynamics).
- Alternate prey are available in the Estuary for predators of the target species. (fisheryindependent surveys have shown small crabs are abundant).
- Post-release survival of blue swimmer crabs (the most frequently discarded species) is considered likely to be high.
- Commercial pot fishers use only locally caught bait. Commercial net and scoop net fishers do not use bait.
- Commercial fishers are not permitted to use their vessels or gear outside the Estuary.
- Recreational drop net fishers may use bait from other areas, and can use vessels state-wide which carries risks.
- It is considered unlikely that gear would be lost in the Estuary, given water depth and the frequency with which gear (e.g. drop nets) are pulled.

Table 11. Catch composition across the five Units of Assessment (UoA) considered for this assessment. Target species considered under Principle 1 are highlighted orange, 'main' species are shown in blue, and primary species are in bold. 'B' denotes species used as bait (for which quantitative information on source and weight is limited). Catch information comprises: UoA 1 – commercial catch landing reports 2014 – 2019, estimated bait usage, and discard records from monthly monitoring trips conducted by Department of Primary Industries and Regional Development (DPIRD) May 2014 – May 2019; UoA 2 – Surveys of recreational fishers (as part of the Western Australia Recreational Angler Program 2005-2021; targeted surveys in the Estuary 2007, 2008); UoA 3 – Surveys of recreational fishers (2007, 2008); UoAs 4 and 5 – commercial reports of landed catch 2015 – 2019, fisher reports and observer monitoring of discards May 2017 – April 2018. Species that may be caught and/or used as bait are marked with \*. For more detailed information on bait and for each UoA, see Tables Table 12 - 21 Data from Fisher et al., 2020.

		UoA 1		UoA 2	UoA 3	UoA 4		UoA 5		UoAs 4 & 5
Common name	Scientific name	Mean % retained catch + bait weight	% discarded catch items	% retained + discarded catch items	Mean % retained + discarded catch items	Mean % retained catch weight	% discarded catch items	Mean % retained catch weight	% discarded catch items	% catch items observed discarded
Blue swimmer crab	Portunus armatus	79.91	99.96	99.29	96.92		49		13	38
Sea mullet*	Mugil cephalus	B (20.02% with yelloweye mullet)		В		70		55		
Silver bream	Rhabdosargus sarba						31		38	34
Common blowfish	Torquigener pleurogramma		<0.01	0.05	1.31		7		33	21
Yelloweye mullet*	Aldrichetta forsteri	B (20.02% with sea mullet)				7	6	11	54	17
Leatherjackets	Monacathidae					< 0.01	3		13	7
Common silverbiddy	Gerres subfasciatus					0.02	1			7
King George whiting	Sillaginodes punctatus			0.02		1	1		4	7
Tailor	Pomatomus saltatrix			0.26 B	0.04	2	1	3	4	7
West Australian salmon	Arripis truttaceus						1			3



Black bream	Acanthopagrus butcheri						1			
Yellowtail grunter	Amniataba caudavittata						0.4			3
Australian herring	Arripis georgianus			0.24	1.73	3	0.2	4		7
Western striped trumpeter	Pelates octolineatus		<0.01				0.2			7
Smooth ray	Dasyatis sp.						0.2			
Estuary cobbler	Cnidoglanis macrocephalus		<0.01			0.2		12	4	3
Mulloway	Argyrosomus japonicus								4	3
Western rock octopus	Octopus djinda	0.06								
Four-lobed swimming crab	Thalamita sima		0.03							
Green mud crab	Scylla serrata		<0.01							
Whitings/sand whiting*	-/Sillago ciliata			0.03 B		0.5				
Yellowfin whiting	Sillago schomburgkii					13		10		
Rough leatherjacket	Scobinichthys granulatus			0.01						
Pufferfish, toadfish and tobies				0.02						
Wrasses/ gropers				0.02						
Western rock lobster	Panulirus cygnus			0.02						
Striped trumpeter	Latris lineata			<0.01						
Trumpeter*				В						
Southern school/silver whiting	Sillago bassensis			<0.01						

Silver trevally*	Pseudocaranx georgianus	<0.01 B	0.01		
Stingray	Myliobatoidei	< 0.01			
Perth herring	Nematalosa vlaminghi		2	5	
Trevallies			0.4	0.01	
Australian sardine	Sardinops sagax		0.04		
Flatheads			0.01	0.03	
Black bream	Acanthopagrus butcheri		0.01	0.1	
Southern garfish	Hyporhamphus melanochir		<0.01		
Squid			<0.01		
Flounders			<0.01	0.01	
Tuna spp.*		В			
Bream*		В			
Crab*		В			
Prawn		В			
Squid		В			
Unidentified fish		В	<0.01		

Broader risks to the ecosystem and environment considered by the risk assessment included garbage. Problems with recreational fishers leaving their garbage behind after fishing were identified and considered to be Low risk. Commercial fishers undertake short trips and the bait used is not packaged. Both considerations were expected to reduce the risk resulting from commercial operations, which was assessed as Negligible.

Risk assessment findings for specific components are discussed under the relevant headings below.

## **Primary and secondary species**

An overview of species caught across UoAs, and primary species classifications as main or minor, is provided in Table 11. Species for which significant relevant information is available are considered first below, followed by UoA-specific information including catch composition and management.

Commercial fishers are required to report catch and effort information by fishing method monthly. This must include catch retained (by species, kg), number of days fished, daily effort (average hours fished/day, average net length deployed/day), and ETP species interactions. Aggregated monthly data and lacking clarity around how fishers report effort (e.g. hours fished) mean that fine-scale fishery dynamics are difficult to elucidate from catch and effort data and caution is required when using these records (Duffy et al. 2021). Commercial fishing vessels are monitored twice per month in the blue swimmer crab fishery. Monitoring includes enumerating non-target species bycatch and unwanted catch (and recording its life status).

Across WA, a biennial recreational fishery survey has been conducted, most recently in 2017/18 (Ryan et al., 2019). The survey usually includes phone diary surveys, on-site boat ramp surveys and remote camera monitoring. Information on catch, effort, fishing location and demographic information is collected (Duffy et al. 2021). There were 240 diarists active in the Peel-Harvey fishery in the most recent survey, selected at random from the recreational vessel fishing licence pool. An example of the information collected from diarists is presented in Figure 11 (showing reported drop net locations). In 2015/16 and 2017/18, boat-based fishers involved in the survey were also asked about shore-based fisher activities. In the future, the boat-based fishers' survey is planned every three years. Camera monitoring occurs at three high-use sites, with an image recorded every eight seconds. A random sample of 10 days of imagery is then analysed per month (Taylor et al. 2018; Desfosses et al. 2021).

Some fishery independent information has been collected from seine net surveys conducted at several sites in WA. This programme was discontinued between 2016 – 2020 and recommenced in September 2020. Collection of recruitment information is a key goal, with surveys occurring monthly between September – April. Focal species include tailor, sea mullet, West Australian salmon, Australian herring, and yellowfin whiting.

Primary and secondary main and minor species are described below. Almost all secondary minor species were data deficient (Table 22).



Figure 11. Drop net fishing locations reported by iSurvey diarists, 2017/18. From DPIRD, unpubl.

#### **Primary main species:**

• Sea mullet (*Mugil cephalus*)

Background on stock status and management for this species is provided in section 0.

#### **Primary minor species:**

• Blue swimmer crab (*Portunus armatus*)

Background on stock status and management for this species is provided in section 0.

• Western rock octopus (Octopus djinda, formerly O. aff. tetricus)

Western rock octopus is subject to a harvest strategy; the species is targeted by the Octopus Interim Managed Fishery (Hart et al. 2018, 2019). This fishery is MSC-certified, with most licence holders

included in the Unit of Certification since 2019<sup>1</sup>. The harvest strategy uses standardised CPUE as the primary performance indicator, with soak time, distance between traps set, and month among six standardised factors. The harvest strategy also utilises the biomass index at the beginning of the trigger trap fishery, and the target (B40), threshold (B30), and limit (B20) biomass-based reference levels as key parameters. Actions are specified for when threshold and limit reference points are reached (Hart et al., 2019). The weight-of-evidence assessment conducted in 2018 concluded that there was a low risk of unacceptable stock depletion (Hart et al., 2018). The harvest strategy applying to the stock is under review. The stock is considered to be Low risk from the Peel-Harvey Estuary fishery (Fisher et al., 2020). Fishery independent depletion experiments suggest that a small proportion of octopus habitat is fished (<10%) (Hart et al., 2019).

Western rock lobster (Panulirus cygnus)

This species supports a managed fishery, which is MSC-certified and the stock is sustainably fished (Daume et al. 2017; Daume and Morison 2020). Management arrangements include total allowable commercial and recreational catches. Most of the lobster's range is not recreationally fished. A harvest strategy supported management 2014-2019 and has been under review. The primary objective of this strategy was: 'To ensure that the egg production in Breeding Stock Management Areas of the Fishery remains above its threshold value for the next five years with a probability greater than 75%'.

Stock status is evaluated using a weight of evidence approach based on empirical and modelled estimates of a range of indices, including catches, catch rates, recruitment, egg production and harvest rate<sup>2</sup>. Limits and thresholds are clearly specified in relation to stock biomass in defined reference periods (de Lestang et al. 2016). For recreational fishers (such as those active in UoA 2), a daily bag and boat limit apply (Johnston et al., 2015).

Australian herring (Arripis georgianus)

Johnston et al. (2015) reported state-wide declining catch rates for this species, which were attributed to environmental factors and overfishing. Management measures designed to introduce the commercial and recreational catch were introduced as a result and the stock is identified as Recovering (Gaughan & Santoro 2020). Landings from the Peel-Harvey Estuary were estimated at approximately 1% of state-wide landings. In the Estuary, the reference level for this species is an annual commercial catch of <9 t and catch in 2019 was below this. The assessed risk of the fishery was Negligible (Fisher et al., 2020).

For Western Australia, the stock is considered to be above the limit reference point (20% unfished biomass), and the current level of fishing is expected to not result in depletion to the point of recruitment impairment. Catch-MSY (CMSY) analysis at the national level predicted an increase in biomass at current catch levels (albeit with high levels of uncertainty)<sup>3</sup>.

A combined finfish bag limit of 30 fish per fisher applies to Australian herring, whiting (excluding King George whiting) and garfish. Within this, the Australian herring limit is 12 fish (Duffy et al., 2021).

<sup>2</sup> https://fish.gov.au/report/176-Western-Rock-Lobster-2018 [Accessed 20 February 2021]

<sup>3</sup> https://fish.gov.au/report/220-Australian-Herring-2018 [Accessed 17 February 2021] Approval Date: 19.10.2020 05:53:29

<sup>&</sup>lt;sup>1</sup> https://fisheries.msc.org/en/fisheries/western-australian-octopus-fishery/@@assessments [Accessed 5 March 2021]

#### West Australian dhufish

The frames of West Australian dhufish are used as bait, not other fish parts. Frames comprise waste resulting from other fishing activities (i.e. the fish are not landed specifically for bait use). Therefore, this species does not require assessment<sup>4</sup>.

Tuna, squid, prawn and unidentified fish used as bait (Table 11)

Tuna used as bait may include heads or frames.

It is unknown which species/source of these bait species comprise.

#### Secondary main species:

Yelloweye mullet (*Aldrichetta forsteri*)

Over the five years to 2018, this species' biomass was considered to be between the limit (20% unfished biomass) and target (40% unfished biomass) reference points. The CMSY method is used to evaluate stock status<sup>5</sup>. A time series of catch information is used to provide annual estimated of biomass and harvest rate. Current catch is below the estimated MSY level of 24 t (Fisher et al. 2020 and references therein).  $F_{2019}$  was too low to be estimated and was below  $F_{MSY}$  (0.15/year). Relative stock biomass was estimated at 0.9 of the unfished level (95% confidence limits: 0.8-1.0). Under current fishing pressure, depletion and recruitment impairment are considered unlikely to occur<sup>5</sup>.

The target catch for yelloweye mullet has been identified as annual commercial catch of < 46 t (DPIRD, 2020b). The relationship between this target level and the more recently estimated MSY level could not be confirmed for this assessment (DPIRD, unpubl.).

The stock is considered at Low risk of Estuary fishery impacts (Fisher et al., 2020).

Estuary cobbler (*Cnidoglanis macrocephalus*) •

Fishing and habitat degradation are thought to have resulted in a historic stock decline in estuary cobbler in south-western Australia (Smith & Lenanton 2021). Peel-Harvey Estuary cobbler forms a discrete stock. Catch rate and amount have been used as stock performance indicators with target values of annual commercial catch rate >6 kg/day and annual commercial catch <9 t (Johnston et al., 2015). In 2018 and 2019, both indicators were within the target range (Fisher et al, 2020; and references therein). While CMSY analysis has been used in the past to assess stock status<sup>6</sup>, reconsideration of catch rate data quality has led to risk assessment becoming the basis for assessing stock status. This species is evaluated as being stable (at a lower than historic level) and at Medium risk from commercial net fishing, and the Estuary fishery overall. Other fishing methods are assigned negligible risk (Fisher et al., 2020). Precautionary management has been recommended in degraded environments where multiple stressors affect this species (Smith & Lenanton 2021).

The commercial catch of this species has declined in the past 20 years, because of reductions in gill net fishing effort. Some unlawful recreational fishing has been reported.

Perth herring (Nematalosa vlaminghi)

<sup>6</sup> https://fish.gov.au/report/187-Estuary-Cobbler-2018 [Accessed 17 February 2021] Approval Date: 19.10.2020 05:53:29

<sup>&</sup>lt;sup>4</sup> https://mscportal.force.com/interpret/s/article/Assigning-bait-category-in-FCR-v2-0-plus-RBF-and-cumulativeconsiderations-FCR-v2-0-SA-3-1-7-SA-3-4-2-GSA-3-4-2-1527262006141 [Accessed 27 March 2021] <sup>5</sup> https://fish.gov.au/report/379-Yelloweye-Mullet-2020 [Accessed 22 June 2021]


This species is anadromous, spawning in rivers then returning to the sea. Commercially harvested fish are on their pre-spawning migration. The species' anadromous life history contributes to its vulnerability to fishing pressure. Environmental degradation has affected spawning and nursery areas. Total mortality of the Peel-Harvey Estuary stock has been estimated at three times the unexploited stock occurring in the Swan-Canning Estuary, using age structure data (Smith et al., unpubl.).

Catch and effort have fluctuated over time (Figure 12), with catches generally higher in the past 20 years after a protracted period of very low catches in the 1980s through mid-1990s. The target catch for this species is currently < 2.7 t, and this target was met in 2019 (DPIRD 2020b). The risks associated with the cumulative impact of the Estuary fishery, and the impact of commercial net fishing, are assessed as High for this stock. Measures to reduce this risk are considered necessary by DPIRD. Risks from other fishing methods are considered Negligible (Fisher et al., 2020; and references therein).

The stock is classified as main while comprising 2% of the retained catch weight for UoA 4, due to its inherent vulnerability.



Figure 12. Annual catch (t) of Perth herring and annual number of fishing days on which this species was retained in the Peel Harvesy Estuary, as reported by commercial fisher statutory monthly catch and effort returns 1975 – 2020. From DPIRD 2021.

• Yellowfin whiting (*Sillago schomburgkii*)

The stock is caught by commercial and recreational fishers and expected to increase in abundance under a warming climate. It occurs in coastal and estuarine habitats and spawns in the ocean. The stock is discrete, having limited connectivity with others of the same species (Fisher et al. 2020 and references within). Spawning occurs in oceanic waters in the West Coast Bioregion, around the Peel-Harvey Estuary mouth, and in the Hardy Inlet (Duffy et al., 2021).

Above average yellowfin whiting catches were recorded in 2014 and 2015, as a result of strong recruitment. Catch declined in 2018 but 2019 catch of 15.8 t exceeded the threshold level (set at 13.8 t). An age-based assessment of the stock was undertaken. Its key finding was that yellowfin whiting abundance in the Estuary fluctuates due to variable recruitment between years (Daume & Hartmann, 2020).

Spawning potential ratios (SPR) estimates are between the Target ( $>B_{MSY}$ ) and Threshold ( $B_{MSY}$ ) reference levels. A CMSY analysis estimated relative stock biomass (2019) as 0.87 (95% confidence limits: 0.78-0.95) of the unfished biomass. F2019 was estimated at 0.07 (95% confidence limits: 0.06-0.11) and below the F<sub>MSY</sub> of 0.3 (Duffy et al., 2021). Overall, it was concluded that the stock is unlikely to be depleted given the current level of harvest. However, if annual catches increase significantly, SPR estimates indicate that an increased likelihood of depletion should be expected (Duffy et al. 2021).

A 'soft trigger' of 10 t was set in 2020, and 12 t was identified as the catch tolerance level. The harvest strategy states that DPIRD will meet with stakeholders in-season if the trigger is reached, to explore the appropriateness of the 12 t tolerance level for that season (considering fishing and environmental factors) (DPIRD 2020a). If catch in excess of a tolerance level occurs without being accounted for (e.g. by environmental impacts or arrangements between fishing sectors), fishery performance is deemed unacceptable. A review of management arrangements is triggered and the need for a review of stock status, HCR, and/or tolerance levels (DPIRD, 2020a).

Current fishing pressure is considered to be sustainable, based on evidence including a catch curve and per-recruit assessment of 2015 and 2016 age composition data. Management includes limited entry and gear restrictions for commercial fishers, and bag limits for recreational fishers<sup>7</sup>.

The Estuary fishery risk to this species was assessed as Medium (Fisher et al., 2020).

#### Secondary minor species:

• Tailor (*Pomatomus saltatrix*)

The target catch level for this species is <9 t. Catches in 2019 were well below this (DPIRD 2020b).

In response to a decrease in size and catch rate before 2000, bag and size limits were introduced to reduce the recreational harvest of this species<sup>8</sup>. Now, a size limit (300 mm), an individual daily bag limit (eight fish) and a mixed species daily bag limit (16 fish per fisher) apply (Duffy et al., 2021). Recruitment appears to have been stable over time.

The species is managed, but management targets and limits do not appear to be linked to biological reference points currently. Therefore, it is classified as a secondary species.

• Australian sardine (*Sardinops sagax*)

The exploitation rate of stocks occurring off Western Australia has been estimated at <5% of the estimated spawning biomass. Climatic influences are thought to be causing a southward contraction in the species range (Gaughan and Santoro 2020). State and Commonwealth management is in place, which includes limited entry and gear restrictions in the commercial fishery, and bag and possession limits in the recreational fishery<sup>9</sup>.

• West Australian salmon (Arripis truttaceus)

Size (300 mm) and bag (four fish) limits are in place for recreational fishers (Duffy et al., 2021).

• King George whiting (*Sillaginodes punctata*)

Size (280 mm) and bag (12 fish) limits are in place for recreational fishers (Duffy et al., 2021).

<sup>9</sup> https://fish.gov.au/report/186-Australian-Sardine-2018 [Accessed 17 February 2021] Approval Date: 19.10.2020 05:53:29

<sup>&</sup>lt;sup>7</sup> https://fish.gov.au/report/213-Yellowfin-Whiting-2018 [Accessed 17 February 2021]

<sup>&</sup>lt;sup>8</sup> https://fish.gov.au/report/215-Tailor-2018 [Accessed 17 February 2021]



#### Catch, bait use and management in the Units of Assessment:

#### • UoA 1

Non-target catch is occasional only. Western rock octopus (a minor primary species) are occasionally caught in crab traps, with catches ranging from 5 - 129 kg in the five-year period 2014/15 - 2018/19 (Table 12).

Five species have been recorded from DPIRD's monthly trap monitoring conducted between May 2014 and May 2019 (Table 13). Among these, only the four-lobed swimming crab (*Thalamita sima*) was represented in more than one trap-lift. This species has a broad distribution well outside the Estuary, and stock-wide impacts are considered likely to be undetectable (Fisher et al., 2020).

The findings of monthly monitoring conducted by DPIRD staff shows that other than for the target species blue swimmer crab, the number of unwanted catch items is extremely small in this trap fishery. For example, the discarded four-lobed swimming crab comprises 0.03% of the total number of catch items (Table 13). Excluding blue swimmer crab and four-lobed swimming crab, catch items in Table 13 were only recorded from a single trap lift (Fisher et al., 2020). Monthly monitoring by DPIRD staff on commercial crabbing vessels has occurred since 2007.

Entrance gaps incorporated into the design of traps are reported to enable the escape of fish that enter traps (Fisher et al., 2020). All fishers are reported by DPIRD to have incorporated escape gaps into their gear, after the trial period 2006 – 2010.

Sea mullet and yelloweye mullet are main species as bait used in this UoA, and locally sourced (Table 14; Fisher et al., 2020). Unwanted catch of yelloweye mullet has been recorded in net fisheries (Table 21).

Table 12. Catch retained in the Peel-Harvey Estuary crab trap fishery (UoA 1), 2014/15 – 2018/19. From Fisher et al., 2020.

Species	Retained catch (tonnes)							
Species	2014/15	2015/16	2016/17	2017/18	2018/19	Average	retained	
Blue swimmer crab	96.8	57.7	55.1	96.6	65.4	74.5	99.92%	
Octopus	0.005	0.023	0.032	0.103	0.129	0.058	0.08%	

Table 13. Catch items counted (by number) in commercial traps set for blue swimmer crabs in the Peel-Harvey Estuary (UoA 1). Data collected from 4,596 trap lifts, during monthly monitoring trips conducted by Department of Primary Industries and Regional Development, May 2014 – May 2019. From Fisher et al., 2020.

Species	Retained catch	Discarded catch	Total catch
Blue swimmer crab (Portunus armatus)	30,156	14,382	44,538
Four-lobed swimming crab (Thalamita sima)	0	12	12
Green mud crab (Scylla serrata)	0	1	1
Common blowfish (Torquigener pleurogramma)	0	1	1
Western striped trumpeter (Pelates octolineatus)	0	1	1
Estuary cobbler (Cnidoglanis microcephalus)	0	1	1
Total	30,156	14,398	44,554

Table 14. Estimated amount of bait used in the Peel-Harvey Estuary commercial crab trap fishery (UoA 1). From Fisher et al., 2020.

Year	No. of traplifts	Bait type	Amount used per trap (kg)	Total bait used (kg)
2014/15	69,888	Sea mullet Yelloweye mullet	0.3	20,966
2015/16	56,746	Sea mullet Yelloweye mullet	0.3	17,024
2016/17	52,874	Sea mullet Yelloweye mullet	0.3	15,862
2017/18	62,400	Sea mullet Yelloweye mullet	0.3	18,720
2018/19	58,044	Sea mullet Yelloweye mullet	0.3	17,413

#### • UoA 2

Non-target species caught in recreational drop nets have not been quantified recently, though information available from 2007/2008 and earlier includes low levels of primary and secondary species captures, e.g. Australian herring, western rock lobster, common blowfish (*Torquigener pleurogramma*), King George whiting (*Sillaginodes punctata*) (Table 11; Table 15). Johnston et al. (2015) noted that these data have not been independently validated and may not be representative of the fishery bycatch.

At the time of the first assessment of this fishery (Morison et al., 2016), bait used by this UoA was reported to comprise mostly sea mullet, chicken or lamb, based on 19 survey responses collected in December 2014 (



Table 16). Bait was reported to be sourced from a store (sea mullet, tuna), or caught by the fisher in the Estuary or at another location (Johnston et al., 2015). Bait information collected from the Recreational Angler Logbook Program identifies several additional bait types (Table 17). While the source stocks of these baits are unknown (e.g. for prawn and squid), the amounts used are considered to be minor. Management of source stocks cannot be assessed, therefore, they cannot be categorised as primary species.

While catch and bait usage information does not allow direct calculation of the proportions of total catch that comprise bait, the gear type is similar to the commercial trap fishery, and it appears reasonable that similar amounts of bait would be used. On a precautionary basis, sea mullet is considered a main species, as bait used in this UoA. Other in-scope species are used as bait in minor quantities (

Table 16). The frames of West Australian dhufish are used as bait. Frames comprise waste resulting from other fishing activities (i.e. the frames are not landed specifically for bait use) and therefore this species is out of scope for this assessment.

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Table 15. Retained and discarded catch composition (as number of catch items), compiledfrom surveys of recreational drop net fishers. From Johnston et al., 2015.

Chaolog	Retaine	d catch	Discarde	ed catch	Total	% of
species	1998/99	2007/08	1998/99	2007/08	catch	total
Blue swimmer crab	21,142	8,646	25,762	12,093	67,643	99.49%
Australian herring	70	49	14	2	135	0.20%
Tailor	10	18	5	37	70	0.10%
Mussels	48	0	0	0	48	0.07%
Common blowfish	12	0	10	11	33	0.05%
General/sand whiting	11	1	0	5	17	0.03%
King George whiting	6	4	0	0	10	0.01%
Western school whiting	1	0	7	0	8	0.01%
Rough leatherjacket	0	0	2	3	5	0.01%
Pufferfish, toadfish and tobies	0	0	0	5	5	0.01%
Wrasses/gropers	0	0	0	5	5	0.01%
Western rock lobster	0	4	0	0	4	0.01%
Striped trumpeter	0	2	0	0	2	<0.01%
Trumpeters/grunters	2	0	0	0	2	<0.01%
Southern school/silver whiting	0	1	0	0	1	<0.01%
Silver trevally	0	1	0	0	1	<0.01%
Western buffalo bream	1	0	0	0	1	<0.01%
Octopus	1	0	0	0	1	<0.01%
Brown-spotted wrasse	1	0	0	0	1	<0.01%
Stingray	0	0	0	1	1	<0.01%
Total	21,305	8,726	25,800	12,162	67,993	

Table 16. Bait usage reported by recreational drop net fishers participating in a survey conducted in the Peel-Harvey Estuary in December 2014. Note that percentages below are rounded to whole numbers, e.g. tuna, which comprises 4.5% of the bait usage events reported From Johnston et al., 2015.

Species	Number recorded	% of total*
Sea mullet	45	34%
Chicken	32	24%
Lamb	21	16%
Tailor	15	11%
Tuna	6	5%
Bream	4	3%
West Australian dhufish	4	3%
Silver trevally	3	2%
Trumpeter	2	2%
Crab	1	1%
Sand whiting	U	-
Spleen	U	-
Total	133*	

\*Does not include records of sand whiting and spleen

Table 17. Bait types reported during individual fishing events by recreational fishers using drop nets to target blue swimmer crabs in the Peel-Harvey Estuary (PHE), between December 2005 and March 2021 who voluntarily maintained a logbook as part of the Department of Primary Industries and Regional Development, Western Australia Recreational Angler Program, compared with bait types reported during individual fishing events by diarists in the Swan-Canning Estuary (SCE), Leschenault Estuary and wider Bunbury area (LE), Geographe Bay (GB), other areas of the West Coast Bioregion (OWC), and the South Coast (SCB) and Gascoyne Bioregions (GCB). "Other" for the PHE includes out of scope baits, such as fish heads, frames, chicken, cow spleen, and red meat offcuts). From DPIRD, unpubl.

		Fishing events									
		West Coast Bioregion									
Bait type	Pł	ΗE	SC	E	LE		GB		OWC	SCB	GCB
	n	%	n	%	n	%	n	%	n	n	n
Other	82	75	540	65	110	85	185	38	2	4	3
Small fish	14	13	180	22	7	5	227	47	3	0	2
Mulies	2	2	1	0	1	1	7	1	0	0	1
Multiple	2	2	10	1	9	7	23	5	0	0	0
Prawn	1	1	0	0	1	1	0	0	0	0	0
Squid	1	1	1	0	0	0	3	1	0	0	0
Crab	1	1	5	1	0	0	4	1	2	0	0
Strip bait	0	0	5	1	0	0	2	0.4	0	0	0
Not reported	6	6	92	11	1	1	32	7	0	0	2
Total	109		834		129		483		7	4	8



#### • UoA 3:

Scoop netters are known to land very few non-target species, though information is limited to past surveys and has become dated (Table 18). Johnston et al. (2015) noted that survey data were not independently validated and may not be representative of bycatch in the fishery. Australian herring and blowfish dominated non-target species catch (Table 11; Table 18).

Bait is not used in this UoA.

 Table 18. Numbers of retained and discarded catch items compiled from survey information

 reported by recreational scoop net fishers. From Johnston et al., 2015.

Species Name	Number Retained				Number Discarded				% Total
Species Name	1998	1999	2007	2008	1998	1999	2007	2008	Catch
Blue swimmer crab	304	696	24	959	371	627	290	1243	97.3
Australian herring	0	26	0	45	0	0	0	0	1.5
Mussels	18	0	0	0	0	0	0	0	0.4
Tailor	0	0	1	0	0	0	0	0	0.0
Common blowfish	0	0	0	0	0	0	0	34	0.7

#### • UoAs 4 and 5

A wider range of non-target species is caught in these UoAs (Table 11). Commercial catch records document retained catch (Table 19; Table 20). Three species occurred in catch volumes sufficient to be classified as main in the haul net fishery (yelloweye mullet, yellowfin whiting, and Perth herring). One additional main species was identified from the gill net fishery catch records (estuary cobbler) (Table 11).

The nature and extent of unwanted catch have also been explored in these UoAs. From the beginning of May 2017 to the end of April 2018, a voluntary monitoring programme was implemented, which all active licence-holders in the net fishery participated in. The programme covered 538 net shots, comprising 96% haul net shots and 4% from gill net shots (Table 21). This method split represents the use of net methods reported, suggesting the information obtained can also be considered representative. Government observers conducted bimonthly monitoring to validate the information collected, covering 29 shots (Fisher et al., 2020). The stated intent is that this monitoring of the commercial fishery will occur every five years (DPIRD, 2020a) and it recommenced in early 2021.

On average, fewer than four discards were recorded per haul net shot, compared to 12 discards per gill net shot. Discard weight was not recorded, but the proportion of shots from which discarded catch items were released was determined. The reasons catch was unwanted, and therefore discarded, included that retention was prohibited (blue swimmer crabs which can only legally be retained following trap capture; species caught below legal size, such as silver bream, tailor); the quality of catch items was poor (due to predation while catch remained in the net); or the species had no commercial value (e.g. blowfish). Post-capture survival was not estimated. Haul net discards were considered more likely to survive than unwanted catch extracted from gill nets (Fisher et al., 2020).

Mesh sizes in the fishery (reported as typically 50 – 100 mm) enable some escape of small-sized fish. Unwanted catch from nets is returned to the water during hauling or after landing. Nets can also be dropped into the water prior to landing catch, if fishers want to release fish (e.g. if a net's catch comprises largely unwanted species) (Fisher et al., 2020). If the weight per discarded item is very roughly estimated at 0.25 kg, the estimated weight of unwanted catch is reported to comprise 0.6% of the haul net fishery and 1.5% of the gill net fishery (Fisher et al., 2020).

Bait is not used in these UoAs. Gill net effort is reported to have declined to very low levels in recent years (Fisher et al., 2020).

Table 19. Retained catches (tonnes), 2015 – 2019, in the Peel-Harvey Estuary haul net fishery. From Fisher et al., 2020.

Species	Retained catch (tonnes)						
	2015	2016	2017	2018	2019	Average	retained
Sea Mullet	79.9	84.6	95.4	100.4	80.7	88.2	70%
Yellowfin Whiting	26.4	19.0	12.2	11.6	15.7	17.0	13%
Yelloweye Mullet	4.9	11.1	10.7	10.4	9.6	9.3	7%
Australian Herring	2.6	3.1	3.8	5.4	6.3	4.2	3%
Tailor	6.2	1.3	1.1	2.6	2.3	2.7	2%
Perth Herring	2.5	2.8	3.3	2.5	1.9	2.6	2%
King George Whiting	0.4	0.8	0.1	1.6	1.8	0.9	1%
Whitings, other	0.1	0.8	0.4	0.3	1.4	0.6	0.5%
Trevallies	1.1	0.8	0.4	0.3	0.2	0.5	0.4%
Estuary Cobbler	0.4	0.3	0.1	0.5	0.2	0.3	0.2%
Australian Sardine	0.2	0.1	0	0	0	0.1	0.04%
Common Silverbiddy	0.02	0.1	0.002	0.01	0.04	0.03	0.02%
Silver Trevally	0.08	0	0	0	0	0.02	0.01%
Flatheads	0.01	0.01	0.02	0.01	0.02	0.01	0.01%
Black Bream	0	0.02	0.003	0.02	0	0.008	0.01%
Southern Garfish	0.005	0	0	0	0.002	0.001	<0.01%
Squid	0	0	0	0	0.01	0.001	<0.01%
General Fish	0	0	0.005	0	0	0.001	<0.01%
Leatherjackets	0	0	0	0	0.005	0.001	<0.01%
Flounders	0	0	0	0	0.003	0.001	<0.01%
Total	124.7	124.8	127.4	135.6	120.2	126.5	

Table 20.	<b>Retained</b>	catches	(tonnes),	2015 -	2019,	in the	<b>Peel-Harvey</b>	Estuary	gill net	
fishery. F	rom Fisher	r <b>et al.,</b> 2	2020.							

Species	Retained catch (tonnes)						
	2015	2016	2017	2018	2019	Average	retained
Sea Mullet	11.1	1.8	5.2	2.4	0.8	4.2	55%
Estuary Cobbler	0.9	0.9	1.8	1.2	0.01	0.9	12%
Yelloweye Mullet	0.9	0.3	2.0	0.8	0.0	0.8	11%
Yellowfin Whiting	3.2	0	0.5	0.1	0.1	0.8	10%
Perth Herring	0.0	0	1.1	1.0	0	0.4	5%
Australian Herring	0.1	0	0.4	0.7	0.2	0.3	4%
Tailor	0.1	0	0.04	0.8	0.02	0.2	3%
Black Bream	0.01	0	0.03	0	0	0.1	0.1%
Flatheads	0	0	0.01	0	0	0.002	0.03%
King George Whiting	0.01	0	0.005	0	0	0.002	0.03%
Trevallies	0.01	0	0	0	0	0.001	0.01%
Flounders	0	0	0	0.002	0	0.0004	0.01%
Total	16.3	3.0	11.1	6.9	1.1	7.7	_

Table 21. Occurrence of unwanted catch that was discarded from haul and gill nets set by commercial fishers, between May 2017 and April 2018, in the Peel-Harvey Estuary. Fisher reporting was voluntary, and observers from the Department of Primary Industries and Regional Development monitored some shots. n = number of net shots included. From Fisher et al., 2020.

	Reported by fishers		Observed
Species	Haul nets (n = 514)	Gill nets (n = 24)	Haul and Gill nets (n = 29)
Blue swimmer crab (Portunus armatus)	49%	13%	38%
Silver bream (Rhabdosargus sarba)	31%	38%	34%
Common blowfish (Torquigener pleurogramma)	7%	33%	21%
Yelloweye mullet (Aldrichetta forsteri)	6%	54%	17%
Leatherjacket (Monacathidae)	3%	13%	7%
Common silverbiddy (Gerres subfasciatus)	1%		7%
King George whiting (Sillaginodes punctata)	1%	4%	7%
Tailor (Pomatomus saltatrix)	1%	4%	7%
West Australian salmon (Arripis truttaceus)	1%		3%
Black bream (Acanthopagrus butcheri)	1%		
Yellowtail grunter (Amniataba caudavittata)	0.4%		3%
Australian herring (Arripis georgianus)	0.2%		7%
Western striped trumpeter (Pelates octolineatus)	0.2%		7%
Smooth ray (Dasyatis sp.)	0.2%		
Estuary cobbler (Cnidoglanis macrocephalus)		4%	3%
Mulloway (Argyrosomus japonicus)		4%	3%

## Endangered, Threatened and Protected (ETP) Species

ETP are identified and managed through international agreements (including those identified by the MSC FS as defining ETP (SA3.1.5.2)), and Australian national legislation and state legislation (Western Australia), as follows:

- The Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment (JAMBA) 1974
- The Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment (CAMBA) 1986
- The Agreement between the Government of Australia and the Government of the Republic of Korea on the Protection of Migratory Birds (ROKAMBA) 2007
- Environment Protection and Biodiversity Conservation Act 1999
- Fish Resources Management Act 1994

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• Biodiversity Conservation Act 2016 (which superseded the Western Australian Wildlife Conservation Act 1950)

Requirements include reporting ETP interactions from commercial fisheries, and protection and management requirements for migratory birds (e.g. relating to preventing damage to birds' environments and preserving habitats). Sharks and rays are commercially protected in Western Australia and are only permitted to be retained by a specific number of commercial fisheries. Smooth stingray (*Dasyatis brevicaudata*) and black stingray (*Dasyatis thetidis*) are recreationally protected.

ETP occurring in the Estuary include at least 84 bird species (residents and migrants) (Appendix A in Fisher et al. 2020, and references therein), rays, syngnathids (*Hippocampus* spp.), and Indo-Pacific bottlenose dolphins. Commercial fishers are required by law to report ETP interactions in their statutory monthly catch and effort returns. These returns are checked by DPIRD research staff, and possible errors detected are checked with skippers or fishing licensees. ETP interactions with recreational fisheries may be detected if reported to the Department of Biodiversity, Conservation and Attractions Wildcare Helpline, and are otherwise unreported.

While interactions are considered possible with dolphins and seahorses, none are known to have occurred (Fisher et al., 2020). Therefore, these taxa are not scored in the assessment.

#### • UoA 1

One cormorant (*Phalacrocorax* spp.) was recovered from a crab trap during DPIRD monitoring of the fishery. The three month period when the Estuary is closed to crab trap fishing coincides with the arrival of migrant shorebirds (Fisher et al., 2020).

#### • UoA 2

No information is available about drop net interactions with ETP. Broad similarities with the crab trap design enable some comparison, and it has been concluded that impacts are likely to be low (Fisher et al., 2020).

#### • UoA 3

Crabs are targeted individually by fishers using the scoop net method. Fishers wade through the water to scoop net. Much of the Estuary is accessible to users of this method due to the shallow water depths, while there are some especially popular spots (e.g. Coodanup and Novara, in the Peel Inlet).

Disturbance of ETP (specifically birds) appears to be the main risk, which is addressed below. No other interactions are known.

#### • UoAs 4 – 5

The potential for net interactions with ETP including dolphins, birds and syngnathids has been identified. None have been reported since 2007 and none were observed by the DPIRD monitoring conducted in 2017/18 (Johnston et al., 2015; Fisher et al., 2020). In 2006 and 2007, interactions with cormorants were reported (five and two interactions respectively).

Affecting the spatial overlap with ETP and therefore the risk of interactions, haul net fishing generally occurs in shallower waters < 1 m in depth and nets are not set in place unattended, while gill nets are set (e.g. overnight) in deeper areas where fish movements are thought to occur. Net activity is focused away from densely vegetated areas, as macrophytes increase the weight of nets, making them harder to haul by hand (Fisher et al., 2020).

#### ETP impacts that do not result directly from fishing gear:

Aside from the impacts of the gear *per se*, ETP may be affected by the anthropogenic disturbance associated with recreational activities including fishing, boating and other watersports. In the initial MSC assessment of the Peel-Harvey Estuary fishery, aquatic birds and shorebirds were identified as at risk in this regard (Morison et al., 2016). Resident aquatic birds occur year-round in the Estuary, with more than 10 species recorded breeding there. Migrant shorebirds (including some that are classified as threatened) arrive from September onwards to spend the non-breeding season. From March, these migrants return to their northern hemisphere breeding sites. Replenishing their depleted reserves after migration and building up sufficient body weight to survive the return to their breeding sites is critical for the survival of these birds. Systematic shorebird monitoring has occurred in the Estuary since 2008, with counts being conducted from fixed sites in summer (Graff, 2019; Fisher et al,. 2020; and references within).

Disturbance of birds at their foraging and/or roosting sites resulting in the reduction of effective foraging time due to disturbance responses, wasted energy flying to evade disturbance, and utilisation of suboptimal areas for foraging have all been raised as issues at the Estuary (Graff, 2019; Fisher et al., 2020). Fishing (defined as line-fishing, crabbing) and boating were identified as the main causes of shorebird disturbance by Graff (2019). Disturbance was higher on weekends and public holidays than weekdays, and lower during the seasonal closure to crabbing. The level of disturbance also varied among sites. There was a negative relationship between shorebird abundance and disturbance, and birds often left areas when disturbed (Graff, 2019).

Data on the abundance and distribution of birds at the Estuary, and disturbance, contributed to the risk assessment conducted in 2020 (Fisher et al. 2020). The risk assessment categorised birds as migratory threatened species, migratory non-threatened species, non-migratory shorebirds (specifically considering the fairy tern and hooded plover, as well as other species) and other waterbirds (e.g. waterfowl).

Overall, a high risk of cumulative impact from the fishery was identified on migratory, threatened species. Disturbance from shore-based scoop net fishing activity on these birds was considered especially problematic (risk identified as high). These species are present at the Estuary October – March, and feed and roost in the same habitats used by scoop netters. Birds and fishers are also active day and night, and the findings reported by Graaf (2019) suggest that birds avoid popular scooping areas once the crabbing season opens, while using these areas in the closed season. For threatened species, it was considered possible that disturbance in Estuary habitats could impact recovery (Fisher



et al., 2020). In contrast, boat-based commercial and recreational fishers were considered to have negligible effects by Fisher et al. (2020) because of the water depths activity occurs in (i.e., vessels are not as close to birds as wading fishers).

For migratory non-threatened shorebirds, the risks of cumulative impact of the Estuary fishery, and the impact of scoop netting were considered Medium, while risks of other methods were considered negligible (Fisher et al. 2020). The difference between the High (threatened) and Medium (non-threatened) was related to the stability of the shorebird populations, rather than a difference in fishing impacts at the Estuary. Impacts on resident shorebirds were scored similarly (Medium, for cumulative impact and scoop-netting). Vessel-based fishers were considered to have negligible impacts for these ETP, as above. For other resident waterbirds, the cumulative impact and scoop netting impacts were considered to present a low risk, with other methods having Negligible risk (Fisher et al., 2020).

The need for new management measures to address disturbance of shorebirds has been identified (DPIRD, 2020b), and DPIRD plans to develop shorebird management measures in consultation with the relevant conservation groups, i.e. Birdlife WA and Peel-Harvey Catchment Council. A timeframe for this has not been finalised.

## **Habitats**

While some seasonal changes in habitats occur, 17 significantly different nearshore habitat types have been distinguished in the Estuary, using cluster analysis based on enduring and non-enduring habitat characteristics. Enduring characteristics were grouped into three categories: site location with respect to marine and riverine water sources, exposure to wave activity, and substrate and submerged vegetation types. Non-enduring characteristics were the physico-chemical attributes of estuarine waters, such as salinity, dissolved oxygen concentration and water temperature. Significant correlations were found between enduring and non-enduring habitat characteristics. Differences among habitats in fish and invertebrate assemblages were also correlated with differences in enduring characteristics. Habitats are somewhat dynamic, e.g. given seasonal changes (Valensini et al., 2009).

Macroalgae and seagrass are the main components of the Estuary's macrophyte biomass, occurring in large beds (Johnston et al. 2015). From the late 1970s through 2018, a general decrease in chlorophyta (*Willeella brachyclados*) was documented (especially in the eastern Peel Inlet), and a concomitant increase in seagrass biomass was recorded (especially in the western Peel Inlet and northern Harvey Estuary). Elevated salinity levels resulting from reduced river flows into the Estuary have contributed to the expansion of seagrass beds and the colonisation of the southern Harvey Estuary by seagrass in 2017/18 (Fisher et al., 2020; and references therein).

The dominant seagrass in 2009 was *Zostera* spp., followed by *Ruppia* sp., and *Halophila* sp. (Johnston et al., 2015). Since then, *Ruppia* sp. has become dominant, with changes in the macrophyte community correlating with reduced nitrogen concentrations in parts of the Estuary that are furthest from river inflows. Accumulations of chlorophyta occur around river mouths where higher nutrient loads prevail.

CSA (Consequence Spatial Analysis) and SICA (Scale Intensity Consequence Analysis) risk assessments of seagrass habitats considered the impacts of the haul and gill-net fisheries to be Medium and Low (using the CSA and SICA methods, respectively), while the pot, drop net and scoop net fisheries were assessed as Low risk to seagrass habitats. For trap fisheries, the risk of habitat impacts was related to the size and weight of traps, hauling depth and haul speed (Johnston et al. 2015). The impacts of scoop netter activity on habitats (i.e. impacts of fisher movements) are affected by the accessibility of fishing sites, crab distribution and fisher preferences (Fisher et al., 2020). Overlaying the scoop net fishery footprint with habitat information shows that chlorophyta biomass has increased in an area in which scooping effort occurs in the southern Harvey Estuary. In the Peel Inlet, key scoop netting areas have experienced an increase in seagrass cover and biomass relative to historical levels (Krumholz, 2019).

The first full MSC assessment of the UoAs considered here identified the following scoring elements for Habitat PIs: Macroalgae, seagrass, rocky and unconsolidated sediment habitat features. A condition was placed on recreational scoop net fishery (UoC3), requiring evidence that this UoC is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm, and considering overlap with habitat for bird species (especially threatened species) (Morison et al. ,2016). That condition was closed in the fourth surveillance audit (Daume & Hartmann, 2021).

In the risk assessment conducted by Fisher et al., (2020), habitats are divided into sand and mud, macroalgae, and seagrasses. Fishery risks of unacceptable cumulative UoA impacts on sand and mud habitats, and seagrass habitats, were considered low to negligible. For macroalgae, this risk was assessed as negligible.

For sand and mud habitats, key considerations in the risk assessment process were (Fisher et al. 2020):

• Substrate impacts of wading fishers, and fishing gear.

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- Drag of commercial gill and haul nets over the substrate (and benthos), noting that crab traps do not drag.
- Crab trap and drop net mesh is large enough to enable the escape of any macrobenthos that may be captured.
- Drop nets do not drag, but the number of them increases the potential for impacts.
- The large number of scoop netters wading in the Estuary shallows and margins in the summer months.

For macroalgae, the following considerations were highlighted (Fisher et al. 2020):

- Commercial haul and gill net fishers actively avoid these habitats because macroalgae loads make nets harder to haul.
- Macroalgae are dynamic, and not necessarily anchored to the substrate.
- Crab traps are not dragged across the substrate and these fishers can only operate on weekdays.

The risk of unacceptable impacts on seagrass was assessed as being higher than for macroalgae (while still low overall) because seagrasses are anchored to the substrate. This sessile habit was considered to increase susceptibility to trampling and net dragging. Further, crab traps occasionally bring up small amounts of seagrass (Fisher et al., 2020).

The closed season when crabbing is not permitted provides a 3-month period for recovery from any habitat impacts resulting from fishing activity.

Ongoing data collection on estuary habitats is planned by the WA Department of Water and Environmental Regulation (DWER). In January 2021, 457 sites were surveyed in the estuary and the survey will be repeated within four years (as part of the Healthy Estuaries WA programme, with potential for collaboration to be developed with DPIRD). DWER will compare historical information, considering sampling methods as appropriate, with the newly acquired and future survey data.

For the purposes of this assessment, seagrass beds were identified as VMEs and are therefore assessed as such (MSC FS GSA3.13.3.2). Habitat elements considered in this reassessment were those defined and evaluated by Fisher et al. (2020) for the most recent ecological risk assessment process.

Table 22 – Scoring elements								
Component	Scoring elements	Designation	Data-deficient					
P1	Blue swimmer crab	Target species	No					
P1, Primary	Sea mullet	Target species, Main	No					
Primary	Australian herring	Minor	No					
Primary	Western rock octopus	Minor	No					
Primary	Western rock lobster	Minor	No					
Primary	Tuna spp.	Minor	No (though species unknown)					
Secondary	Yelloweye mullet	Main	No					
Secondary	Estuary cobbler	Main	No					
Secondary	Yellowfin whiting	Main	No					
Secondary	Perth herring	Main	Yes					
Secondary	Silver bream	Minor	Yes					
Secondary	Common blowfish	Minor	Yes					
Secondary	Rough leatherjacket	Minor	Yes					
Secondary	Leatherjackets	Minor	Yes					
Secondary	Common silverbiddy	Minor	Yes					
Secondary	King George whiting	Minor	Yes					
Secondary	Tailor	Minor	Yes					
Secondary	West Australian salmon	Minor	No					
Secondary	Black bream	Minor	Yes					
Secondary	Yellowtail grunter	Minor	Yes					
Secondary	Western striped trumpeter	Minor	Yes					
Secondary	Striped trumpeter	Minor	Yes					



Secondary	Smooth ray	Minor	Yes
Secondary	Mulloway	Minor	Yes
Secondary	Four-lobed swimming crab	Minor	Yes
Secondary	Green mud crab	Minor	Yes
Secondary	Whitings/sand whiting	Minor	Yes
Secondary	Pufferfish, toadfish and tobies	Minor	Yes
Secondary	Wrasses/gropers	Minor	Yes
Secondary	Southern school/ silver whiting	Minor	Yes
Secondary	Silver trevally	Minor	Yes
Secondary	Stingray	Minor	Yes
Secondary	Trevallies	Minor	Yes
Secondary	Australian sardine	Minor	Yes
Secondary	Flatheads	Minor	Yes
Secondary	Southern garfish	Minor	Yes
Secondary	Squid	Minor	Yes
Secondary	Flounders	Minor	Yes
Primary or secondary	Bait of unknown species and provenance (squid, prawn, unidentified fish)	Minor	Yes
ETP	Birds (including cormorants, shorebirds and aquatic birds)		No
Habitats	Sand and mud	Commonly encountered, Main	No
Habitats	Macroalgae	Commonly encountered, Main	No
Habitats	Estuary water column	Commonly encountered, Main	No
Habitats	Seagrass	VME, Main	No
Ecosystem			No

## **Cumulative impacts**

Requirements for cumulative impacts were considered (e.g. with other Western Australian fisheries such as the Shark Bay Prawn Managed Fishery<sup>10</sup>). Such impacts did not require evaluation for the UoAs included in this assessment, as part of Principle 2. For example, there were no shared stocks of main species, or ETP for which national or international limits are in place.

### **7.3.2 Principle 2 Performance Indicator scores and rationales**

PI 2.1.1 – Primary species outcome: Blue swimmer crab, crab pots (UoA 1)

PI	2.1.1	The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI			
Scorir	ng Issue	SG 60	SG 80	SG 100	
	Main pr	imary species stock stat	tus		
		Main primary species are <b>likely</b> to be above the PRI.	Main primary species are <b>highly likely</b> to be above the PRI.	There is a <b>high degree</b> of certainty that main primary species are above the PRI and are	
		OR	OR	fluctuating around a level consistent with MSY.	
а	Guide post	If the species is below the PRI, the UoA has measures in place that are <b>expected</b> to ensure that the UoA does not hinder recovery and rebuilding.	If the species is below the PRI, there is either <b>evidence of recovery</b> or a demonstrably effective strategy in place <b>between all MSC UoAs</b> <b>which categorise this</b> <b>species as main</b> , to ensure that they collectively do not hinder recovery and rebuilding.		
	Met?	Yes	Yes	Νο	
Rationale					

There is one primary main species in this UoA, which is used as bait.

<u>Sea mullet</u>: Commercial catch data from the South Coast, West Coast and Gascoyne Coast bioregions (1941 – 2020) and catch rate information from Shark Bay (1956 – 2020) has been used to fit a Schaefer biomass dynamic model. Some issues with fit have occurred in recent years when model estimated CPUE values were larger than observed values. However, in 2020, B/B<sub>0</sub> was estimated as 0.90 (95% confidence limits: 0.89-0.91) and the B/B<sub>MSY</sub> as 1.80 (95% confidence limits: 1.50-2.11).  $F_{2020}$  was estimated as below  $F_{MSY}$ . The stock is highly likely to be above PRI. SG60 and SG80 are met.

95% confidence limits show the biomass to be well above the reference level associated with MSY. However, new information on stock structure has recently emerged and assessment approaches have recently been reconsidered and newly applied. There is not a high degree of certainty that main



primary species are above the PRI and are fluctuating around a level consistent with MSY. SG100 is not met.

	Minor primary species stock status			
				Minor primary species are highly likely to be above the PRI.
b	Guide			OR
2	post		If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.	
	Met?			Yes
Ratior	nale			

There is one primary minor species in this UoA.

<u>Western rock octopus</u>: This species is managed through a stock-wide harvest strategy. A weight-ofevidence assessment conducted in 2018 concluded that there was a low risk of unacceptable stock depletion. The assessment did, however, indicate that further work to investigate the efficiency of the fishing gear and spatial extent of the stock will be needed to provide a more accurate estimation of stock biomass. It has been estimated through depletion experiments that less than 10% of the octopus habitat is actively fished.

The UoA catches a very small amount of this stock, which would not hinder its recovery or rebuilding. SG100 is met.

#### References

DPIRD(2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-HarveyEstuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western AustralianMarineStewardshipCouncilReporthttp://www.fish.wa.gov.au/Documents/wamsc\_reports/wamsc\_report\_no\_3.pdf

Duffy, R., Harris, D., Fisher, E., Smith, K., Johnston, D., Denham, A. and Hesp. S.A. (2021). *Resource Assessment Report: South-West Estuarine and Nearshore. Finfish Resource. Part 1: Sea Mullet and Yellowfin Whiting.* Department of Primary Industries and Regional Development, Western Australia. http://www.fish.wa.gov.au/Documents/wamsc\_reports/wamsc\_report\_no\_3\_addendum\_4.pdf

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery. Fisheries Research Report No. 311.* Department of Primary Industries and Regional Development, Western Australia. http://www.fish.wa.gov.au/Documents/research\_reports/frr311.pdf

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Hart, A.M., Murphy, D., Hesp, S.A., Leporati, S. 2019. Biomass estimates and harvest strategies for the Western Australian *Octopus* aff. *tetricus* fishery. *ICES Journal of Marine Science* 76(7): 2205–2217. doi:10.1093/icesjms/fsz146

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	90
Condition number (if relevant)	ΝΑ

PI 2.1.1 – Primary species outcome: Blue swimmer crab, drop nets (UoA 2)

ΡI	2.1.1	The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI			
Scorir	ng Issue	SG 60	SG 80	SG 100	
	Main pr	imary species stock stat	tus		
		Main primary species are <b>likely</b> to be above the PRI. OR	Main primary species are highly likely to be above the PRI. OR	There is a <b>high degree</b> of certainty that main primary species are above the PRI <b>and are</b> fluctuating around a level consistent with MSY	
a	Guide post	If the species is below the PRI, the UoA has measures in place that are <b>expected</b> to ensure that the UoA does not hinder recovery and rebuilding.	If the species is below the PRI, there is either <b>evidence of recovery</b> or a demonstrably effective strategy in place <b>between all MSC UoAs</b> <b>which categorise this</b> <b>species as main</b> , to ensure that they collectively do not hinder recovery and rebuilding.	Consistent with MST.	
	Met?	Yes	Yes	No	
Ratior	Rationale				

There is one primary main species in this UoA, which is used as bait.

<u>Sea mullet</u>: Commercial catch data from the South Coast, West Coast and Gascoyne Coast bioregions (1941 – 2020) and catch rate information from Shark Bay (1956 – 2020) has been used to fit a Schaefer biomass dynamic model. Some issues with fit have occurred in recent years, when model estimated CPUE values were larger than observed values. However, in 2020, B/B<sub>0</sub> was estimated as 0.90 (95% confidence limits: 0.89-0.91) and the B/B<sub>MSY</sub> as 1.80 (95% confidence limits: 1.50-2.11). F<sub>2020</sub> was estimated as below F<sub>MSY</sub>. The stock is highly likely to be above PRI. SG60 and SG80 are met.

95% confidence limits show the biomass to be well above the reference level associated with MSY. However, new information on stock structure has recently emerged and assessment approaches have recently been reconsidered and newly applied. There is not a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY. SG100 is not met.

	Minor primary species stock status				
				Minor primary species are highly likely to be above the PRI.	
b	Guide			OR	
	post		If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.		
	Met?			Yes	
Ratior	nale				

<u>Western rock lobster</u>: This species supports a managed fishery, which is MSC-certified and the stock is sustainably fished. The stock status is evaluated using a weight of evidence approach updated in 2020. The stock was considered to be in a very healthy state. SG100 is met.

<u>Australian herring</u>: For Western Australia, the stock is considered to be above the limit reference point (20% unfished biomass), and the current level of fishing is expected to not result in depletion to the point of recruitment impairment. CMSY analysis at the national level predicted an increase in biomass at current catch levels (with high levels of uncertainty). Landings from the Peel-Harvey Estuary were estimated at approximately 1% of state-wide landings. The stock is considered to be above the PRI, and landings in the Estuary are at a level that the UoA would not hinder the recovery and rebuilding of the stock. SG100 is met.

<u>Tuna (unknown species)</u>: It is unknown what species of tuna is used, and the quantity. However, given the extent of the known use of this bait by the UoA and the size and status of tuna stocks, recovery and rebuilding would not be hindered even if the bait source was a tuna stock below PRI (which is considered unlikely). SG100 is met.

#### Other bait of unknown species/provenance:

The quantities of other baits known to be in use in the UoA are such that recovery and rebuilding of source populations would not be hindered. SG100 is met.

#### References

Daume, S. and Morison, A. (2020). *The Australian Western Rock Lobster Fishery. Surveillance report: Third surveillance.* Bio.inspecta.

Daume, S., Morison, A., Leporati, S. and Trott, P. (2017). *Australian western rock lobster fishery: MSC Full Assessment report*. SCS Global Services.

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DoF (2013). Key findings of the 2013 *West Coast Demersal Scalefish Resource Stock Assessment. Fisheries Management Paper No. 262*. Department of Fisheries, Perth.

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Duffy, R., Hughes, J., Drew, M. (2021). Australian Herring (*Arripis georgianus*). FRDC species report. https://fish.gov.au/report/220-Australian-Herring-2018 [Accessed 17 February 2021]

Draft scoring range	≥80
Information gap indicator	<b>More information sought</b> Source of WA dhufish used as bait (this species may not require assessment if frames used as bait are waste from other fishing activity).

## Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	90
Condition number (if relevant)	ΝΑ

PI 2.1.1 – Primary species outcome: Blue swimmer crab, scoop nets (UoA 3)

PI	2.1.1	The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scorin	Scoring Issue SG 60 SG 80		SG 100	
	Main pr	imary species stock stat	us	
а	Guide	Main primary species are <b>likely</b> to be above the PRI. OR	Main primary species are highly likely to be above the PRI. OR	There is a <b>high degree</b> of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.
	post	If the species is below the PRI, the UoA has measures in place that are <b>expected</b> to ensure that the UoA does not	If the species is below the PRI, there is either <b>evidence of recovery</b> or a demonstrably effective strategy in place <b>between all MSC UoAs</b>	



		hinder recovery and rebuilding.	which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.	
	Met?	NA	NA	NA
Ratio	hale			

There are no main primary species. This scoring issue is not scored.

	Minor primary species stock status			
				Minor primary species are highly likely to be above the PRI.
b	Guide			OR
	post			If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	Met?			Yes
Ratior	nale			

<u>Australian herring</u>: For Western Australia, the stock is considered to be above the limit reference point (20% unfished biomass), and the current level of fishing is expected to not result in depletion to the point of recruitment impairment. CMSY analysis at the national level predicted an increase in biomass at current catch levels (with high levels of uncertainty). Landings from the Peel-Harvey Estuary were estimated at approximately 1% of state-wide landings. The stock is considered to be above the PRI, and landings in the Estuary are at a level that the UoA would not hinder the recovery and rebuilding of the stock. SG100 is met.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100

References



Condition number (if relevant)

NA

### PI 2.1.1 – Primary species outcome: Sea mullet, haul nets (UoA 4)

PI	2.1.1	The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI			
Scorin	ng Issue	SG 60	SG 80	SG 100	
	Main pr	imary species stock stat	us		
а	Guide post	Main primary species are <b>likely</b> to be above the PRI. OR If the species is below the PRI, the UoA has measures in place that are <b>expected</b> to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are highly likely to be above the PRI. OR If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.	There is a <b>high degree</b> of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.	
	Met?	NA	NA	NA	
Rationale					

There are no main primary species caught in this UoA. This scoring issue is not scored.

	Minor p	primary species stock sta	atus	
				Minor primary species are highly likely to be above the PRI.
b	Guide			OR
-	post			If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	Met?			Yes
Ratior	nale			

<u>Blue swimmer crab</u>: This species is a component of discarded catch for the UoA. The primary indicator of stock status is standardised CPUE (kg/traplift). In 2019/20, this was well above the threshold level (1.07 kg/traplift, for a threshold of 0.7 kg/traplift). While some variability in catch levels has occurred,

catch remained within the target range. Fishing effort remained at a level that was not affecting stock recruitment. SG100 is met.

<u>Australian herring</u>: For Western Australia, the stock is considered to be above the limit reference point (20% unfished biomass), and the current level of fishing is expected to not result in depletion to the point of recruitment impairment. CMSY analysis at the national level predicted an increase in biomass at current catch levels (with high levels of uncertainty). Landings from the Peel-Harvey Estuary were estimated at approximately 1% of state-wide landings. The stock is considered to be above the PRI, and landings in the Estuary are at a level that the UoA would not hinder the recovery and rebuilding of the stock. SG100 is met.

#### References

DPIRD.(2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. DPIRD, Perth.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Duffy, R., Hughes, J., Drew, M. (2021). Australian Herring (*Arripis georgianus*). FRDC species report. https://fish.gov.au/report/220-Australian-Herring-2018 [Accessed 17 February 2021]

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

### PI 2.1.1 – Primary species outcome: Sea mullet, gill nets (UoA 5)

PI	2.1.1	The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue		SG 60	SG 80	SG 100
	Main pr	imary species stock stat	tus	
а	Guide	Main primary species are <b>likely</b> to be above the PRI. OR	Main primary species are highly likely to be above the PRI. OR	There is a <b>high degree</b> of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.
	post	If the species is below the PRI, the UoA has measures in place that are <b>expected</b> to ensure that the UoA does not	If the species is below the PRI, there is either <b>evidence of recovery</b> or a demonstrably effective strategy in place	

		ecta qomspecta	MSC Full Ass	21_390EN essment Reporting Template
		hinder recovery and rebuilding.	between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.	
	Met?	NA	NA	NA
Ratior	nale			

There are no main primary species caught in this UoA. This scoring issue is not scored.

	Minor p	Minor primary species stock status		
				Minor primary species are highly likely to be above the PRI.
b	Guide			OR
	post			If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	Met?			Yes
Ratior	nale			

<u>Blue swimmer crab</u>: This species is an important component of discarded catch for the UoA. The primary indicator of stock status is standardised CPUE (kg/traplift). In 2019/20, this was well above the threshold level (1.07 kg/traplift, for a threshold of 0.7 kg/traplift). While some variability in catch levels has occurred, catch remained within the target range set. Fishing effort remained at a level that was not affecting stock recruitment. SG100 is met.

<u>Australian herring</u>: For Western Australia, the stock is considered to be above the limit reference point (20% unfished biomass), and the current level of fishing is expected to not result in depletion to the point of recruitment impairment. CMSY analysis at the national level predicted an increase in biomass at current catch levels (with high levels of uncertainty). Landings from the Peel-Harvey Estuary were estimated at approximately 1% of state-wide landings. The stock is considered to be above the PRI, and landings in the Estuary are at a level that the UoA would not hinder the recovery and rebuilding of the stock. SG100 is met.

#### References

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DPIRD( 2020). Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 304. DPIRD, Perth.

DPIRD (2020). *West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4.* November 2020. Western Australian Marine Stewardship Council Report Series.

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

# PI 2.1.2 – Primary species management strategy: Blue swimmer crab, crab pots (UoA 1)

PI	2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch			
Scorin	ng Issue	SG 60 SG 80 SG 100			
	Manage	ment strategy in place			
а	Guide post	There are <b>measures</b> in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a <b>partial</b> <b>strategy</b> in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a <b>strategy</b> in place for the UoA for managing main and minor primary species.	
	Met?	Yes	Yes	Yes	
Rationale					

<u>Sea mullet</u>: This stock, used as bait fish by the UoA, is managed under the estuarine and nearshore finfish harvest strategy (DPIRD, 2020b), which uses a constant exploitation approach i.e. assuming that catches vary proportionally with varying stock abundance. Management is based on monitoring landed catch against specified reference levels. When the threshold reference level (designed to be equivalent to  $B_{MSY}$ ) is breached, a review is completed to develop a management response within 3 months. Catch would then be reduced across relevant sectors, up to 50% of the current harvest level, to enable stock recovery to the target level (>B<sub>MSY</sub>). If the limit (0.5B<sub>MSY</sub>) level is breached, catch would be reduced among relevant sectors as soon as practicable, by at least 50% of the current catch. The review would determine the management actions required to rebuild the stock to the target level in 2 generation times. This could include 100% catch reduction.

Management measures for commercial fishing identified in the harvest strategy for stocks targeted in the Estuary include limited entry for commercial fishers, effort restrictions, gear restrictions, spatial and temporal closures. Retained catch must be reported. Some monitoring of discarded catch occurs. The extent of gear loss in the sea mullet fishery is expected to be minimal. During haul netting, nets are not left unattended (UoA4). In the gill net fishery (UoA5), nets are set and left unattended. These nets have a float line which, together with the relatively shallow waters of the estuary, would facilitate recovery if any gear was lost. There is a strategy in place, which the UoA operates within, for managing this main species. SG60, SG80 and SG100 are met.

<u>Western rock octopus</u>: The strategy for managing UoA impacts is risk-based and set out as part of the blue swimmer crab harvest strategy. The risk of the UoA to octopus was considered Low in the 2020 risk assessment. The target reference level for retained species (including western rock octopus) is for fishing impacts to generate an acceptable (i.e. medium for lower) risk level. At that level, existing management continues. If a potential material change to risk level is identified, or, fishing impacts are considered to generate a high risk to species populations, a review would be completed within 3 months, and a management response implemented to reduce the risk level to Medium or lower as soon as practicable. An immediate management response is triggered if the limit reference level is reached,

that is, fishing impacts are considered to generate an unacceptable (severe) level of risk. Beyond the UoA, the species is managed through a stock-wide harvest strategy. The key performance indicator used in the stock-wide harvest strategy is annual standardised commercial catch rate in two designated areas. Target, threshold and limit catch rates are specified.

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Ecosystem risks (incorporating risks to primary species) associated with lost gear in this UoA were considered negligible in the risk assessment process that supports fishery management. The shallow waters fished would facilitate gear recovery in this UoA.

There is a strategy in place for the UoA for managing main and minor primary species. SG100 is met.

	Management strategy evaluation						
b	Guide post	The measures are considered <b>likely</b> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some <b>objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.			
	Met?	Yes	Yes	No – Sea mullet Yes – Western rock octopus			
Rationale							

The 2015 – 2020 harvest strategy for sea mullet set out reference levels in terms of commercial annual standardised catch rate and volume. The control rules specified were broadly similar to those in the new harvest strategy applying 2020 – 2025, i.e., triggering a review and management actions to reduce catch when a threshold or limit reference level is breached. In 2015 - 2018, catches of sea mullet were above threshold, which triggered an investigation of sustainability risk to the stock. However, by 2019, management responses had not been defined. The 2020 – 2025 harvest strategy for finfish now states a timeframe in which a review must occur. For sea mullet (as a target stock), the harvest strategy specifies that a '*recovery strategy will be developed and implemented to ensure that the resource can rebuild at an acceptable rate (i.e. within two generation times)*', if the stock declines below the limit reference level. There is some objective basis for confidence that the measures/partial strategy will work for this stock, based on some information directly about the fishery and/or species involved. SG60 and SG80 are met.

Testing of the partial strategy/strategy does not appear to have taken place. Therefore, it cannot support high confidence that the strategy will work for main species, based on information directly about the fishery and/or species involved. SG100 is not met.

For minor species at a stock-wide level, testing has occurred and supports high confidence that the partial strategy/strategy will work, based on information directly about the species involved. SG100 is met.

	Manage	Management strategy implementation				
С	Guide post	There is some evidenceThere is clethat the measures/partialthat the parstrategy is beingstrategy/strimplementedimplementsuccessfully.successfulachieving	ar evidence tial ategy is being ed ly and is its overall			

DIO		ta qomspecta		21_390EN MSC Full Assessment Reporting Template
	Met?		Yes	objective as set out in scoring issue (a). No - Sea mullet Yes – Western rock octopus
<b>D</b>				

Rationale

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There is some evidence that the measures/partial strategy is being implemented successfully. For sea mullet, catch levels are evaluated as below the level commensurate with MSY, and the stock is considered to be close to its unfished state. There have been delays in implementing management actions following threshold breaches in previous years. This issue has been addressed in the updated harvest strategy, with clear timeframes for the implementation of management responses for target species now stated.

Overall, there is some evidence that the measures/partial strategy is being implemented successfully. However, there is not clear evidence. SG80 is met. As yet, SG100 is not met given the finfish harvest strategy changes were made recently and evidence of successful implementation is not yet available.

For western rock octopus, a weight-of-evidence assessment conducted in 2018 concluded that the risk of unacceptable stock depletion was low. Similarly, the risk from the UoA was low. There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a). SG100 is met.

	Shark finning					
d	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.		
	Met?	NA	NA	NA		
Ratior	nale					

Sharks are not primary species for this UoA.

	Review	of alternative measures		
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

There is no unwanted catch of primary species reported. Gear loss in the sea mullet fishery is expected to be minimal, as discussed at (a). Ecosystem risks (incorporating risks to primary species) associated with lost gear in this UoA were considered negligible in the risk assessment process that supports fishery management.



This scoring issue is not scored.

#### References

Daume, S. & Hartmann, K. (2020). Western Australia Peel Harvey Estuarine Fishery Surveillance Report (Fourth Surveillance). Bio.inspecta.

Daume, S. & Morison, A. (2017). Peel Harvey Estuarine Fishery: 2017 MSC Surveillance Audit Report. SCS Global Services.

DPIRD (2020a). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020* – *2025.* Fisheries Management Paper No. 304. DPIRD, Perth.

DPIRD (2020b). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. DPIRD, Perth.

DPIRD (2020c). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

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Draft scoring range	<u>&gt;</u> 80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	95
Condition number (if relevant)	ΝΑ

PI 2.1.2 – Primary species management strategy: Blue swimmer crab, drop nets (UoA 2)

PI 2.1.2	There is a strategy in p rebuilding of primary s implements measures, unwanted catch	lace that is designed to mai pecies, and the UoA regular as appropriate, to minimise	ntain or to not hinder ly reviews and the mortality of
Scoring Issue	SG 60	SG 80	SG 100

	Manage	ment strategy in place		
а	Guide post	There are <b>measures</b> in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a <b>partial</b> <b>strategy</b> in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a <b>strategy</b> in place for the UoA for managing main and minor primary species.
	Met?	Yes	Yes	Yes – Sea mullet, Western rock lobster, Australian herring No – Tuna and minor bait species
Ration	ale			

<u>Sea mullet</u>: This stock, used as bait fish by the UoA, is managed under the estuarine and nearshore finfish harvest strategy (DPIRD, 2020b), which uses a constant exploitation approach (i.e. assuming that catches vary proportionally with varying stock abundance). Management is based on monitoring landed catch against specified target and threshold levels. When the threshold (designed to be equivalent to  $B_{MSY}$ ) is breached, a review is completed to develop a management response within 3 months. Catch would then be reduced across relevant sectors, up to 50% of the current harvest level, to enable stock recovery to the target level (>B<sub>MSY</sub>). If the limit (0.5B<sub>MSY</sub>) level is breached, catch would be reduced among relevant sectors as soon as practicable, by at least 50% of the current catch. The review would determine the management actions required to rebuild the stock to the target level in 2 generation times. This could include 100% catch reduction.

Management measures for commercial fishing identified in the harvest strategy for stocks targeted in the Estuary include limited entry for commercial fishers, effort restrictions, gear restrictions, spatial and temporal closures. Retained catch must be reported. Some monitoring of discarded catch occurs. This stock is not landed recreationally in the Estuary. The extent of gear loss in the sea mullet fishery is expected to be minimal. During haul netting, nets are not left unattended (UoA4). In the gill net fishery (UoA5), nets are set and left unattended. These nets have a float line which, together with the relatively shallow waters of the estuary, would facilitate recovery if any gear was lost. There is a strategy in place, which the UoA operates within, for managing this main species. SG60, SG80 and SG100 are met.

<u>Western rock lobster, Australian herring</u>: The strategy for managing UoA impacts is risk-based, and set out as part of the blue swimmer crab harvest strategy (DPIRD 2020a). The target reference level for retained species is for fishing impacts to generate an acceptable (i.e. medium for lower) risk level. At that level, existing management continues. If a potential material change to risk level is identified, or, fishing impacts are considered to generate a high risk to species populations, a review would be completed within 3 months, and a management response implemented to reduce the risk level to Medium or lower as soon as practicable. An immediate management response is triggered if the limit reference level is reached, that is, fishing impacts are considered to generate an unacceptable (severe) level of risk. Further, the Western rock lobster is subject to a stock-specific harvest strategy. Drop nets do not contain catch unless pulled into their upright position (see Figure 3), therefore, any lost gear would not fish while lying flat on the substrate. There is a strategy in place and SG100 is met. <u>Tuna and other minor bait species of unknown stock/provenance</u>: These are not covered by the harvest strategy and SG100 is not met.

	Management strategy evaluation					
b	Guide post	The measures are considered <b>likely</b> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some <b>objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.		
	Met?	Yes	Yes	No – Sea mullet, Australian herring Yes – Western rock lobster		
Ratior	nale					

The 2015 – 2020 harvest strategy for sea mullet set out reference levels in terms of commercial annual standardised catch rate and volume. The control rules specified were broadly similar to those in the new harvest strategy applying 2020 – 2025, i.e., triggering a review and management actions to reduce catch when a threshold or limit reference level is breached. In 2015 - 2018, catches of sea mullet were above threshold, which triggered an investigation of sustainability risk to the stock. However, by 2019, management responses had not been defined. The 2020 – 2025 harvest strategy for finfish now states a timeframe in which a review must occur. For sea mullet (as a target stock), the harvest strategy specifies that a 'recovery strategy will be developed and implemented to ensure that the resource can rebuild at an acceptable rate (i.e. within two generation times)' if the stock declines below the limit reference level. There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved. SG60 and SG80 are met.

Main and minor species are considered at SG100. Testing does not appear to have been conducted for the Australian herring, to support high confidence that the strategy will work, based on information directly about the fishery and/or species involved. SG100 is not met.

For western rock lobster, the stock specific harvest strategy is under review. Performance of the previous strategy is sufficient to comprise testing to support high confidence that the partial strategy/strategy will work, based on information directly about the species involved. SG100 is met.

	Management strategy implementation					
с	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> <b>successfully and is</b> <b>achieving its overall</b> <b>objective as set out in</b> <b>scoring issue (a).</b>		
	Met?		Yes	No – Sea mullet Yes – Australian herring, Western rock lobster		



#### Rationale

There is some evidence that the measures/partial strategy is being implemented successfully. For sea mullet, catch levels are evaluated as below the level commensurate with MSY, and the stock is considered to be close to its unfished state. There have been delays in implementing management actions following threshold breaches in previous years. This issue has been addressed in the updated harvest strategy for this target species. Overall, there is some evidence that the measures/partial strategy is being implemented successfully. However, there is not clear evidence. SG80 is met, while SG100 is not.

For Australian herring, the stock is considered to be above the PRI, and landings in the Estuary are at a level that the UoA would not hinder the recovery and rebuilding of the stock (approximately 1% of state-wide landings). There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a). SG100 is met.

For western rock lobster, there is clear evidence that the previous harvest strategy (now under review) was implemented successfully and achieved its overall objective. SG100 is met.

	Shark fi	Shark finning					
d	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.			
	Met?	NA	NA	NA			
Ratior	nale						

Sharks are not primary species for this UoA.

	Review of alternative measures				
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.	
	Met?	NA	NA	NA	
Rationale					

The main primary species is sea mullet, caught in UoAs 4 and 5. There has been no unwanted catch of sea mullet recorded in discard monitoring undertaken. Ghost fishing risks through gear loss in these UoAs are considered negligible. Haul nets are actively fished. Gill nets are set and left unattended, however the shallow waters of the Estuary and float line of these nets are both expected to facilitate recovery of any lost gear.

Unwanted catch of minor species is negligible, based on the information available.



#### References

Daume, S. & Hartmann, K. (2020). *Western Australia Peel Harvey Estuarine Fishery Surveillance Report (Fourth Surveillance)*. Bio.inspecta.

Daume, S. & Morison, A. (2017). *Peel Harvey Estuarine Fishery: 2017 MSC Surveillance Audit Report*. SCS Global Services.

Daume, S. & Morison, A. (2020). *The Australian Western Rock Lobster Fishery: 2020 MSC Surveillance Audit Report.* Bio.inpecta.

DPIRD (2020a). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020* – 2025. Fisheries Management Paper No. 304. DPIRD, Perth.

DPIRD (2020b). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. DPIRD, Perth.

DPIRD (2020c). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery.* Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

Hart, A.M., Murphy, D., Hesp, S.A., Leporati, S. 2019. Biomass estimates and harvest strategies for the Western Australian *Octopus* aff. *tetricus* fishery. *ICES Journal of Marine Science*, 76(7): 2205–2217. doi:10.1093/icesjms/fsz146

Draft scoring range	<u>&gt;</u> 80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	85
Condition number (if relevant)	ΝΑ

PI 2.1.2 – Primary species management strategy: Blue swimmer crab, scoop nets (UoA 3)

PI	2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch				
Scorir	ng Issue	SG 60	SG 80	SG 100		
а	Manage	Management strategy in place				
	Guide	There are <b>measures</b> in place for the UoA, if	There is a <b>partial</b> <b>strategy</b> in place for the	There is a <b>strategy</b> in place for the UoA for		

	21_3 MSC Full Assessment Reporting Tem			21_390EN essment Reporting Template
	post	necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	managing main and minor primary species.
	Met?	Yes	Yes	Yes
Rationale				

There are no main primary species. SG60 and SG80 are met by default.

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<u>Australian herring</u>: The strategy for managing UoA impacts is risk-based, and set out as part of the blue swimmer crab harvest strategy (DPIRD, 2020a). The target reference level for retained species is for fishing impacts to generate an acceptable (i.e. medium for lower) risk level. At that level, existing management continues. If a potentially material change to risk level is identified, or fishing impacts are considered to generate a high risk to species populations, a review would be completed within 3 months, and a management response implemented to reduce the risk level to Medium or lower as soon as practicable. An immediate management response is triggered if the limit reference level is reached, that is, fishing impacts are considered to generate an unacceptable (severe) level of risk. There is a strategy in place and SG100 is met.

b	Management strategy evaluation				
	Guide post	The measures are considered <b>likely</b> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some <b>objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.	
	Met?	Yes	Yes	Νο	
Rationale					

There are no main primary species. SG60 and SG80 are met by default.

The strategy for minor species is considered at SG100. At this point, testing has not been undertaken to support high confidence that the strategy will work, based on information directly about the fishery and/or species involved. SG100 is not met.

	Manage	Management strategy implementation				
с	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its overall objective as set out in scoring issue (a).		
	Met?		Yes	Νο		


#### Rationale

There are no main primary species. SG80 is met by default.

For minor primary species (the Australian herring), there is not recent clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a). SG100 is not met.

	Shark finning				
d	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.	
	Met?	NA	NA	NA	
Ratior	nale				

Sharks are not primary species for this UoA.

	Review	Review of alternative measures				
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.		
	Met?	NA	NA	NA		
Rationale						

There are no main primary species. The most recent information available shows negligible discarding of minor primary species. Therefore, this scoring issue is not scored.

#### References

DPIRD (2020a). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020* – *2025.* Fisheries Management Paper No. 304. DPIRD, Perth.

DPIRD(2020b). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

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Draft	cooring	***
Drait	scoring	range

<u>></u>80



Information gap indicator

Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	85
Condition number (if relevant)	NA

PI 2.1.2 – Primary species management strategy: Sea mullet, haul nets (UoA 4)

PI	2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch			
Scorin	ng Issue	SG 60	SG 80	SG 100	
Manag		ment strategy in place			
а	Guide post	There are <b>measures</b> in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a <b>partial</b> <b>strategy</b> in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a <b>strategy</b> in place for the UoA for managing main and minor primary species.	
	Met?	Yes	Yes	Yes	
Ratior	Rationale				

There are no main primary species. SG60 and SG80 are met by default.

The finfish harvest strategy (DPIRD, 2020b) describes the UoA management approach to minor primary species. This is risk based, with target (fishing impacts generate an acceptable, i.e. medium for lower risk level), threshold (a potentially material change to risk level is identified, or, fishing impacts are considered to generate a high risk to species populations) and limit reference levels (fishing impacts are considered to generate an unacceptable (severe) level of risk). At or in excess of threshold reference levels, a review would be completed within 3 months, and a management response implemented to reduce the risk level to Medium or lower as soon as practicable. On reaching a limit reference level, an immediate management response is triggered with actions to reduce the risk as soon as practicable.

The blue swimmer crab is also subject to a specific harvest strategy (DPIRD, 2020a), developed for the targeted crab fishery. The harvest strategy includes various objectives, thresholds and performance indicators, for managing the stock.

There is a strategy in place for the UoA for managing minor primary species. SG100 is met.

### **b** Management strategy evaluation



There are no main primary species. Therefore, SG60 and SG80 are met by default.

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Testing does not appear to have been conducted for the Australian herring, to support high confidence that the strategy will work, based on information directly about the fishery and/or species involved. SG100 is not met.

For the blue swimmer crab, performance of the stock-specific harvest strategy is sufficient to comprise testing to support high confidence that the partial strategy/strategy will work, based on information directly about the species involved. SG100 is met.

	Manage	Management strategy implementation				
с	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its overall objective as set out in scoring issue (a).		
	Met?		Yes	Yes		
Rationale						

There are no main primary species. Therefore, SG80 is met by default.

For blue swimmer crabs, annual catches have remained within the acceptable range set out by the harvest strategy through the past five seasons. There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a). SG100 is met.

For Australian herring, the stock is considered to be above the PRI, and landings in the Estuary are at a level that the UoA would not hinder the recovery and rebuilding of the stock (approximately 1% of state-wide landings). There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a). SG100 is met.

	Shark finning				
d	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.	
	Met?	ΝΑ	NA	NA	



### Rationale

Sharks are not primary species for this UoA.

	Review	Review of alternative measures				
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.		
	Met?	NA	NA	NA		
Rationale						

By weight, unwanted catch discarded in UoA 4 comprised an estimated 0.6% of total catch, in catch monitoring undertaken in 2017/2018.

Australian herring discards comprised 0.2% of discarded items. Blue swimmer crab comprised 49% of discards among the 0.6% of total catch that is unwanted; crabs cannot legally be retained by net fishers.

The extent of gear loss in the haul net fishery is expected to be negligible (nets are not left unattended when fishing). Therefore, unwanted catch from ghost fishing is considered negligible.

Overall, unwanted catch is considered negligible and the scoring issue is not scored.

### References

Daume, S. & Hartmann, K. (2020). *Western Australia Peel Harvey Estuarine Fishery Surveillance Report (Fourth Surveillance)*. Bio.inspecta.

Daume, S. & Morison, A. (2017). Peel Harvey Estuarine Fishery: 2017 MSC Surveillance Audit Report. SCS Global Services.

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Draft scoring range	<u>&gt;</u> 80
Information gap indicator	Information sufficient to score PI

# Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	95
Condition number (if relevant)	NA

PI 2.1.2 – Primary species management strategy: Sea mullet, gill nets (UoA 5)

PI	2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch			
Scoring Issue		SG 60	SG 80	SG 100	
	Manage	ment strategy in place			
а	Guide post	There are <b>measures</b> in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a <b>partial</b> <b>strategy</b> in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a <b>strategy</b> in place for the UoA for managing main and minor primary species.	
	Met?	Yes	Yes	Yes	
Ratior	Rationale				

There are no main primary species. SG60 and SG80 are met by default.

The finfish harvest strategy (DPIRD, 2020b) describes the UoA management approach to minor primary species. This is risk based, with target (fishing impacts generate an acceptable, i.e. medium for lower risk level), threshold (a potentially material change to risk level is identified, or, fishing impacts are considered to generate a high risk to species populations) and limit reference levels (fishing impacts are considered to generate an unacceptable (severe) level of risk). At or in excess of threshold reference levels, a review would be completed within 3 months, and a management response implemented to reduce the risk level to Medium or lower as soon as practicable. On reaching a limit reference level, an immediate management response is triggered with actions to reduce the risk as soon as practicable.

The blue swimmer crab is also subject to a specific harvest strategy (DPIRD, 2020a), developed for the targeted crab fishery. The harvest strategy includes various objectives, thresholds and performance indicators, for managing the stock.

There is a strategy in place for the UoA for managing main and minor primary species. SG60, SG80 and SG100 are met.



b	Guide post	The measures are considered <b>likely</b> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some <b>objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.	
	Met?	Yes	Yes	Yes – Blue swimmer crab No – Australian herring	
Rationale					

There are no main primary species. Therefore, SG60 and SG80 are met by default.

Testing does not appear to have been conducted for the Australian herring, to support high confidence that the strategy will work, based on information directly about the fishery and/or species involved. SG100 is not met.

For the blue swimmer crab, performance of the stock-specific harvest strategy is sufficient to comprise testing to support high confidence that the partial strategy/strategy will work, based on information directly about the species involved. SG100 is met.

	Manage	Management strategy implementation				
С	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its overall objective as set out in scoring issue (a).		
	Met?		Yes	Yes		
Rationale						

There are no main primary species. Therefore, SG80 is met by default.

For blue swimmer crabs, annual catches have remained within the acceptable range set out by the harvest strategy through the past five seasons. There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a). SG100 is met.

For Australian herring, the stock is considered to be above the PRI, and landings in the Estuary are at a level that the UoA would not hinder the recovery and rebuilding of the stock (approximately 1% of state-wide landings). There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a). SG100 is met.

Ь	Shark	fin	nin	a
ч	Shark			9

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	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.
	Met?	NA	NA	ΝΑ
Rationale				

#### Sharks are not primary species for this UoA.

	Review	of alternative measures			
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.	
	Met?	NA	NA	NA	
Bationale					

There are no main primary species. There is no unwanted catch reported of the Australian herring. Unwanted catch is considered negligible for blue swimmer crab in this UoA. Unwanted catch due to lost gear in the UoA is considered minimal. Nets have a float line which, together with the relatively shallow waters of the estuary, would facilitate recovery of any gear lost.

This scoring issue is not scored.

### References

Daume, S. & Hartmann, K. (2020). *Western Australia Peel Harvey Estuarine Fishery Surveillance Report (Fourth Surveillance)*. Bio.inspecta.

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DPIRD. (2020b). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 303. DPIRD, Perth.

DPIRD. (2020c). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

Draft scoring range	<u>&gt;</u> 80
Information gap indicator	Information sufficient to score PI

# Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	95
Condition number (if relevant)	NA

PI 2.1.3 – Primary species information – Blue swimmer crab, crab pots (UoA 1)

PI	2.1.3	Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species				
Scorir	ng Issue	SG 60	SG 80	SG 100		
	Informa	mation adequacy for assessment of impact on main primary species				
а	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is <b>adequate to</b> <b>assess</b> the impact of the UoA on the main primary species with respect to status. <b>OR</b> <b>If RBF is used to score</b> <b>PI 2.1.1 for the UoA:</b> Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species	Quantitative information is available and is <b>adequate to assess</b> with a high degree of certainty the impact of the UoA on main primary species with respect to status.		
	Met?	Yes	Yes	No		
Ratior	Rationale					

<u>Sea mullet</u>: There is some information on volumes of sea mullet bait used by the UoA in combination with yelloweye mullet. However, the usage of each species is unknown. Other quantitative information to assess the impact of the UoA includes catch rate and catch volume information, and age composition data (from different parts of the stock range). A Schaefer production model has been used as a basis to preliminarily conclude that catch is well below MSY-level. However, the model fit is not good in recent years, when model-estimated catch rates were larger than the observed values. New information on stock structure has recently emerged and assessment approaches have been reconsidered and newly applied. CPUE information, as an indicator of recruitment in the Estuary, shows that stock status is above MSY proxies. However, newly available information and modelling approaches preclude a high degree of certainty regarding UoA impacts at this point.

Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. SG60 and SG80 are met. SG100 is not.

	Informa	Information adequacy for assessment of impact on minor primary species		
b	Guide post	Some quantition is information is estimate the UoA on mino species with status.	tative s adequate to impact of the r primary respect to	
	Met?	Yes		
Ratior	nale			

Some quantitative information is available on minor primary species (western rock octopus) and this is adequate to estimate the impact of the UoA with respect to status. SG100 is met.

	Informa	ation adequacy for mana	agement strategy		
С	Guide post	Information is adequate to support <b>measures</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>partial</b> <b>strategy</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> primary species, and evaluate with a <b>high degree of</b> <b>certainty</b> whether the strategy is achieving its objective.	
	Met?	Yes	Yes	No – Sea mullet Yes – Western rock octopus	
Rationale					

Information is adequate to support a strategy to manage main primary species (sea mullet), including fishery-dependent data and information on the species biology and life history. SG60 and SG80 are met.

Information is not adequate currently to evaluate, for all primary species, with a high degree of certainty, that the strategy is achieving its objective. SG100 is not met for sea mullet, where the extent of bait use of this species and yelloweye mullet could usefully be clarified. SG100 is met for western rock octopus, for which catch (and other) information and a UoA-specific and effective stockwide harvest strategy are in place.

### References

DPIRD. (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.



Hart, A.M., Murphy, D.M., Harry, A.V. and Fisher, E.A. (2018). *Western Australian Marine Stewardship Council Report Series No. 14: Resource Assessment Report Western Australian Octopus Resource.* Department of Primary Industries and Regional Development, Western Australia.

Hart, A.M., Murphy, D., Hesp, S.A., Leporati, S. (2019). Biomass estimates and harvest strategies for the Western Australian *Octopus* aff. *tetricus* fishery. *ICES Journal of Marine Science*, 76(7): 2205–2217. doi:10.1093/icesjms/fsz146

Draft scoring range	≥80	
Information gap indicator	Information sufficient to score PI	

### **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	95
Condition number (if relevant)	ΝΑ

PI 2.1.3 – Primary species information – Blue swimmer crab, drop nets (UoA 2 )

ΡI	2.1.3	Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species				
Scorin	ig Issue	SG 60	SG 80	SG 100		
	Informa	ation adequacy for assessment of impact on main primary species				
а	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is <b>adequate to</b> <b>assess</b> the impact of the UoA on the main primary species with respect to status. <b>OR</b> <b>If RBF is used to score</b> <b>PI 2.1.1 for the UoA:</b> Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is <b>adequate to assess</b> <b>with a high degree of</b> <b>certainty</b> the impact of the UoA on main primary species with respect to status.		
	Met?	Yes	Yes	Νο		
Rationale						

<u>Sea mullet</u>: There is some information on volumes of sea mullet bait used by the UoA in combination with yelloweye mullet. However, the usage of each species is unknown. Other quantitative information to assess the impact of the UoA includes catch rate and catch volume information, and age composition data (from different parts of the stock range). A Schaefer production model has been used as a basis



to preliminarily conclude that catch is well below MSY-level. However, the model fit is not good in recent years, when model-estimated catch rates were larger than the observed values. New information on stock structure has recently emerged and assessment approaches have been reconsidered and newly applied. CPUE information, as an indicator of recruitment in the Estuary, shows that stock status is above MSY proxies. However, newly available information and modelling approaches preclude a high degree of certainty regarding UoA impacts at this point.

Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. SG60 and SG80 are met. SG100 is not.

	Informa	Information adequacy for assessment of impact on minor primary species			
b	Guide post	Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.			
	Met?	No			
Ratior	hale				

Some quantitative information is available on minor primary species that comprise landed and discarded catch, and bait. Bait information is reported from 2014, with a small additional amount Western Australia Recreational Angler Program collected 2005-2021, while the available catch information was collected over 10 years ago. While it may be that the fishery has changed little in that time, the information available is not considered adequate to estimate the impact of the UoA on minor primary species with respect to status. SG100 is not met.

	Informa	Information adequacy for management strategy			
c	Guide post	Information is adequate to support <b>measures</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>partial</b> <b>strategy</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> primary species, and evaluate with a <b>high degree of</b> <b>certainty</b> whether the strategy is achieving its objective.	
	Met?	Yes	Yes	Yes – Sea mullet, Western rock lobster No – Australian herring, Tuna and other minor bait species	
Rationale					

Information is adequate to support a strategy to manage the main primary species, including fisherydependent data and information on the species biology and life history. SG60 and SG80 are met. Information is sufficient to allow stock status of sea mullet to be evaluated, which can provide a basis to assess whether the strategy is working. SG100 is met for this main species.

For western rock lobster, the performance of the stock-wide harvest strategy and stock status demonstrate that information is adequate to support a strategy to manage the species and evaluate with a high degree of certainty whether the strategy is achieving its objective. SG100 is met.



Information is not adequate currently to support a strategy to manage other minor primary species and evaluate with a high degree of certainty that the strategy is achieving its objective. Bait use information is dated and may not represent the current state of the fishery. SG100 is not met.

#### References

DPIRD. (2020). *West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4*. November 2020. Western Australian Marine Stewardship Council Report Series.

DPIRD. (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. DPIRD, Perth.

DPIRD. (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 303. DPIRD, Perth.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

### **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	85
Condition number (if relevant)	ΝΑ

PI 2.1.3 – Primary species information – Blue swimmer crab, scoop nets (UoA 3)

PI	2.1.3	Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
	Informa	ation adequacy for asses	sment of impact on mai	n primary species
а	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR	Some quantitative information is available and is <b>adequate to</b> <b>assess</b> the impact of the UoA on the main primary species with respect to status.	Quantitative information is available and is <b>adequate to assess</b> <b>with a high degree of</b> <b>certainty</b> the impact of the UoA on main primary species with respect to status.
		If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and	OR If RBF is used to score PI 2.1.1 for the UoA:	



		susceptibility attributes for main primary species.	Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	
	Met?	NA	NA	ΝΑ
Ratior	nale			

There are no main primary species. This scoring issue is not scored.

	Information adequacy for assessment of impact on minor primary species			
b	Guide post	Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.		
	Met?	No		
Ratior	nale			

Some quantitative information is available on minor primary species that comprise landed and discarded catch. The available information has become dated, having been collected more than 10 years ago. While it may be that the fishery has changed little in that time, the information available is not considered adequate to estimate the impact of the UoA on minor primary species with respect to status. SG100 is not met.

	Informa	ation adequacy for mana	agement strategy		
с	Guide post	Information is adequate to support <b>measures</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>partial</b> <b>strategy</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> primary species, and evaluate with a <b>high degree of</b> <b>certainty</b> whether the strategy is achieving its objective.	
	Met?	Yes	Yes	Νο	
Rationale					

There are no main primary species, therefore SG60 and SG80 are met by default.

Information is not adequate currently to support a strategy to manage Australian herring, the only primary species, and evaluate with a high degree of certainty that the strategy is achieving its objective. SG100 is not met.

### References

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

DPIRD (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. DPIRD, Perth.

DPIRD (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. DPIRD, Perth.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

### **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	80
Condition number (if relevant)	NA

PI 2.1.3 – Primary species information – Sea mullet, haul nets (UoA 4)

PI	2.1.3	Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species			
Scorin	ig Issue	SG 60	SG 80	SG 100	
	Informa	ation adequacy for asses	ssment of impact on mai	in primary species	
а	Guide	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score	Some quantitative information is available and is <b>adequate to</b> <b>assess</b> the impact of the UoA on the main primary species with respect to status.	Quantitative information is available and is <b>adequate to assess</b> <b>with a high degree of</b> <b>certainty</b> the impact of the UoA on main primary species with respect to status.	
	post	<b>PI 2.1.1 for the UoA:</b> Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	<b>If RBF is used to score</b> <b>PI 2.1.1 for the UoA:</b> Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.		
	Met?	NA	ΝΑ	ΝΑ	
Ratior	Rationale				

There are no main primary species, therefore this scoring issue is not scored.



	Information adequacy for assessment of impact on minor primary species			
b	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Yes
Ratior	nale			

Some quantitative information is available on the two minor primary species that comprise landed and discarded catch, and stock status has been evaluated using available data. Some information on species life histories and biology is also available to inform an assessment of UoA impacts.

Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status. SG100 is met.

	Information adequacy for management strategy			
C	Guide post	Information is adequate to support <b>measures</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>partial</b> <b>strategy</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> primary species and evaluate with a <b>high degree of</b> <b>certainty</b> whether the strategy is achieving its objective.
	Met?	Yes	Yes	Yes – Blue swimmer crab No – Australian herring
Rationale				

There are no main primary species. Therefore, SG60 and SG80 are met by default.

For blue swimmer crab, stock status indicators are monitored for the stock-specific harvest strategy. Catch landing information and stock status monitoring demonstrates that information is adequate to support a strategy to this primary species and evaluate with a high degree of certainty whether the strategy is achieving its objective. SG100 is met.

Information is not adequate currently to evaluate with a high degree of certainty, that the strategy for Australian herring is achieving its objective. SG100 is not met.

### References

DPIRD (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia

DPIRD(2020). Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Duffy, R., Hughes, J., Drew, M. (2021). Australian Herring (*Arripis georgianus*). FRDC species report. https://fish.gov.au/report/220-Australian-Herring-2018 [Accessed 17 February 2021]

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

### **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	95
Condition number (if relevant)	ΝΑ

### PI 2.1.3 – Primary species information – Sea mullet, gill nets (UoA 5)

PI	2.1.3	Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scorin	ng Issue	SG 60	SG 80	SG 100
	Informa	ation adequacy for asses	ssment of impact on mai	in primary species
а	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is <b>adequate to</b> <b>assess</b> the impact of the UoA on the main primary species with respect to status. <b>OR</b> <b>If RBF is used to score</b> <b>PI 2.1.1 for the UoA:</b> Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is <b>adequate to assess</b> with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	NA	NA	NA
Rationale				

There are no main primary species, therefore this scoring issue is not scored.



	Information adequacy for assessment of impact on minor primary species		or primary species	
b	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Yes
Ratior	nale			

Some quantitative information is available on minor primary species that comprise landed and discarded catch, and stock status has been evaluated using available data. Some information on species life histories and biology is also available to inform an assessment of UoA impacts.

Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status. SG100 is met.

	Information adequacy for management strategy			
С	Guide post	Information is adequate to support <b>measures</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>partial</b> <b>strategy</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> primary species, and evaluate with a <b>high degree of</b> <b>certainty</b> whether the strategy is achieving its objective.
	Met?	Yes	Yes	Yes – Blue swimmer crab No – Australian herring
Rationale				

There are no main primary species. Therefore, SG60 and SG80 are met by default.

For blue swimmer crab, stock status indicators are monitored for the stock-specific harvest strategy. Catch landing information and stock status monitoring demonstrates that information is adequate to support a strategy to this primary species and evaluate with a high degree of certainty whether the strategy is achieving its objective. SG100 is met.

Information is not adequate currently to evaluate with a high degree of certainty, that the strategy for Australian herring is achieving its objective. SG100 is not met.

### References

DPIRD(2020). Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia

DPIRD(2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia

DPIRD(2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Duffy, R., Hughes, J., Drew, M. (2021). Australian Herring (*Arripis georgianus*). FRDC species report. https://fish.gov.au/report/220-Australian-Herring-2018 [Accessed 17 February 2021]

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	95
Condition number (if relevant)	ΝΑ

PI 2.2.1 – Secondary species outcome – Blue swimmer crab, crab pots (UoA 1)

PI	2.2.1	The UoA aims to mainta limit and does not hinde biological based limit	in secondary species above a l er recovery of secondary specie	biologically based as if they are below a
Scorin	g Issue	SG 60	SG 80	SG 100
	Main se	condary species stock	status	
а	Guide	Main secondary species stock are <b>likely</b> to be above biologically based limits. OR If below biologically based limits, there are <b>measures</b> in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are highly likely to be above biologically based limits. OR If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective	There is a <b>high</b> <b>degree of certainty</b> that main secondary species are above biologically based limits.
			strategy in place between those MSC UoAs that have considerable catches of the	



			<b>species</b> , to ensure that they collectively do not hinder recovery and rebuilding.	
	Met?	Yes	Yes	Νο
Ratior	nale			

There is one main secondary species, used as bait in this UoA.

<u>Yelloweye mullet</u>: The CMSY method is used to evaluate the status of this stock. A time series of catch information is used to provide annual estimated of biomass and harvest rate. Current catch is below the estimated MSY level of 24 t.  $F_{2019}$  was too low to be estimated and was below  $F_{MSY}$  (0.15/year). Relative stock biomass was estimated at 0.9 of the unfished level (95% confidence limits: 0.8-1.0). Under current fishing pressure, depletion and recruitment impairment are considered unlikely to occur.

The results of the CMSY analysis are reported in summary form, but not published in detail. SG60 and SG80 are met. However, it cannot be concluded that there is a high degree of certainty that main secondary species are above biologically based limits. SG100 is not met.

	Minor secondary species stock status		
			Minor secondary species are highly likely to be above biologically based limits.
b	Guide		OR
	post		If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?		Yes
Ratior	nale		

<u>Estuary cobbler</u>: The CMSY method is used to derive estimates of relative biomass in relation to MSY and harvest rate for cobbler. Currently, the stock is estimated to be above the limit biomass (20% unfished biomass) and below the target biomass (40% unfished biomass). The CMSY evaluation has not been published, and only summary findings are reported. However, the small amount of catch reported from this UoA provides further evidence that the UoA would not hinder recovery and rebuilding. SG100 is met.

Stock status of other minor secondary species in relation to biological limits is unknown. However, given low level of catch in the UoA (see Table 11) and the widespread nature of these stocks relative to the Estuary fishery, the UoA would not hinder recovery and rebuilding. For example, the western striped trumpeter occurs widely in estuaries and river mouths along the coast of Western Australia, as well as locations in Queensland, South Australia and the Northern Territory. The estuary cobbler (also called the estuary catfish, (Duffy & Smoothey, 2021) is found along the Western Australian coast, as well as in South Australia, Victoria and New South Wales. The four-lobed swimming crab is reported from all Australian states except South Australia and Tasmania, while the green mud crab is broadly distributed across the Indo-Pacific region. SG100 is met.



#### References

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery.* Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

McGrouther, M., (2021). *Estuary Cobbler*, Cnidoglanis macrocephalus (*Valenciennes, 1840*). Australian Museum. https://australian.museum/learn/animals/fishes/estuary-catfish-cnidoglanis-macrocephalus-valenciennes-1840/ [Accessed 3 August 2021]

McGrouther, M., (2019). *Western Striped Grunter*, Pelates octolineatus (*Jenyns*, *1840*). Australian Museum. https://australian.museum/learn/animals/fishes/western-striped-grunter-pelates-octolineatus/ [Accessed 3 August 2021]

ALA (n.d.). Thalamita sima *H. Milne Edwards, 1834 Four-Lobed Swimmer Crab.* Atlas of Living Australia. https://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:19e8528e-355c-4ba4-8526-e4e458246456 [Accessed 3 August 2021]

Earl, J., Gorfine, H., Duffy, R., Krueck, N. (2021). *Yelloweye Mullet*, Aldrichetta forsteri. FRDC Species Report. https://fish.gov.au/report/379-Yelloweye-Mullet-2020 [Accessed 20 June 2021]

Duffy, R., & Smoothey, A. (2021). *Estuary Cobbler*, Cnidoglanis macrocephalus. FRDC Species Report. https://fish.gov.au/report/312-Estuary-Cobbler-2020 [Accessed 17 February 2021].

Sealifebase (n.d.). Scylla serrata (*Forsskål, 1775*) *Indo-Pacific swamp crab.* https://www.sealifebase.ca/summary/Scylla-serrata.html [Accessed 3 August 2021]

Draft scoring range	<u>&gt;</u> 80
Information gap indicator	<b>More information sought</b> Detailed results of evaluations of stock status for yelloweye mullet and estuary cobbler.

### **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	90
Condition number (if relevant)	ΝΑ

# PI 2.2.1 – Secondary species outcome – Blue swimmer crab, drop net (UoA 2)

PI	2.2.1	The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scorin	g Issue	SG 60	SG 80	SG 100
	Main se	condary species stock s	tatus	
		Main secondary species are <b>likely</b> to be above biologically based limits.	Main secondary species are <b>highly likely</b> to be above biologically based limits.	There is a <b>high degree</b> of certainty that main secondary species are above biologically based
		OR	OR	limits.
а	Guide post	If below biologically based limits, there are <b>measures</b> in place expected to ensure that the UoA does not hinder recovery and rebuilding.	If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding	
	Met?	NA	NA	NA
Bationale				

There are no main secondary species, so this scoring issue is not applicable.

	Minor secondary species stock status		
b	Guide	Minor secondary species are highly likely to be above biologically based limits.	
	post	OR	
		If below biologically based limits', there is evidence	



that the UoA does not hinder the recovery and rebuilding of secondary species

Yes

Rationale

Met?

Stock status of minor secondary species in relation to biological limits is unknown. However, given low level of catch in the UoA and the broad distribution of stocks relative to the UoA, the UoA would not hinder recovery and rebuilding. For example, common blowfish is a common species occurring in estuaries and bays along the eastern and western Australian coasts. King George whiting, rough leatherjacket and tailor are similarly distributed, occuring from Western Australia around the southern coast of the continent, Tasmania, and north into New South Wales. For tailor, range extends further into Queensland. Tailor recruitment appears to have remained stable over time.

For bait species of unknown origin, usage appears sufficiently low that recovery and rebuilding would not be hindered.

SG100 is met.

### References

Bray, D.J. (2020). *Tailor,* Pomatomus saltatrix *(Linnaeus 1766)*, Fishes of Australia. https://fishesofaustralia.net.au/home/species/4246 [Accessed 3 August 2021]

Bray, D.J. (2020), *Rough Leatherjacket,* Scobinichthys granulatus (*White 1790*). Fishes of Australia. https://fishesofaustralia.net.au/home/species/825 [Accessed 3 August 2021]

Bray, D.J. (2021), *Weeping Toadfish, Torquigener pleurogramma (Regan 1903)*. Fishes of Australia. https://fishesofaustralia.net.au/home/species/883 [Accessed 3 August 2021]

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	≥80	
Information gap indicator	Information sufficient to score PI	

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

PI 2.2.1 – Secondary species outcome – Blue swimmer crab, scoop nets (UoA 3)

PI	2.2.1	The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Main se	condary species stock s	tatus	
а	Guide post	Main secondary species are <b>likely</b> to be above biologically based limits. OR If below biologically based limits, there are <b>measures</b> in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are highly likely to be above biologically based limits. OR If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.	There is a <b>high degree</b> of certainty that main secondary species are above biologically based limits.
	Met?	NA	NA	NA
Ratior	nale			

There are no main secondary species, so this scoring issue is not applicable.

	Minor s	Minor secondary species stock status			
b		Minor secondary species are highly likely to be above biologically based limits.			
	Guide	OR			
	post	If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species			



Yes

Met?

Rationale

Stock status of minor secondary species in relation to biological limits is unknown. However, given low level of catch in the UoA and the widespread nature of these stocks relative to the UoA, the UoA would not hinder recovery and rebuilding. For example, common blowfish is a common species occurring in estuaries and bays along the eastern and western Australian coasts. Tailor occur from Western Australia around the southern coast of the continent, Tasmania, and north into New South Wales and Queensland. Tailor recruitment appears to have remained stable over time. SG100 is met.

#### References

Bray, D.J. (2020). *Tailor*, Pomatomus saltatrix *(Linnaeus 1766)*, Fishes of Australia. https://fishesofaustralia.net.au/home/species/4246 [Accessed 3 August 2021]

Bray, D.J. (2021), *Weeping Toadfish, Torquigener pleurogramma (Regan 1903).* Fishes of Australia. https://fishesofaustralia.net.au/home/species/883 [Accessed 3 August 2021]

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

### PI 2.2.1 – Secondary species outcome – Sea mullet, haul nets (UoA 4)

PI	2.2.1	The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scorin	ig Issue	SG 60	SG 80	SG 100
	Main se	condary species stock s	tatus	
а	Guide	Main secondary species are <b>likely</b> to be above biologically based limits. OR	Main secondary species are <b>highly likely</b> to be above biologically based limits. OR	There is a <b>high degree</b> of certainty that main secondary species are above biologically based limits.
	Guide post	If below biologically based limits, there are <b>measures</b> in place expected to ensure that	If below biologically based limits, there is either <b>evidence of recovery</b> or a <b>demonstrably effective</b> <b>partial strategy</b> in place	

bio	pecta q <sub>e</sub> inspecta	MSC Full Asses	21_390EN ssment Reporting Template
	the UoA does not hinder recovery and rebuilding.	such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are <b>considerable</b> , there is either <b>evidence of</b> <b>recovery</b> or a, <b>demonstrably effective</b> <b>strategy in place between</b> <b>those MSC UoAs that</b> <b>have considerable</b> <b>catches of the species</b> , to ensure that they collectively do not hinder recovery and rebuilding.	
Met?	Yes – All main species	Yes – Yelloweye mullet, Yellowfin whiting No – Perth herring	No – All main species
Rationale			

<u>Yelloweye mullet</u>: The CMSY method is used to evaluate the status of this stock. A time series of catch information is used to provide annual estimated of biomass and harvest rate. Current catch is below the estimated MSY level of 24 t.  $F_{2019}$  was too low to be estimated and was below  $F_{MSY}$  (0.15/year). Relative stock biomass was estimated at 0.9 of the unfished level (95% confidence limits: 0.8-1.0). Under current fishing pressure, depletion and recruitment impairment are considered unlikely to occur.

The results of the CMSY analysis are reported in summary form, but not published in detail. CMSY modelling is used in data poor situations. SG60 and SG80 are met. However, it cannot be concluded with a high degree of certainty that this main secondary species is above biologically based limits. SG100 is not met.

<u>Yellowfin whiting</u>: SPR estimates are between the Target (> $B_{MSY}$ ) and Threshold ( $B_{MSY}$ ) reference levels. A CMSY analysis estimated relative stock biomass (2019) as 0.87 (95% confidence limits: 0.78-0.95) of the unfished biomass.  $F_{2019}$  was estimated at 0.07 (95% confidence limits: 0.06-0.11) and below the  $F_{MSY}$  of 0.3. CMSY modelling is used in data poor situations. SG60 and SG80 are met. Current fishing pressure is considered to be sustainable. However, there is not a high degree of certainty that this species is above biologically based limits. SG100 is not met.

<u>Perth herring</u>: This species is anadromous, spawning in rivers then returning to the sea. Commercially harvested fish are on their pre-spawning migration. The species' anadromous life history contributes to its vulnerability to fishing pressure. Environmental degradation has affected spawning and nursery areas. Total mortality of the Peel-Harvey Estuary stock has been estimated at three times the unexploited stock occurring in the Swan-Canning Estuary. The permanence of the Estuary to sea connection at Peel Harvey may allow more frequent recruitment in these estuaries, compared to estuaries that are intermittently closed off from the sea. However, stock status in relation to biologically-based limits is unknown.

Perth herring is an indicator species among the suite of nearshore and estuarine finfish managed in southwest WA. The target catch for this species is < 2.7 t, and this target was met in 2019. In 2017 and 2018, higher catches occurred, including catch exceeding the threshold level in 2017. The risks

associated with the cumulative impact of the Estuary fishery, and the impact of commercial net fishing, are assessed as High for this stock. Risks from other fishing methods are considered Negligible.

Additional measures to reduce this risk are considered necessary by DPIRD.

Catch and effort have fluctuated over time (Figure 12), with catches generally higher in the past 20 years after a period of very low catches in the 1980s through mid-1990s. SG60 appears to be met based on currently available information. However, SG80 and SG100 are not.

	Minor s	econdary species stock	status	
				Minor secondary species are highly likely to be above biologically based limits.
b	Guide			OR
	post			If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			Yes
Ratior	nale			

For estuary cobbler, the CMSY method is used to derive estimates of relative biomass in relation to MSY and harvest rate. Currently, the stock is estimated to be above the limit biomass (20% unfished biomass) and below the target biomass (40% unfished biomass). The CMSY evaluation has not been published, and summary findings are reported.

Stock status of other minor secondary species in relation to biological limits is unknown. However, given low level of catch in the UoA of most secondary species, the UoA would not hinder recovery and rebuilding. For tailor, recruitment appears to have been stable for around 20 years. King George whiting appears not to have been assessed recently but occurs widely outside the Estuary. Overall, it appears that minor secondary species are highly likely to be above biologically based limits, and/or there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species. SG100 is met.

#### References

Daume, S. & Hartmann, K. (2021). *Western Australia Peel Harvey Estuarine Fishery Surveillance Report*. Fourth surveillance. Bio.inspecta.

DPIRD. (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. DPIRD, Perth, Western Australia

DPIRD. (2020). *West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4*. November 2020. Western Australian Marine Stewardship Council Report Series.

Duffy, R., & Smoothey, A. (2021). *Estuary Cobbler*, Cnidoglanis macrocephalus. FRDC Species Report. https://fish.gov.au/report/312-Estuary-Cobbler-2020 [Accessed 17 February 2021].

Duffy, R., Harris, D., Fisher, E., Smith, K., Johnston, D., Denham, A. and Hesp. S.A. (2021). *Resource Assessment Report: South-West Estuarine and Nearshore. Finfish Resource. Part 1: Sea Mullet and Yellowfin Whiting.* Department of Primary Industries and Regional Development, Western Australia.

Earl, J., Gorfine, H., Duffy, R., Krueck, N. (2021). *Yelloweye Mullet*, Aldrichetta forsteri. FRDC Species Report. https://fish.gov.au/report/379-Yelloweye-Mullet-2020 [Accessed 20 June 2021]

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Gaughan, D.J. and Santoro, K. (eds). (2020). *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2018/19: The State of the Fisheries*. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Roelofs, A., Stewart, J., Duffy, R., Conron, S. (2021). *Tailor (2020),* Pomatomus saltatrix. FRDC Species Report. https://fish.gov.au/report/215-Tailor-2018 [Accessed 17 February 2021]

More	e information sought
Information gap indicator Addit	itional information relevant to stock
status	us of main secondary species (scoring
issue	e (a)).

### **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	75
Condition number (if relevant)	9

### PI 2.2.1 – Secondary species outcome – Sea mullet, gill nets (UoA 5)

PI	2.2.1	The UoA aims to maintai limit and does not hinder biological based limit	n secondary species above a bi r recovery of secondary species	ologically based s if they are below a
Scorir	ng Issue	SG 60	SG 80	SG 100
	Main se	condary species stock s	tatus	
а	Guide post	Main secondary species are <b>likely</b> to be above biologically based limits. OR If below biologically based limits, there are <b>measures</b> in place	Main secondary species are <b>highly likely</b> to be above biologically based limits. OR If below biologically based limits, there is either <b>evidence</b> of recovery or a	There is a <b>high</b> <b>degree of</b> <b>certainty</b> that main secondary species are above biologically based limits.

bio	inspective	expected to ensure that the UoA does not hinder recovery and rebuilding.	demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species, to ensure that they	21_390EN nent Reporting Template
			<b>species</b> , to ensure that they collectively do not hinder recovery and rebuilding.	
	Met?	Yes – All main species	Yes – Yelloweye mullet, Yellowfin whiting, No - Perth herring, Estuary cobbler	No – All main species
Ratio	nale			

<u>Yelloweye mullet</u>: The CMSY method is used to evaluate the status of this stock. A time series of catch information is used to provide annual estimated of biomass and harvest rate. Current catch is below the estimated MSY level of 24 t.  $F_{2019}$  was too low to be estimated and was below  $F_{MSY}$  (0.15/year). Relative stock biomass was estimated at 0.9 of the unfished level (95% confidence limits: 0.8-1.0). Under current fishing pressure, depletion and recruitment impairment are considered unlikely to occur.

The results of the CMSY analysis are reported in summary form, but not published in detail. CMSY modelling is used in data poor situations. SG60 and SG80 are met. However, it cannot be concluded with a high degree of certainty that this species is above biologically based limits. SG100 is not met.

<u>Estuary cobbler</u>: Peel-Harvey estuary cobbler form a discrete stock. Catch rate and amount have been used as stock performance indicators with target values of annual commercial catch rate >6 kg/day and annual commercial catch <9 t (Johnston et al. 2015). In 2018 and 2019, both indicators were within the target range. While CMSY analysis has been used in the past to assess stock status, reconsideration of catch rate data quality has led to risk assessment becoming the basis for assessing stock status. This species is evaluated as being stable (at a lower than historic level) and at Medium risk from commercial net fishing. SG60 is met. Based on currently available information, it is not possible to determine whether SG80 and SG100 are met.

<u>Yellowfin whiting</u>: SPR estimates are between the Target (>BMSY) and Threshold (BMSY) reference levels. A CMSY analysis estimated relative stock biomass (2019) as 0.87 (95% confidence limits: 0.78-0.95) of the unfished biomass. F2019 was estimated at 0.07 (95% confidence limits: 0.06-0.11) and below the FMSY of 0.3. Current fishing pressure is considered to be sustainable. SG60 and SG80 are met. CMSY modelling is used in data poor situations. There is not a high degree of certainty that this species is above biologically based limits. SG100 is not met.

<u>Perth herring</u>: This species is anadromous, spawning in rivers then returning to the sea. Commercially harvested fish are on their pre-spawning migration. The species' anadromous life history contributes to its vulnerability to fishing pressure. Environmental degradation has affected spawning and nursery areas. Total mortality of the Peel-Harvey Estuary stock has been estimated at three times the unexploited stock occurring in the Swan-Canning Estuary. The permanence of the Estuary to sea



connection at Peel Harvey may allow more frequent recruitment in these estuaries, compared to estuaries that are intermittently closed off from the sea. However, stock status in relation to biologically-based limits is unknown.

Perth herring is an indicator species among the suite of nearshore and estuarine finfish managed in southwest WA. The target catch for this species is < 2.7 t, and this target was met in 2019. In 2017 and 2018, higher catches occurred, including catch exceeding the threshold level in 2017. The risks associated with the cumulative impact of the Estuary fishery, and the impact of commercial net fishing, are assessed as High for this stock. Risks from other fishing methods are considered Negligible. Additional measures to reduce this risk are considered necessary by DPIRD.

Catch and effort have fluctuated over time (Figure 12), with catches generally higher in the past 20 years after a period of very low catches in the 1980s through mid-1990s. SG60 appears to be met based on currently available information. However, SG80 and SG100 are not.

	Minor secondary species stock status			
				Minor secondary species are highly likely to be above biologically based limits.
b	Guide post			If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			Yes
Ratior	nale			

Stock status of minor secondary species in relation to biological limits is unknown. However, given low level of catch in the UoA of most secondary species, the UoA would not hinder recovery and rebuilding. For tailor, recruitment appears to have been stable for around 20 years. Among discarded minor secondary species, silver bream and common blowfish contribute the most to catch (by number). These species' range extends well beyond the Estuary. Other species comprise very small proportions of catch.

Overall, it appears that minor secondary species are highly likely to be above biologically based limits, and/or there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species. SG100 is met.

References

Daume, S. & Hartmann, K. (2021). *Western Australia Peel Harvey Estuarine Fishery Surveillance Report.* Fourth surveillance. Bio.inspecta.

DPIRD. (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. DPIRD, Perth.

DPIRD. (2020). *West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4*. November 2020. Western Australian Marine Stewardship Council Report Series.

Duffy, R., & Smoothey, A. (2021). *Estuary Cobbler*, Cnidoglanis macrocephalus. FRDC Species Report. https://fish.gov.au/report/312-Estuary-Cobbler-2020 [Accessed 17 February 2021].

Duffy, R., Harris, D., Fisher, E., Smith, K., Johnston, D., Denham, A. and Hesp. S.A. (2021). *Resource Assessment Report: South-West Estuarine and Nearshore. Finfish Resource. Part 1: Sea Mullet and Yellowfin Whiting*. Department of Primary Industries and Regional Development, Western Australia.

Earl, J., Gorfine, H., Duffy, R., Krueck, N. (2021). *Yelloweye Mullet*, Aldrichetta forsteri. FRDC Species Report. https://fish.gov.au/report/379-Yelloweye-Mullet-2020 [Accessed 20 June 2021]

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

Gaughan, D.J. and Santoro, K. (eds). (2020). *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2018/19: The State of the Fisheries*. Department of Primary Industries and Regional Development, Western Australia.

Roelofs, A., Stewart, J., Duffy, R., Conron, S. (2021). *Tailor (2020),* Pomatomus saltatrix. FRDC Species Report. https://fish.gov.au/report/215-Tailor-2018 [Accessed 17 February 2021]

Draft scoring range	60-79	
Information gap indicator	<b>More information sought</b> Additional information relevant to stock status of main secondary species (scoring issue (a)).	

### **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	75
Condition number (if relevant)	10

# PI 2.2.2 – Secondary species management strategy – Blue swimmer crab, crab pots (UoA 1)

PI	2.2.2	There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch			
Scorir	ing Issue SG 60 SG 80 SG 100				
	Manage	ement strategy in place			
а	Guide post	There are <b>measures</b> in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a <b>strategy</b> in place for the UoA for managing main and minor secondary species.	
	Met?	Yes	Yes	Yes	
Rationale					

<u>Main secondary species</u>: The harvest strategy is risk-based, with a target reference level commensurate with Medium or lower risk to species populations, a threshold of a potentially material change to risk level, or, a High risk to species populations, and a limit of severe risk. In turn, if the threshold is reached, a review would be completed within three months, and a management response implemented to reduce the risk level to Medium or lower as soon as practicable. An immediate management response is triggered if the limit reference level is reached. Management measures in place for sea mullet also act to restrain catch of this species. The UoA does not implement the finfish harvest strategy designed for sea mullet target fishing, but operates within it. SG60, SG80 and SG100 are met.

<u>Minor secondary species</u>: The blue swimmer crab harvest strategy describes the UoA management approach to minor secondary species. This is risk based, with target (fishing impacts generate an acceptable, i.e. medium for lower risk level), threshold (a potentially material change to risk level is identified, or, fishing impacts are considered to generate a high risk to species populations) and limit reference levels (fishing impacts are considered to generate an unacceptable (severe) level of risk). At or in excess of threshold reference levels, a review would be completed within 3 months, and a management response implemented to reduce the risk level to Medium or lower as soon as practicable. On reaching a limit reference level, an immediate management response is triggered with actions to reduce the risk as soon as practicable. SG100 is met.

### Management strategy evaluation

b

Guide post The measures are considered likely to work, based on plausible argument (e.g. general

There is **some objective basis for confidence** that the measures/partial strategy will work, based **Testing** supports **high confidence** that the partial strategy/strategy will work, based on



		experience, theory or comparison with similar UoAs/species).	on some information directly about the UoA and/or species involved.	information directly about the UoA and/or species involved.
	Met?	Yes	Νο	Νο
Ratior	nale			

For yelloweye mullet, the duration of the review period is specified in the 2020 – 2025 finfish harvest strategy. (This species is classified as a retained species under the finfish harvest strategy). However, the timeframe for implementing management responses is 'as soon as practicable' for breaches of the threshold reference level. For breaches of the limit reference level, the control rule requires 'an *immediate management response to reduce the risk to an acceptable level as soon as practicable'*. In addition, the relationship between identified published target and MSY-based harvest levels is not clear. Given time lags evident in fishery management when thresholds were breached previously (for sea mullet), an objective basis for confidence that the measures/partial strategy will work is not evident, based on some information directly about the fishery and/or species involved.

SG60 is met for this species, i.e. the measures are considered likely to work based on plausible argument. SG80 is not met.

For main and minor secondary species, testing has not occurred to support high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved. SG100 is not met.

	Manage	ement strategy implementation		
C	Guide post	There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its objective as set out in scoring issue (a).	
	Met?	Yes	No – Yelloweye mullet Yes – Minor species	
Bationale				

For yelloweye mullet, the harvest rate is considered to have been below the level commensurate with MSY for at least 10 years. The assessed risk to this species of the Estuary fishery was considered Low in the 2020 assessment. The risk level meets the requirements of the finfish harvest strategy. There is some evidence that the measures/partial strategy is being implemented successfully. SG80 is met. Available information characterises the stock status as between the limit and target reference points. There is not clear evidence that the partial strategy/strategy is both being implemented successfully and is achieving its objective as set out in scoring issue (a). SG100 is not met.

The harvest strategy for blue swimmer crab was updated in 2020 and is set out to apply through 2025. Catches of minor secondary species are very low and monitoring occurred recently. It is concluded that for minor secondary species, there is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a). SG100 is met.

### d Shark finning



	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Ratior	nale			

There are no secondary species that are sharks.

Review of alternative measures to minimise mortality of unwanted car				
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of all secondary species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

Yelloweye mullet comprised 6% and 54% of discarded catch items (by number) in UoAs 4 and 5 respectively. For the haul net fishery (UoA 4), this unwanted catch is considered negligible and not scored (6% of items among an estimated unwanted catch volume of 0.6% of total catch).

For the gill net fishery (UoA 5), unwanted catch was higher (an estimated 1.5% of total catch volume) and less likely to be released alive. Overall, however, the retained catch volume of the gill net fishery has declined substantially in the last decade, to 6.9 t in 2018 and 1.1 t in 2019. At that level of total catch, unwanted catch of secondary species is considered negligible, and this scoring issue is not scored.

For UoAs 4 and 5, unwanted catch due to lost gear is expected to be minimal. During haul netting, nets are not left unattended. In the gill net fishery, nets are set and left unattended. These nets have a float line which, together with the relatively shallow waters of the estuary, would facilitate recovery if any gear was lost.

For UoA 1, risks associated with lost gear in this UoA were considered negligible in the risk assessment process that supports fishery management. The shallow waters fished would facilitate gear recovery.

### References

DPIRD (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia.

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DPIRD. (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia..

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Draft scoring range	60-79
Information gap indicator	<b>More information sought</b> Additional information on unwanted catch of yelloweye mullet in the gill net fishery, in relation to total catch and effort in that fishery (scoring issue (e)).

### **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	75
Condition number (if relevant)	11

PI 2.2.2 – Secondary species management strategy – Blue swimmer crab, drop nets (UoA 2)

PI	2.2.2	There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch				
Scorir	ng Issue	J Issue SG 60 SG 80 SG 100		SG 100		
	Manage	Management strategy in place				
а	Guide post	There are <b>measures</b> in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a <b>strategy</b> in place for the UoA for managing main and minor secondary species.		
	Met?	Yes	Yes	Yes – Blue swimmer crab No – Minor bait species		
Ratior	nale					

There are no main secondary species. Therefore, SG60 and SG80 are met by default.



The blue swimmer crab harvest strategy describes the UoA management approach to minor secondary species. This is risk based, with target (fishing impacts generate an acceptable, i.e. medium for lower risk level), threshold (a potentially material change to risk level is identified, or, fishing impacts are considered to generate a high risk to species populations) and limit reference levels (fishing impacts are considered to generate an unacceptable (severe) level of risk). At or in excess of threshold reference levels, a review would be completed within 3 months, and a management response implemented to reduce the risk level to Medium or lower as soon as practicable. On reaching a limit reference level, an immediate management response is triggered with actions to reduce the risk as soon as practicable. SG100 is met.

Minor bait species of unknown stock/provenance\_are not covered by the harvest strategy and SG100 is not met.

	Management strategy evaluation				
b	Guide post	The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is <b>some objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.	
	Met?	Yes	Yes	Νο	
Rationale					

There are no main secondary species, therefore SG60 and SG80 are met by default.

For minor secondary species, testing has not occurred to support high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved. SG100 is not met.

	Management strategy implementation				
с	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its objective as set out in scoring issue (a).	
	Met?		Yes	No	
Rationale					

There are no main secondary species, therefore SG80 is met by default.

The harvest strategy for blue swimmer crab was updated in 2020 and is set out to apply through 2025. Assessed risk levels for minor secondary species currently meet the requirements of the harvest strategy (i.e. all are medium or lower). However, it is unclear whether there was any new evidence available to be considered (e.g. UoA catch and bait use information) when the risk assessment was updated in 2020.

It is concluded that for minor secondary species, there is not clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a). SG100 is not met.

	Shark finning			
d	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Ratior	nale			

There are no secondary species that are sharks.

	Review of alternative measures to minimise mortality of unwanted catch			
е	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of all secondary species, and they are implemented, as appropriate.
	Met?	Yes	Yes	No
Rationale				

There are no main secondary species. SG60 and SG80 are met by default.

Most minor secondary species fished appear to be caught at negligible levels and would not be scored, with the possible exception of tailor (made on a precautionary basis, noting that a small amount of dated information is available on catch composition and bait use).

Unwanted catch due to lost gear in the UoA is expected to be negligible. Drop nets do not contain catch unless pulled into their upright position (see Figure 3), therefore, any lost gear would not fish while lying flat on the substrate.

There has not been a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of minor secondary species. SG100 is not met.

References

DPIRD (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development,, Perth, Western Australia

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.


Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	85
Condition number (if relevant)	ΝΑ

PI 2.2.2 – Secondary species management strategy – Blue swimmer crab, scoop nets (UoA 3)

PI	2.2.2	There is a strategy in pla designed to maintain or t the UoA regularly review minimise the mortality of	ce for managing secondar to not hinder rebuilding of s and implements measur f unwanted catch	y species that is secondary species and es, as appropriate, to
Scorin	ng Issue	SG 60	SG 80	SG 100
	Manage	ement strategy in place		
а	Guide post	There are <b>measures</b> in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a <b>strategy</b> in place for the UoA for managing main and minor secondary species.
	Met?	Yes	Yes	Yes
Ratior	nale			

There are no main secondary species. Therefore, SG60 and SG80 are met by default.

The blue swimmer crab harvest strategy describes the UoA management approach to minor secondary species. This is risk based, with target (fishing impacts generate an acceptable, i.e. medium for lower risk level), threshold (a potentially material change to risk level is identified, or, fishing impacts are considered to generate a high risk to species populations) and limit reference levels (fishing impacts are considered to generate an unacceptable (severe) level of risk). At or in excess of threshold reference levels, a review would be completed within three months, and a management response implemented to reduce the risk level to Medium or lower as soon as practicable. On reaching a limit reference level, an immediate management response is triggered with actions to reduce the risk as soon as practicable. SG100 is met.

### **b** Management strategy evaluation

	21_39 MSC Full Assessment Reporting Temp			21_390EN essment Reporting Template
	Guide post	The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is <b>some objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	Yes	Yes	Νο
Ratior	hale			

There are no main secondary species, therefore SG60 and SG80 are met by default.

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For minor secondary species, testing has not occurred to support high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved. SG100 is not met.

	Manage	Management strategy implementation				
с	Guide post	There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> <b>successfully and is</b> <b>achieving its objective</b> <b>as set out in scoring</b> <b>issue (a).</b>			
	Met?	Yes	No			
Ratior	nale					

There are no main secondary species, therefore SG80 is met by default.

The harvest strategy for blue swimmer crab was updated in 2020 and is set out to apply through 2025. Assessed risk levels for minor secondary species currently meet the requirements of the harvest strategy (i.e. all are medium or lower). However, it is unclear whether there was any new evidence available to be considered (e.g. UoA catch and bait use information) when the risk assessment was updated in 2020. It is concluded that there is not clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a). SG100 is not met.

	Shark finning			
d	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.
	Met?	NA	NA	NA
Ratior	nale			

There are no secondary species that are sharks.

**e** Review of alternative measures to minimise mortality of unwanted catch

	21_390E MSC Full Assessment Reporting Templat			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of all secondary species, and they are implemented, as appropriate.
	Met?	Yes	Yes	Νο
Ratio	nale			

There are no main secondary species.

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There has not been a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of minor secondary species. Based on the information available, tailor appear to be bycaught at negligible levels and would not be scored. However, scoring is conducted here on a precautionary basis for common blowfish, noting that a small amount of dated information is available on catch composition. SG100 is not met.

#### References

DPIRD (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Department of Fisheries, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	85
Condition number (if relevant)	ΝΑ

# PI 2.2.2 – Secondary species management strategy – Sea mullet, haul nets (UoA 4)

PI	2.2.2	There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Manage	ement strategy in place		
а	Guide post	There are <b>measures</b> in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a <b>strategy</b> in place for the UoA for managing main and minor secondary species.
	Met?	Yes	Yes	Yes
Ratior	nale			

Main and minor secondary species are managed under the finfish harvest strategy is risk-based, with a target reference level commensurate with Medium or lower risk to species populations, a threshold of a potentially material change to risk level or a High risk to species populations, and a limit reference level of severe risk. If the threshold reference level is reached, a review would be completed within 3 months, and a management response implemented to reduce the risk level to Medium or lower as soon as practicable. An immediate management response is triggered if the limit reference level is reached and implemented as soon as practicable. Management measures in place (limited entry for commercial fishers, effort restrictions, gear restrictions, spatial and temporal closures) act to restrain catch of primary species, though measures are not designed specifically for them.

An age-based assessment of the stock of yellowfin whiting was undertaken after catches above threshold levels occurred (most recently in 2019). Its key finding was that yellowfin whiting abundance in the Estuary fluctuates due to variable recruitment between years. A 'soft trigger' of 10 t was set in 2020, and 12 t was identified as the catch tolerance level. The harvest strategy states that DPIRD will meet with stakeholders in-season if the trigger is reached, to explore the appropriateness of the 12 t tolerance level for that season (considering fishing and environmental factors). If catch in excess of a tolerance level occurs without being accounted for (e.g. by environmental impacts or arrangements between fishing sectors), fishery performance is deemed unacceptable. A review of management arrangements is triggered and the need for a review of stock status, HCR, and/or tolerance levels is considered. There is a strategy in place for this main secondary species.

Perth herring also falls within the finish harvest strategy, as a retained species. The 2020 risk assessment concluded that the UoA risk to the Perth herring was High, noting also its inherent vulnerability due to life history characteristics and environmental degradation. This risk rating has therefore triggered the requirement for a management review (to be completed within 3 months), and the implementation of an appropriate management response as soon as practicable.

For all main species, SG60, SG80 and SG100 are met.

Minor secondary species would be managed as retained or bycatch species under the finfish harvest strategy, following the risk-based management approach set out above. SG100 is met.

	Manage	Management strategy evaluation				
Ь	Guide post	The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is <b>some objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.		
	Met?	Yes	Νο	No		

#### Rationale

The 2020 – 2025 finfish harvest strategy specifies the duration of the review period when a review is to be undertaken in response to the breach of threshold or limit reference level. However, the timeframe for implementing management responses is 'as soon as practicable' for breaches of the threshold reference level. For breaches of the limit reference level, the control rule requires 'an immediate management response to reduce the risk to an acceptable level as soon as practicable'. SG60 is met, i.e. the measures are considered likely to work based on plausible argument.

However, given time lags evident in fishery management when thresholds were breached previously (for sea mullet), an objective basis for confidence that the measures/partial strategy will work is not evident, based on some information directly about the fishery and/or species involved. Further, for Perth herring, the findings of the 2020 risk assessment triggered the requirement for a management review. This was required to be completed within 3 months but has not been initiated. For yelloweye mullet, the relationship between the stated target catch and MSY-based catch is not evident. Overall, there is not an objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved. SG80 is not met.

Testing has not occurred to an extent that there is high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved. SG100 is not met.

	Management strategy implementation				
с	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its objective as set out in scoring issue (a).	
	Met?		Νο	Νο	
Ratior	nale				

There appear to be ongoing issues with time lags in implementing management actions in accordance with the harvest strategy (see scoring issue (b)). While there is some evidence that management



responses are actioned eventually, timely implementation as required by the harvest strategy is not apparent. SG80 is not met.

As yet, there is not clear evidence that the strategy is being implemented successfully for all main and minor secondary species and is achieving its objective as set out in scoring issue (a). SG100 is not met.

	Shark finning				
d	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.	
	Met?	NA	NA	ΝΑ	
Ratior	nale				

There are no secondary species that are sharks.

	f unwanted catch			
е	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of all secondary species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

Unwanted catch of secondary species for this UoA is negligible. (Unwanted catch of all primary and secondary species comprised an estimated 0.6% of total catch). The extent of gear loss in the haul net fishery is expected to be negligible (nets are not left unattended when fishing). Therefore, unwanted catch from ghost fishing is considered negligible.

Therefore, this scoring issue is not scored.

#### References

DPIRD (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia

DPIRD. 2020. West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Earl, J., Gorfine, H., Duffy, R., Krueck, N. (2021). *Yelloweye Mullet*, Aldrichetta forsteri. FRDC Species Report. https://fish.gov.au/report/379-Yelloweye-Mullet-2020 [Accessed 20 June 2021]



Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. 2020. Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

# Draft scoring range Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	65
Condition number (if relevant)	12

PI 2.2.2 – Secondary species management strategy – Sea mullet, gill nets (UoA 5)

PI	2.2.2	There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch			
Scoring Issue		SG 60	SG 80	SG 100	
	Manage	ement strategy in place			
a	Guide post	There are <b>measures</b> in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a <b>strategy</b> in place for the UoA for managing main and minor secondary species.	
	Met?	Yes	Yes	Yes	
Rationale					

Main and minor secondary species are managed under the finfish harvest strategy, which is risk-based, with a target reference level commensurate with medium or lower risk to species populations, a threshold of a potentially material change to risk level or a High risk to species populations, and a limit reference level of severe risk. If the threshold reference level is reached, a review would be completed within three months, and a management response implemented to reduce the risk level to medium or lower as soon as practicable. An immediate management response is triggered if the limit reference level is reached and implemented as soon as practicable. Management measures in place (limited entry for commercial fishers, effort restrictions, gear restrictions, spatial and temporal closures) act to restrain catch of primary species, though measures are not designed specifically for them.



Catch rate and amount are the stock performance indicators for estuary cobbler with target values of annual commercial catch rate >6 kg/day and annual commercial catch <9 t. In 2018 and 2019, both indicators were within the target range.

An age-based assessment of the stock of yellowfin whiting was undertaken after catches above threshold levels occurred (most recently in 2019). Its key finding was that yellowfin whiting abundance in the Estuary fluctuates due to variable recruitment between years. A "soft trigger" of 10 t was set in 2020, and 12 t was identified as the catch tolerance level. The harvest strategy states that DPIRD will meet with stakeholders in-season if the trigger is reached, to explore the appropriateness of the 12 t tolerance level for that season (considering fishing and environmental factors). If catch in excess of a tolerance level occurs without being accounted for (e.g. by environmental impacts or arrangements between fishing sectors), fishery performance is deemed unacceptable. A review of management arrangements is triggered and the need for a review of stock status, HCR, and/or tolerance levels is considered. There is a strategy in place for this main secondary species.

For Perth herring, the 2020 risk assessment concluded that the UoA risk was High, noting also the species' inherent vulnerability due to life history characteristics and environmental degradation. This risk rating has therefore triggered the requirement for a management review (to be completed within 3 months), and the implementation of an appropriate management response as soon as practicable.

For all main species, SG60, SG80 and SG100 are met.

Minor secondary species would be managed as retained or bycatch species under the finfish harvest strategy, following the risk-based management approach set out above. SG100 is met.

	Manage	Management strategy evaluation				
Ь	Guide post	The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is <b>some objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.		
	Met?	Yes	Νο	Νο		
Rationale						

The 2020 – 2025 finfish harvest strategy specifies the duration of the review period, when a review is to be undertaken in response to the breach of threshold or limit reference level. However, the timeframe for implementing management responses is 'as soon as practicable' for breaches of the threshold reference level. For breaches of the limit reference level, the control rule requires 'an *immediate management response to reduce the risk to an acceptable level as soon as practicable'*. SG60 is met, i.e. the measures are considered likely to work based on plausible argument. However, given time lags evident in fishery management when thresholds were breached previously (for sea mullet), an objective basis for confidence that the measures/partial strategy will work is not evident, based on some information directly about the fishery and/or species involved. Further, for Perth herring, the findings of the 2020 risk assessment triggered the requirement for a management review. This was required to be completed within three months but has not been initiated. For yelloweye mullet, the relationship between the stated target catch and MSY-based catch is not evident. Overall, there is not an objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved. SG80 is not met.



Testing has not occurred to an extent that there is high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved. SG100 is not met.

	Manage	Management strategy implementation				
с	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its objective as set out in scoring issue (a).		
	Met?		Νο	Νο		
Ratior	nale					

There appear to be ongoing issues with time lags in implementing management actions in accordance with the harvest strategy (see scoring issue (b)). While there is some evidence that management responses are actioned eventually, timely implementation as required by the harvest strategy is not apparent. SG80 is not met.

As yet, there is not clear evidence that the strategy is being implemented successfully for all main and minor secondary species, and is achieving its objective as set out in scoring issue (a). SG100 is not met.

	Shark finning				
d	Guide post	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree</b> of certainty that shark finning is not taking place.	
	Met?	NA	NA	NA	
Ratior	nale				

There are no secondary species that are sharks.

	Review	f unwanted catch		
е	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of all secondary species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

Unwanted catch due to lost gear in the UoA is considered minimal. Nets have a float line which, together with the relatively shallow waters of the estuary, would facilitate recovery of any gear lost.

By weight, unwanted catch discarded in UoA 5 comprised an estimated 1.5% of total catch, in catch monitoring undertaken in 2017/2018. Yelloweye mullet (a main secondary species) comprised 54% discarded catch items (by number) in the UoA (i.e. 54% of items among an estimated unwanted catch volume of 1.5% of total catch). Among minor secondary species, silver bream and common blowfish comprised 38% and 33% (respectively) of discarded catch.

Overall, however, the retained catch volume of the gill net fishery has declined substantially in the last decade to 6.9 t in 2018 and 1.1 t in 2019. At that level of total catch, and the level of unwanted catch estimated for the fishery, unwanted catch of secondary species is considered negligible, and this scoring issue is not scored.

### References

DPIRD (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	60-79	
Information gap indicator	<b>More information sought</b> Additional information on unwanted catch of yelloweye mullet in the gill net fishery, in relation to total catch and effort in that fishery (scoring issue (e)).	

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	65
Condition number (if relevant)	13

PI 2.2.3 – Secondary species information – Blue swimmer crab, crab pots (UoA 1)

PI	2.2.3	Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species			
Scoring Issue SG 60 SG 80 SG 100				SG 100	
	Information adequacy for assessment of impacts on main secondary species				
а	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary	Some quantitative information is available and <b>adequate to assess</b> the impact of the UoA on	Quantitative information is available and <b>adequate</b> to assess with a high degree of certainty the	

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	MSC Full Ass	sessment Reporting Template		
species with respect to status.	main secondary species with respect to status.	impact of the UoA on main secondary species with respect to status		
OR	OR	with respect to status.		
If RBF is used to sco PI 2.2.1 for the UoA:	re If RBF is used to score PI 2.2.1 for the UoA:			
Qualitative information adequate to estimate productivity and susceptibility attributes for main secondary species.	is Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.			
Met? Yes	Yes	Νο		
Rationale				

<u>Yelloweye mullet</u>: Commercial catch data and bait use information are the main quantitative information sources available to assess UoA impacts. Stock status can be estimated (via a data poor assessment method). Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. SG60 and SG80 are met.

The extent of bait usage comprising this species is unknown (while the amount used in combination with sea mullet has been estimated). Therefore, quantitative information is not available to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status. Bait use by species would be informative in that regard. SG100 is not met.

	Information adequacy for assessment of impacts on minor secondary spec			
b	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			Yes
Rationale				

For estuary cobbler, an assessment of stock status has been conducted, and information is available on UoA catch. Some quantitative information is adequate to estimate the impact of the UoA on this minor secondary species with respect to status. SG100 is met.

With the status of other minor secondary species stocks unknown in relation to reference points, fishery-dependent data, life history and biological information inform estimation of the impacts of the UoA. Secondary species are exclusively represented in discard data, with discarding of any species at <0.01% of the total discards (which are almost all the target species, addressed under Principle 1). The four-lobed swimming crab comprised 0.03% of discarded items. Information from the commercial fishery and DPIRD trap monitoring, together with species information is adequate to estimate the impact of the UoA on minor secondary species with respect to status. SG100 is met.

### **c** Information adequacy for management strategy

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	Guide post	Information is adequate to support <b>measures</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>partial</b> <b>strategy</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> secondary species, and <b>evaluate</b> with a <b>high degree of</b> <b>certainty</b> whether the strategy is <b>achieving its</b> <b>objective</b> .
	Met?	Yes	Yes	Νο
Ration	ale			

Information on yelloweye mullet, the main secondary species, is adequate to support a partial strategy. Available information includes an evaluation of stock status, commercial catch and some bait use information. SG60 and SG80 are met.

Information is not adequate currently to evaluate, with a high degree of certainty, that a strategy is achieving its objective for secondary species. SG100 is not met.

### References

DPIRD(2020). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia

DPIRD (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Duffy, R., & Smoothey, A. (2021). *Estuary Cobbler*, Cnidoglanis macrocephalus. FRDC Species Report. https://fish.gov.au/report/312-Estuary-Cobbler-2020 [Accessed 17 February 2021].

Earl, J., Gorfine, H., Duffy, R., Krueck, N. (2021). *Yelloweye Mullet*, Aldrichetta forsteri. FRDC Species Report. https://fish.gov.au/report/379-Yelloweye-Mullet-2020 [Accessed 20 June 2021]

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery. Fisheries Research Report No. 311*. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	85
Condition number (if relevant)	ΝΑ

# PI 2.2.3 – Secondary species information – Blue swimmer crab, drop nets (UoA 2)

PI	2.2.3	Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species				
Scorin	Scoring Issue SG 60 SG 80 SG 100					
	Information adequacy for assessment of impacts on main secondary spec					
а	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score	Some quantitative information is available and <b>adequate to assess</b> the impact of the UoA on main secondary species with respect to status. OR <b>If RBF is used to score</b>	Quantitative information is available and <b>adequate</b> <b>to assess with a high</b> <b>degree of certainty</b> the impact of the UoA on main secondary species with respect to status.		
		<b>PI 2.2.1 for the UoA:</b> Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	<b>PI 2.2.1 for the UoA:</b> Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.			
	Met?	NA	NA	NA		
Ratior	Rationale					

There are no main secondary species. Therefore, this scoring issue is not scored.

	Information adequacy for assessment of impacts on minor secondary spec		
b	Guide post	Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.	
	Met?	No	
Ration	nale		

The information on catch composition and bait use is dated and may not be representative of the fishery. Quantitative information is not adequate to estimate the impact of the UoA on minor secondary species with respect to status. SG100 is not met.

	Informa	Information adequacy for management strategy				
С	Guide post	Information is adequate to support <b>measures</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>partial</b> <b>strategy</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> secondary species, and <b>evaluate</b>		

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				with a <b>high degree of</b> <b>certainty</b> whether the strategy is <b>achieving its</b> <b>objective</b> .	
	Met?	Yes	Yes	Νο	
Ratior	nale				

There are no main secondary species, therefore SG60 and SG80 are met by default.

Information is not adequate currently to evaluate, for minor secondary species, with a high degree of certainty, that the strategy is achieving its objective. SG100 is not met.

References

DPIRD (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	80
Condition number (if relevant)	ΝΑ

PI 2.2.3 – Secondary species information – Blue swimmer crab, scoop nets (UoA 3)

PI	2.2.3	Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species				
Scorin	Scoring Issue SG 60 SG 80 SG 100					
	Informa	Information adequacy for assessment of impacts on main secondary species				
а	Guide post	Qualitative information is <b>adequate to estimate</b> the impact of the UoA on the main secondary	Some quantitative information is available and <b>adequate to assess</b> the impact of the UoA on	Quantitative information is available and <b>adequate</b> <b>to assess with a high</b> <b>degree of certainty</b> the impact of the UoA on		



There are no main secondary species. Therefore, this scoring issue is not scored.

	Informa	tion adequacy for assessment of impacts on minor secondary species
b	Guide post	Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?	No
Ratior	nale	

The information on catch composition is dated and may not be representative of the fishery. Quantitative information is not adequate to estimate the impact of the UoA on minor secondary species with respect to status. SG100 is not met.

	Information adequacy for management strategy			
С	Guide post	Information is adequate to support <b>measures</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>partial</b> <b>strategy</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> secondary species, and <b>evaluate</b> with a <b>high degree of</b> <b>certainty</b> whether the strategy is <b>achieving its</b> <b>objective</b> .
	Met?	Yes	Yes	Νο
Rationale				

There are no main secondary species, therefore SG60 and SG80 are met by default.

Information is not adequate currently to evaluate, for minor secondary species, with a high degree of certainty, that the strategy is achieving its objective. SG100 is not met.



#### References

DPIRD (2020). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development,, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. 2020. *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	80
Condition number (if relevant)	ΝΑ

### PI 2.2.3 – Secondary species information – Sea mullet, haul nets (UoA 4)

PI	2.2.3	Information on the natur adequate to determine the strategy to manage s	re and amount of seconda he risk posed by the UoA a secondary species	ry species taken is and the effectiveness of
Scorir	ng Issue	SG 60	SG 80	SG 100
	Informa	ation adequacy for asses	ssment of impacts on ma	ain secondary species
а	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and <b>adequate to assess</b> the impact of the UoA on main secondary species with respect to status. OR <b>If RBF is used to score</b> <b>PI 2.2.1 for the UoA:</b> Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and <b>adequate</b> <b>to assess with a high</b> <b>degree of certainty</b> the impact of the UoA on main secondary species with respect to status.



Met?	Yes – All main species	Yes – Yelloweye mullet, Yellowfin whiting No – Perth herring	No – All main species

Rationale

Commercial catch data is a key source of quantitative information available to assess UoA impacts on yelloweye mullet and yellowfin whiting, and some biological information is also available. Stock statuses have been assessed (via a data poor assessment method, CMSY). Some quantitative information is available and is adequate to assess the impact of the UoA on these main secondary species with respect to status. SG60 and SG80 are met.

Some quantitative information is available on Perth herring, though additional information is needed to adequately assess the impact of the UoA on this species with respect to status. SG60 is met, while SG80 is not.

Available quantitative information is not adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status. SG100 is not met.

	Information adequacy for assessment of impacts on minor seconda			nor secondary species
b	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			Yes
Ratior	nale			

With the status of minor secondary species stocks unknown in relation to reference points, fisherydependent data, life history and biological information inform estimation of the impacts of the UoA. Information is adequate to estimate the impact of the UoA on minor secondary species with respect to status. SG100 is met.

	Information adequacy for management strategy			
с	Guide post	Information is adequate to support <b>measures</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>partial</b> <b>strategy</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> secondary species, and <b>evaluate</b> with a <b>high degree of</b> <b>certainty</b> whether the strategy is <b>achieving its</b> <b>objective</b> .
	Met?	Yes	Yes	Νο
Rationale				

A range of information is available on the UoA and main secondary species caught in it (e.g. fishery catch and effort, species life history and some status information, and a significant body of information on the Estuary itself). This is adequate to support a partial strategy to manage main secondary species. SG60 and SG80 are met.



Information is not adequate currently to evaluate with a high degree of certainty that the strategy is achieving its objective. SG100 is not met.

References

DPIRD (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia,.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Duffy, R., & Smoothey, A. (2021). *Estuary Cobbler*, Cnidoglanis macrocephalus. FRDC Species Report. https://fish.gov.au/report/312-Estuary-Cobbler-2020 [Accessed 17 February 2021].

Earl, J., Gorfine, H., Duffy, R., Krueck, N. (2021). *Yelloweye Mullet*, Aldrichetta forsteri. FRDC Species Report. https://fish.gov.au/report/379-Yelloweye-Mullet-2020 [Accessed 20 June 2021]

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Roelofs, A., Stewart, J., Duffy, R., Conron, S. (2021). *Tailor (2020),* Pomatomus saltatrix. FRDC Species Report. https://fish.gov.au/report/215-Tailor-2018 [Accessed 17 February 2021]

Draft scoring range	60-79
Information gap indicator	<b>More information sought</b> Available quantitative information to assess the impact of the UoA on main secondary species with respect to status (see scoring issue (a)).

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	75
Condition number (if relevant)	14

### PI 2.2.3 – Secondary species information – Sea mullet, gill nets (UoA 5)

PI	2.2.3	Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species		
Scorin	ng Issue	SG 60	SG 80	SG 100
	Informa	ation adequacy for asses	sment of impacts on ma	ain secondary species
а	Guide post	Qualitative information is adequate to estimate the impact of the UoA on the main secondary	Some quantitative information is available and <b>adequate to assess</b> the impact of the UoA on	Quantitative information is available and <b>adequate</b> to assess with a high degree of certainty the



#### Rationale

Commercial catch data is a key source of quantitative information available to assess UoA impacts on main species and some biological information is also available. For yelloweye mullet and yellowfin whiting, stock status has been assessed (via a data poor assessment method). Some quantitative information is available and is adequate to assess the impact of the UoA on these main secondary species with respect to status. SG60 and SG80 are met.

For Perth herring and estuary cobbler, some quantitative information is available to estimate impacts (e.g. through the risk assessment process), though additional information is needed to adequately assess the impact of the UoA with respect to status. SG60 is met, while SG80 is currently not met.

Available quantitative information is not adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status. SG100 is not met.

	Inform	ation adequacy for assess	ment of impacts on mi	nor secondary species
b	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			Yes
Ratior	nale			

With the status of minor secondary species stocks unknown in relation to reference points, fisherydependent data, life history and biological information inform estimation of the impacts of the UoA. Information is adequate to estimate the impact of the UoA on minor secondary species with respect to status. SG100 is met.

Information adequacy	for management strategy
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Guide<br/>postInformation is adequate<br/>to support measures toInform<br/>to sup

Information is adequate to support a **partial** 

Information is adequate to support a **strategy** to

С

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	manage <b>main</b> secondary species.	<b>strategy</b> to manage <b>main</b> secondary species.	manage <b>all</b> secondary species, and <b>evaluate</b> with a <b>high degree of</b> <b>certainty</b> whether the strategy is <b>achieving its</b> <b>objective</b> .	
Met?	Yes	Yes	Νο	
Rationale				

A range of information is available on the UoA and main secondary species caught in it (e.g. fishery catch and effort, species life history and some status information, and a significant body of information on the Estuary itself). This is adequate to support a partial strategy to manage the main secondary species. SG60 and SG80 are met.

Information is not adequate currently to evaluate with a high degree of certainty that the strategy is achieving its objective. SG100 is not met.

#### References

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DPIRD (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 303.Department of Primary Industries and Regional Development, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Duffy, R., & Smoothey, A. (2021). *Estuary Cobbler*, Cnidoglanis macrocephalus. FRDC Species Report. https://fish.gov.au/report/312-Estuary-Cobbler-2020 [Accessed 17 February 2021].

Earl, J., Gorfine, H., Duffy, R., Krueck, N. (2021). *Yelloweye Mullet*, Aldrichetta forsteri. FRDC Species Report. https://fish.gov.au/report/379-Yelloweye-Mullet-2020 [Accessed 20 June 2021]

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

Draft scoring range	60-79
Information gap indicator	<b>More information sought</b> Available quantitative information to assess the impact of the UoA on main secondary species with respect to status (see scoring issue (a)).

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	75
Condition number (if relevant)	15

### PI 2.3.1 – ETP species outcome – Blue swimmer crab, crab pots (UoA 1)

PI	2.3.1	The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species			
Scorin	g Issue	SG 60 SG 80 SG 100			
	Effects where a	of the UoA on population applicable	n/stock within national c	or international limits,	
а	Guide post	Where national and/or international requirements set limits for ETP species, the <b>effects of the UoA</b> on the population/ stock are known and <b>likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, the <b>combined effects of</b> <b>the MSC UoAs</b> on the population /stock are known and <b>highly likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a <b>high degree of</b> <b>certainty</b> that the <b>combined effects of the</b> <b>MSC UoAs</b> are within these limits.	
	Met?	NA	NA	NA	
Rationale					

There are no applicable national or international limits. This scoring issue is not applicable.

	Direct e	effects		
b	Guide post	Known direct effects of the UoA are likely to not <b>hinder recovery</b> of ETP species.	Direct effects of the UoA are <b>highly likely</b> to not <b>hinder recovery</b> of ETP species.	There is a <b>high degree</b> of confidence that there are no <b>significant</b> detrimental direct effects of the UoA on ETP species.
	Met?	Yes	Yes	Yes
Rationale				

Commercial fishers are required to report ETP interactions by law. DPIRD monitoring has also occurred in this UoA. One cormorant has been recovered from a crab pot during DPIRD monitoring. No other ETP interactions are known from the UoA. DPIRD monitoring of this UoA (including for ETP interactions) most recently occurred in 2019.

Ecosystem risks (incorporating risks to ETP) associated with lost gear in this UoA were considered negligible in the risk assessment process that supports fishery management. The shallow waters fished would facilitate gear recovery.

There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species. SG60, SG80 and SG100 are met.

	Indirect effects			
с	Guide post	Indirect effects have been considered for the UoA and are thought to be <b>highly likely</b> to not create unacceptable impacts.	There is a <b>high degree</b> of confidence that there are no significant detrimental indirect effects of the UoA on ETP species.	



	Met?	Yes	Yes
Ration	ale		

Indirect effects of the UoA on ETP include effects of removal of fished species and reduced habitat suitability for ETP (including through altered availability of prey organisms). Sustainable management of target, primary and secondary species and limited habitat impacts reduce the likelihood of such effects. Risks associated with lost gear in this UoA were considered negligible in the risk assessment process that supports fishery management. The shallow waters fished would facilitate gear recovery in this UoA.

Disturbance of birds (especially threatened migratory shorebirds) has been identified as an issue in the Estuary. However, commercial trap fishers are boat-based, and commercial capacity is currently limited to six licences. Traps can only be pulled once every 24 h period and are removed during seasonal and weekend closures. Further, the relatively slower speeds that vessels are reported to travel at are considered likely to reduce disturbance to birds associated with this UoA. The 2020 risk assessment concluded that impacts of disturbance of this UoA were negligible.

There is a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species. SG80 and SG100 are met.

### References

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. 2020. Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. 2019. Shorebird disturbance on the Peel-Harvey Estuary. BirdLife Western Australia.

Draft scoring range	<u>&gt;</u> 80	
Information gap indicator	Information sufficient to score PI	

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

PI 2.3.1 – ETP species outcome – Blue swimmer crab, drop nets (UoA 2)

PI	2.3.1	The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scorin	ig Issue	SG 60	SG 80	SG 100
а	Effects where a	of the UoA on population applicable	n/stock within national o	r international limits,
4	Guide post	Where national and/or international requirements set limits for ETP species,	Where national and/or international requirements set limits for ETP species,	Where national and/or international requirements set limits for ETP species,

		the <b>effects of the UoA</b> on the population/ stock are known and <b>likely</b> to be within these limits.	the <b>combined effects of</b> <b>the MSC UoAs</b> on the population /stock are known and <b>highly likely</b> to be within these limits.	there is a <b>high degree of</b> certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	NA	NA	NA
Ratior	nale			

There are no applicable national or international limits. This scoring issue is not applicable.

	Direct e	Direct effects			
b	Guide post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Direct effects of the UoA are <b>highly likely</b> to not <b>hinder recovery</b> of ETP species.	There is a <b>high degree</b> of confidence that there are no <b>significant</b> detrimental direct effects of the UoA on ETP species.	
	Met?	Yes	Yes	Νο	
Ratior	nale				

There is no qualitative or quantitative information about drop net interactions with ETP species. However, given similarities in gear design, it is reasonable to assume similar modes of interaction as would occur with commercial crab pots. Information from the commercial pot fishery, together with the short time that drop nets are typically deployed underwater (10-15 minutes), and the findings of an ecological risk assessment, supports the conclusion that direct effects of the UoA are highly likely to not hinder recovery of ETP species. Drop nets do not 'catch' unless pulled into their upright position (see Figure 3). Therefore, any lost gear would not fish while flat on the substrate, minimising unobserved ETP mortalities.

SG60 and SG80 are met. There is not a high degree of confidence, and SG100 is not met.

	Indirect effects			
с	Guide post	Indirect effects have been considered for the UoA and are thought to be <b>highly likely</b> to not create unacceptable impacts.	There is a <b>high degree</b> of confidence that there are no significant detrimental indirect effects of the UoA on ETP species.	
	Met?	Yes	Νο	
Ratior	nale			

Indirect effects of the UoA on ETP include any effects of the removal of fished species and reduced habitat suitability for ETP (including through altered availability of prey organisms). Sustainable management of target, primary and secondary species and limited habitat impacts would reduce the likelihood of such effects. Further, drop nets do not 'catch' unless pulled into their upright position (see Figure 3). Therefore any lost gear would not fish while flat on the substrate, limiting indirect effects.

Disturbance of birds (especially threatened migratory shorebirds) has been identified as problematic in the Estuary. No crabbing is permitted 1 September – 30 November, which reduces disturbance during



the arrival of migratory shorebirds at the estuary. Drop net fishing occurs from vessels in deeper parts of the estuary, or sometimes from jetties and bridges. The 2020 risk assessment concluded that impacts of disturbance of this UoA were Negligible, based on vessels travelling slower in shallow waters and not approaching birds sufficiently close that disturbance occurs. SG80 is met.

Given the large amount of drop net effort and information gaps for this method, there is not a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species. SG100 is not met.

References

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. 2020. Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

Graff, J. (2019). Shorebird disturbance on the Peel-Harvey Estuary. BirdLife Western Australia.

Draft scoring range	60-79
Information gap indicator	<b>More information sought</b> Further information is sought to clarify the potential disturbance to birds resulting from recreational fishing vessels (as a subset of all vessels).

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	80
Condition number (if relevant)	ΝΑ

PI 2.3.1 – ETP species outcome – Blue swimmer crab, scoop nets (UoA 1)

PI	2.3.1	The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue SG 60		SG 60	SG 80	SG 100
	Effects where a	of the UoA on population applicable	n/stock within national o	r international limits,
а	Guide post	Where national and/or international requirements set limits for ETP species, the <b>effects of the UoA</b> on the population/ stock are known and <b>likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, the <b>combined effects of</b> <b>the MSC UoAs</b> on the population /stock are known and <b>highly likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a <b>high degree of</b> <b>certainty</b> that the <b>combined effects of the</b> <b>MSC UoAs</b> are within these limits.
	Met?	NA	NA	NA
Rationale				

There are no applicable national or international limits. This scoring issue is not applicable.

	Direct effects			
b	Guide post	Known direct effects of the UoA are likely to not <b>hinder recovery</b> of ETP species.	Direct effects of the UoA are <b>highly likely</b> to not <b>hinder recovery</b> of ETP species.	There is a <b>high degree</b> of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	Yes	Yes	Yes
Ratior	nale			

Scoop nets are an active fishing method, highly targeted to catching crabs. Fishers deploy the nets by hand. Nets are made of hard materials, have an open top (i.e. a scoop shape) and are not left unattended. The gear is considered extremely unlikely to interact with ETP directly. There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species. SG60, SG80 and SG100 are met.

	Indirect effects			
с	Guide post	Indirect effects have been considered for the UoA and are thought to be <b>highly likely</b> to not create unacceptable impacts.	There is a <b>high degree</b> of confidence that there are no <b>significant</b> detrimental indirect effects of the UoA on ETP species.	
	Met?	Νο	Νο	
Ratior	nale			

Indirect effects of the UoA on ETP include any effects of the removal of fished species and reduced habitat suitability for ETP. Sustainable management of target, primary and secondary species would reduce the likelihood of such effects. Habitat impacts of scoop netting are considered below (under 2.4.1).

Disturbance of birds (especially threatened migratory shorebirds) has been identified as problematic in the Estuary. No crabbing is permitted between 1 September and 30 November, which reduces disturbance during the arrival of migratory shorebirds at the estuary. However, outside that period, scoop net fishers may be active during day or night and can disturb shorebirds feeding and roosting in the shallows and adjacent areas. Migratory shorebirds remain present until the autumn when they return to their northern hemisphere breeding grounds, and January-February is the peak season for this UoA. Scoop net fishers were documented as a key source of disturbance for migratory shorebirds. The 2020 risk assessment classified this UoA as a High risk for migratory threatened shorebirds. The need for additional management action was recognised (in accordance with the blue swimmer crab harvest strategy). For this group, indirect effects have been considered are not thought to be highly likely to not create unacceptable impacts. SG80 is not met.

There is not a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species. SG100 is not met.

### References

DPIRD (2020). Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. (2019). Shorebird disturbance on the Peel-Harvey Estuary. BirdLife Western Australia

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI.

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	70
Condition number (if relevant)	16

### PI 2.3.1 – ETP species outcome – Sea mullet, haul nets (UoA 4)

PI	2.3.1	The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Effects where a	of the UoA on population applicable	n/stock within national c	or international limits,
а	Guide post	Where national and/or international requirements set limits for ETP species, the <b>effects of the UoA</b> on the population/ stock are known and <b>likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, the <b>combined effects of</b> <b>the MSC UoAs</b> on the population /stock are known and <b>highly likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a <b>high degree of</b> <b>certainty</b> that the <b>combined effects of the</b> <b>MSC UoAs</b> are within these limits.
	Met?	NA	NA	NA
Ratior	nale			

There are no applicable national or international limits. This scoring issue is not applicable.

	Met?	Yes	Yes	effects of the UoA on ETP species.
b	Guide	Known direct effects of the UoA are likely to not <b>hinder recovery</b> of ETP species.	Direct effects of the UoA are <b>highly likely</b> to not <b>hinder recovery</b> of ETP species.	There is a <b>high degree</b> of confidence that there are no significant detrimental direct



### Rationale

Commercial fishers are required to report ETP interactions by law. DPIRD monitoring has also occurred in this UoA in 2017/18. In 2006 and 2007, interactions with cormorants were reported (five and two interactions respectively). No interactions have been reported since 2007 and none were observed by the DPIRD monitoring in 2017/18.

The direct effects of lost gear on ETP in the UoA are expected to be minimal. (During haul netting, nets are not left unattended).

There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species. Therefore SG60 and SG80 are met. With the most recent monitoring information available from 2017/18, SG100 is not considered to be met (while no significant detrimental direct effects are expected).

	Indirect effects				
с	Guide post	Indirect effects have been considered for the UoA and are thought to be <b>highly likely</b> to not create unacceptable impacts.	There is a <b>high degree</b> of confidence that there are no significant detrimental indirect effects of the UoA on ETP species.		
	Met?	Yes	Yes		
Ratior	nale				

Indirect effects of the UoA on ETP could include effects of removal of fished species and reduced habitat suitability for ETP. Sustainable management of target, primary and secondary species and limited habitat impacts reduces the likelihood of such effects. Indirect effects of lost gear are expected to be negligible, given the minimal extent of gear loss considered to occur in the UoA.

Disturbance of birds (especially threatened migratory shorebirds) has been identified as an issue in the Estuary. However, commercial net fishers are boat-based, and capacity is currently limited to six licenced fishers. There is a maximum legal boat length (6.5 m) and mechanised hauling systems are not permitted. Trips mostly comprise a single haul and a half-day of activity, mainly on calm, clear days. The scale of the fishery is considered unlikely to have significant detrimental indirect effects on shorebirds. The 2020 risk assessment concluded that impacts of disturbance of this UoA on ETP were negligible.

There is a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species. SG80 and SG100 are met.

#### References

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. (2019). Shorebird disturbance on the Peel-Harvey Estuary. BirdLife Western Australia.

Draft scoring range



Information gap indicator

Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	95
Condition number (if relevant)	ΝΑ

### PI 2.3.1 – ETP species outcome – Sea mullet, gill nets (UoA 5)

PI	2.3.1	The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
	Effects where a	of the UoA on population applicable	n/stock within national c	or international limits,
а	Guide post	Where national and/or international requirements set limits for ETP species, the <b>effects of the UoA</b> on the population/ stock are known and <b>likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, the <b>combined effects of</b> <b>the MSC UoAs</b> on the population /stock are known and <b>highly likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a <b>high degree of</b> <b>certainty</b> that the <b>combined effects of the</b> <b>MSC UoAs</b> are within these limits.
	Met?	NA	NA	NA
Rationale				

There are no applicable national or international limits. This scoring issue is not applicable.

	Direct e	Direct effects				
b	Guide post	Known direct effects of the UoA are likely to not <b>hinder recovery</b> of ETP species.	Direct effects of the UoA are <b>highly likely</b> to not <b>hinder recovery</b> of ETP species.	There is a <b>high degree</b> of confidence that there are no <b>significant</b> detrimental direct effects of the UoA on ETP species.		
	Met?	Yes	Yes	No		
Rationale						

Commercial fishers are required to report ETP interactions by law. DPIRD monitoring has also occurred in this UoA in 2017/18. No interactions have been reported with net fisheries since 2007 and none were observed by the DPIRD monitoring in 2017/18.

The direct effects of lost gear on ETP in the UoA are expected to be minimal. Nets are set and left unattended in the UoA. These nets have a float line which, together with the relatively shallow waters of the estuary, would facilitate recovery if any gear was lost.

There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species. SG60 and SG80 are met. With the most recent monitoring information available from 2017/18, SG100 is not considered to be met (while no significant detrimental direct effects are expected).

с	Indirect effects	direct effects			
	Guide post	Indirect effects have been considered for the UoA and are thought to be <b>highly likely</b> to not create unacceptable impacts.	There is a <b>high degree</b> of confidence that there are no significant detrimental indirect effects of the UoA on ETP species.		
	Met?	Yes	Yes		
Ratior	nale				

Indirect effects of the UoA on ETP could include effects of removal of fished species and reduced habitat suitability for ETP. Sustainable management of target, primary and secondary species and limited habitat impacts reduces the likelihood of such effects. Indirect effects of lost gear are expected to be negligible, given the minimal extent of gear loss considered to occur in the UoA.

Disturbance of birds (especially threatened migratory shorebirds) has been identified as an issue in the Estuary. However, commercial net fishers are boat-based, and capacity is currently limited to sixlicenced fishers. There is a maximum legal boat length (6.5 m) and mechanised hauling systems are not permitted. Gill net effort in recent years is reported to have declined significantly. The scale of the fishery is considered unlikely to have significant detrimental indirect effects on shorebirds. The 2020 risk assessment concluded that impacts of the UoA for ETP were negligible.

There is a high degree of confidence that there are no significant detrimental indirect effects of the UoA on ETP species. SG80 and SG100 are met.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. (2019). Shorebird disturbance on the Peel-Harvey Estuary. BirdLife Western Australia.

Draft scoring range	<u>&gt;</u> 80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	95
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Condition number (if relevant)

NA

PI 2.3.2 – ETP species management strategy – Blue swimmer crab, crab pots (UoA 1)

PI	2.3.2	<ul> <li>The UoA has in place precautionary management strategies designed to:</li> <li>meet national and international requirements;</li> <li>ensure the UoA does not hinder recovery of ETP species.</li> </ul> Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species		
Scorin	ng Issue	SG 60	SG 80	SG 100
	Manage	ement strategy in place	(national and internatior	nal requirements)
а	Guide post	There are <b>measures</b> in place that minimise the UoA-related mortality of ETP species, and are expected to be <b>highly</b> <b>likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be <b>highly</b> <b>likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>comprehensive</b> <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to <b>achieve</b> <b>above</b> national and international requirements for the protection of ETP species.
	Met?	Yes	Yes	Νο
Rationale				

The selectivity of the fishing method comprises an operational measure that minimises the UoA-related mortality of ETP species. Fishers are required to report interactions with ETP and DPIRD monitoring also occurs. Extremely low rates of ETP capture are known to have occurred over time in crab traps. There are measures in place that minimise the UoA-related mortality of ETP species and are expected to be highly likely to achieve national and international requirements for the protection of ETP species. SG60 is met.

Available information is used to evaluate the fishery risk to ETP, with a risk level of "Medium" or lower set out as the management target reference level as part of the blue swimmer crab harvest strategy 2020 – 2025. Where a High risk or a change in risk level occurs, the reasons for this must be reviewed within 3 months and a management response implemented as soon as practicable. The limit reference level has been identified as when fishing impacts are considered to generate an unacceptable level of risk (i.e. a Severe risk). At that time, an immediate management response is initiated to reduce the risk to an acceptable level as soon as practicable. Currently, the risk that the UoA presents to ETP is considered to be Negligible, and no additional management action has been triggered.

There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species. SG80 is met.

A comprehensive strategy is not in place; SG100 is not met.

	Manage	ement strategy in place (	(alternative)		
Ь	Guide post	There are <b>measures</b> in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a <b>strategy</b> in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a <b>comprehensive</b> <b>strategy</b> in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.	
	Met?	NA	NA	NA	
Rationale					

Scoring issue (a) is scored, therefore (b) is not.

	Manage	ement strategy evaluation	n		
с	Guide post	The measures are <b>considered likely</b> to work, based on <b>plausible</b> <b>argument</b> (e.g.,general experience, theory or comparison with similar fisheries/species).	There is an <b>objective</b> <b>basis for confidence</b> that the measures/strategy will work, based on <b>information</b> directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a <b>quantitative analysis</b> supports <b>high</b> <b>confidence</b> that the strategy will work.	
	Met?	Yes	Yes	Νο	
Rationale					

The operational measure of the fishing method is considered likely to work for managing direct UoA impacts on ETP. This is based on confirmation of the method's selectivity, demonstrated by the monitoring information collected by DPIRD, and with no ETP interactions reported by fishers.

As described above in scoring issue (a), the risk that this UoA presents to ETP is considered to be Negligible, and no additional management action has been triggered through the 2020 risk assessment process. Overall, therefore, there is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved. SG60 and SG80 are met.

A quantitative analysis is not available to support high confidence that the strategy will work, and SG100 is not met.

	Manage	ement strategy implement	ation	
d	Guide post	T tl n b s	here is some <b>evidence</b> hat the neasures/strategy is being implemented uccessfully.	There is <b>clear evidence</b> that the strategy/comprehensive strategy is being implemented successfully and <b>is achieving its</b> <b>objective as set out in</b> <b>scoring issue (a) or</b> <b>(b).</b>



	Met?	Yes	No
Rationa	ale		

Evidence for the selectivity of the fishing method is provided by the monitoring information collected by DPIRD over time. Further, a requirement to report ETP interactions is in place and no ETP interactions have been reported by UoA fishers. There is some evidence that the measures/strategy is being implemented successfully. SG80 is met.

As yet, there is no clear evidence that the strategy is being implemented successfully and achieving its objective. SG100 is not met.

	Review	of alternative measures	s to minimise mortality o	f ETP species	
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.	
	Met?	NA	ΝΑ	ΝΑ	
Rationale					

Direct UoA-related mortality of ETP is negligible, with mortality of a single cormorant recorded by DPIRD and no fisher reports of ETP interactions occurring. Therefore, this scoring issue is not scored.

### References

DPIRD (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development,, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. (2019). Shorebird disturbance on the Peel-Harvey Estuary. BirdLife Western Australia.

Draft scoring range	<u>&gt;</u> 80	
Information gap indicator	Information sufficient to score PI	

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 



Overall Performance Indicator score	80
Condition number (if relevant)	NA

PI 2.3.2 – ETP species management strategy – Blue swimmer crab, drop nets (UoA 2)

PI	2.3.2	<ul> <li>The UoA has in place precautionary management strategies designed to:</li> <li>meet national and international requirements;</li> <li>ensure the UoA does not hinder recovery of ETP species.</li> </ul> Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species			
Scorin	ng Issue	SG 60 SG 80 SG 100			
	Manage	ement strategy in place	(national and internatior	nal requirements)	
а	Guide post	There are <b>measures</b> in place that minimise the UoA-related mortality of ETP species, and are expected to be <b>highly</b> <b>likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be <b>highly</b> <b>likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>comprehensive</b> <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to <b>achieve</b> <b>above</b> national and international requirements for the protection of ETP species.	
	Met?	Yes	Yes	Νο	
Rationale					

Analogous with the gear used in UoA 1, the selectivity of the fishing method comprises an operational measure that minimises the UoA-related mortality of ETP species.

Available information is used to evaluate the fishery risk to ETP, with a risk level of "Medium" or lower set out as the management target reference level as part of the blue swimmer crab harvest strategy 2020 – 2025. Where a High risk or a change in risk level occurs, the reasons for this must be reviewed within 3 months and a management response implemented as soon as practicable. The limit reference level has been identified as when fishing impacts are considered to generate an undesirable level of risk (i.e. a Severe risk). At that time, an immediate management response is initiated to reduce the risk to an acceptable level as soon as practicable. Currently, the risk that the UoA presents to ETP is considered to be Negligible, and no additional management action has been triggered.

There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species. SG80 is met.

A comprehensive strategy is not in place; SG100 is not met.

**b** Management strategy in place (alternative)

		21_390EN MSC Full Assessment Reporting Template		
	Guide post	There are <b>measures</b> in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a <b>strategy</b> in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	NA	NA	ΝΑ
Ratior	nale			

Scoring issue (a) is scored, therefore (b) is not.

bio inspecta qoinspecta

	Manage	ement strategy evaluation	n	
с	Guide post	The measures are <b>considered likely</b> to work, based on <b>plausible</b> <b>argument</b> (e.g.,general experience, theory or comparison with similar fisheries/species).	There is an <b>objective</b> <b>basis for confidence</b> that the measures/strategy will work, based on <b>information</b> directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a <b>quantitative analysis</b> supports <b>high</b> <b>confidence</b> that the strategy will work.
	Met?	Yes	Yes	Νο
Rationale				

The operational measure of fishing method is considered likely to work for managing direct UoA impacts on ETP, based on plausible argument.

While no information is available from recreational drop net fishing, the commercial crab pot fishery operates similar gear, and extremely low levels of ETP interactions are known from that fishery.

Further, as described above in scoring issue (b), the risk that this UoA presents to ETP is considered to be Negligible, and no additional management action has been triggered through the 2020 risk assessment process. Overall, therefore, there is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved. SG60 and SG80 are met.

A quantitative analysis is not available to support high confidence that the strategy will work, and SG100 is not met.

	Manage	ment strategy implementation
d	Guide post	There is some <b>evidence</b> that the measures/strategy is being implemented successfully. There is <b>clear evidence</b> that the strategy/comprehensive strategy is being implemented successfully and <b>is achieving its</b> <b>objective as set out in</b> <b>scoring issue (a) or</b> (b).



Met?	Yes	Νο
Rationale		

Evidence for the selectivity of the crab pot fishing method, including extremely low levels of ETP interactions, is provided by the monitoring information collected by DPIRD over time from the commercial fishery. SG80 is met.

As yet, there is no clear evidence that the strategy is being implemented successfully and achieving its objective. SG100 is not met.

	Review of alternative measures to minimise mortality of ETP species			
е	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	NA	ΝΑ	NA
Rationale				

UoA-related mortality of ETP is considered negligible, therefore, this scoring issue is not scored.

### References

DPIRD (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery.* Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	<u>&gt;</u> 80	
Information gap indicator	Information sufficient to score PI	

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	80
Condition number (if relevant)	ΝΑ

PI 2.3.2 – ETP species management strategy – Blue swimmer crab, scoop nets (UoA 3)

ΡI	2.3.2	<ul> <li>The UoA has in place precautionary management strategies designed to:</li> <li>meet national and international requirements;</li> <li>ensure the UoA does not hinder recovery of ETP species.</li> </ul> Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species			
Scorir	ng Issue	SG 60 SG 80 SG 100			
	Manage	ement strategy in place	(national and internatior	nal requirements)	
a	Guide post	There are <b>measures</b> in place that minimise the UoA-related mortality of ETP species, and are expected to be <b>highly</b> <b>likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be <b>highly</b> <b>likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>comprehensive</b> <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to <b>achieve</b> <b>above</b> national and international requirements for the protection of ETP species.	
	Met?	Yes	Yes	Νο	
Rationale					

The selectivity of the fishing method comprises an operational measure that minimises the UoA-related mortality of ETP species.

Available information is used to evaluate the fishery risk to ETP, with a risk level of "Medium" or lower set out as the management target reference level as part of the blue swimmer crab harvest strategy 2020 – 2025. Where a High risk or a change in risk level occurs, the reasons for this must be reviewed within 3 months and a management response implemented as soon as practicable. The limit reference level has been identified as when fishing impacts are considered to generate an undesirable level of risk (i.e. a Severe risk). At that time, an immediate management response is initiated to reduce the risk to an acceptable level as soon as practicable. In 2020, the risk that the UoA presents to one group of ETP was identified as high, and the need for additional management actions has been recognised.

There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species. SG80 is met.

A comprehensive strategy is not in place; SG100 is not met.

### Management strategy in place (alternative)

b	Guide post	There are <b>measures</b> in place that are expected to ensure the UoA does not hinder the recovery of ETP	There is a <b>strategy</b> in place that is expected to ensure the UoA does not hinder the recovery of ETP	There is a <b>comprehensive</b> <b>strategy</b> in place for managing ETP species, to
		species.	species.	ensure the UoA does not


				hinder the recovery of ETP species.
	Met?	NA	NA	NA
Ratior	nale			

Scoring issue (a) is scored, therefore (b) is not.

	Management strategy evaluation				
с	Guide post	The measures are <b>considered likely</b> to work, based on <b>plausible</b> <b>argument</b> (e.g.,general experience, theory or comparison with similar fisheries/species).	There is an <b>objective</b> <b>basis for confidence</b> that the measures/strategy will work, based on <b>information</b> directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a <b>quantitative analysis</b> supports <b>high</b> <b>confidence</b> that the strategy will work.	
	Met?	Yes	Νο	No	
Ratior	nale				

The operational measure of fishing method is considered likely to work for managing direct UoA impacts on ETP, based on plausible argument.

The harvest strategy for blue swimmer crabs 2020 – 2025 states that control measures are now required to reduce disturbance of migratory threatened shorebirds due to scoop netting, to reduce an identified High risk to an acceptable level (Medium or lower risk). This demonstrates key early steps of the risk evaluation and management process being followed, while measures remain to be identified.

The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species). SG60 is met. As yet, there is not an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved. The identification of high risk for threatened migratory shorebirds appears to be the first time an ETP risk has been considered undesirable through applying the harvest strategy. SG80 is not met.

A quantitative analysis is not available to support high confidence that the strategy will work, and SG100 is not met.

	Management strategy implementation					
d	Guide post		There is some <b>evidence</b> that the measures/strategy is being implemented successfully.	There is <b>clear evidence</b> that the strategy/comprehensive strategy is being implemented successfully and <b>is achieving its</b> <b>objective as set out in</b> <b>scoring issue (a) or</b> <b>(b).</b>		
	Met?		Νο	Νο		



### Rationale

Though catch information for this UoA is limited and now dated, there is some evidence for the selectivity of the fishing method.

The Harvest Strategy states that when a high risk level is recognised, the reasons for this must be reviewed within three months and a management response implemented as soon as practicable. In 2020, the risk that the UoA presents to one group of ETP (threatened migratory shorebirds) was identified as high, and the need for additional management actions was identified. The three month period within which a review was required has now passed, and the review has not been completed. The strategy appears to not be implemented successfully. SG80 is not met.

As yet, there is no clear evidence that the strategy is being implemented successfully and achieving its objective. SG100 is not met.

	Review of alternative measures to minimise mortality of ETP species				
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.	
	Met?	Yes	Yes	Νο	
Ratior	nale				

Direct UoA-related mortality of ETP is negligible, while disturbance risk may have cumulative effects that are extremely difficult to quantify. Nonetheless, a set of recommendations has been prepared to address disturbance issues at the Estuary, to manage the identified risk to threatened migratory shorebirds. The intent to review this (and other) UoA risks is set out in the blue swimmer crab harvest strategy. SG60 and SG80 are met. Biennial review appears not to be provided for, and SG100 is not met.

#### References

DPIRD (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Western Australia.

Graff, J. (2019). *Shorebird disturbance on the Peel-Harvey Estuary*. BirdLife Western Australia.



Draft scoring range	60-79	
Information gap indicator	<b>More information sought</b> Information on the ETP management strategy to address disturbance of threatened migratory shorebirds (as per scoring issues (c, d)).	

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	70
Condition number (if relevant)	17

# PI 2.3.2 – ETP species management strategy – Sea mullet, haul nets (UoA 4)

PI	2.3.2	<ul> <li>The UoA has in place precautionary management strategies designed to:</li> <li>meet national and international requirements;</li> <li>ensure the UoA does not hinder recovery of ETP species.</li> </ul> Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species			
Scorin	ig Issue	SG 60	SG 80	SG 100	
	Manage	ement strategy in place	(national and internatior	nal requirements)	
а	Guide post	There are <b>measures</b> in place that minimise the UoA-related mortality of ETP species, and are expected to be <b>highly</b> <b>likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be <b>highly</b> <b>likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>comprehensive</b> <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to <b>achieve</b> <b>above</b> national and international requirements for the protection of ETP species.	
	Met?	Yes	Yes	Νο	
Ratior	Rationale				

Characteristics of the fishing operation minimise the UoA-related mortality of ETP species. For example, fishers do not leave gear unattended, there are capacity limits in place, and effort comprises generally one haul per vessel per day. Fishers are required to report interactions with ETP and DPIRD monitoring has occurred (and is planned to recur 5-yearly). Extremely low rates of ETP capture are known to have occurred over time, with interactions limited to one seabird taxon (cormorants). There are measures in

place that minimise the UoA-related mortality of ETP species and are highly likely to achieve national and international requirements for the protection of ETP species. SG60 is met.

Available information is used to evaluate the fishery risk to ETP, with a risk level of "Medium" or lower set out as the management target reference level as part of the finfish harvest strategy 2020 – 2025. Where a High risk or a change in risk level occurs, the reasons for this must be reviewed within 3 months and a management response implemented as soon as practicable. The limit reference level has been identified as when fishing impacts are considered to generate an unacceptable level of risk (i.e. a Severe risk). At that time, an immediate management response is initiated to reduce the risk to an acceptable level as soon as practicable. Currently, the risk that the UoA presents to ETP is considered to be Negligible, and no additional management action has been triggered.

There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species. SG80 is met.

A comprehensive strategy is not in place; SG100 is not met.

	Management strategy in place (alternative)				
b	Guide post	There are <b>measures</b> in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a <b>strategy</b> in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a <b>comprehensive</b> <b>strategy</b> in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.	
	Met?	NA	NA	NA	
Rationale					

Scoring issue (a) is scored, therefore (b) is not.

	Manage	ement strategy evaluation	n		
С	Guide post	The measures are <b>considered likely</b> to work, based on <b>plausible</b> <b>argument</b> (e.g.,general experience, theory or comparison with similar fisheries/species).	There is an <b>objective</b> <b>basis for confidence</b> that the measures/strategy will work, based on <b>information</b> directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a <b>quantitative analysis</b> supports <b>high</b> <b>confidence</b> that the strategy will work.	
	Met?	Yes	Yes	Νο	
Rationale					

The operational measures characterising the fishing method are considered likely to work for managing direct UoA impacts on ETP. Further, an extremely low level of interactions have been detected in the fishery over time. As described above in scoring issue (b), the risk that this UoA presents to ETP is considered to be Negligible, and no additional management action has been triggered by the findings of 2020 risk assessment process. There is an objective basis for confidence that the measures/strategy will



work, based on information directly about the fishery and/or the species involved. SG60 and SG80 are met.

A quantitative analysis is not available to support high confidence that the strategy will work, and SG100 is not met.

	Management strategy implementation				
d	Guide post	The tha me bei suc	ere is some <b>evidence</b> at the easures/strategy is ing implemented ccessfully.	There is <b>clear evidence</b> that the strategy/comprehensive strategy is being implemented successfully and <b>is achieving its</b> <b>objective as set out in</b> <b>scoring issue (a) or</b> <b>(b).</b>	
	Met?	Ye	S	Νο	
Ratior	nale				

Evidence for the selectivity of the fishing method is provided by the extremely low levels of ETP interactions detected over time, through monitoring by DPIRD and fisher reporting of ETP interactions (a legal requirement). ETP risks were considered negligible for this UoA.

There is some evidence that the measures/strategy is being implemented successfully. SG80 is met.

As yet, there is no clear evidence that the strategy is being implemented successfully and achieving its objective. SG100 is not met.

	Review of alternative measures to minimise mortality of ETP species				
е	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.	
	Met?	NA	NA	NA	
Ratior	nale				

Direct UoA-related mortality of ETP is negligible. Therefore, this scoring issue is not scored.

#### References

DPIRD (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. (2019). Shorebird disturbance on the Peel-Harvey Estuary. BirdLife Western Australia.

Draft scoring range	<u>&gt;</u> 80
Information gap indicator	Information sufficient to score PI

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	80
Condition number (if relevant)	NA

PI 2.3.2 – ETP species management strategy – Sea mullet, gill nets (UoA 5)

PI	2.3.2	<ul> <li>The UoA has in place precautionary management strategies designed to:</li> <li>meet national and international requirements;</li> <li>ensure the UoA does not hinder recovery of ETP species.</li> </ul> Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species		
Scorin	ng Issue	SG 60	SG 80	SG 100
	Manage	ement strategy in place	(national and internation	nal requirements)
a	Guide post	There are <b>measures</b> in place that minimise the UoA-related mortality of ETP species, and are expected to be <b>highly</b> <b>likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be <b>highly</b> <b>likely to achieve</b> national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	Yes	Yes	No
Ratior	nale			

Fishers are required to report interactions with ETP and DPIRD monitoring has occurred (and is planned to recur five-yearly). Extremely low rates of ETP capture are known to have occurred over time, with interactions limited to one seabird taxon (cormorants) in net fisheries. Indirectly, the nature of the fishing



operation can be considered a measure, including that nets are set at night, capacity is limited, there is a decreasing level of effort with this fishing method. SG60 is met.

Available information is used to evaluate the fishery risk to ETP, with a risk level of "Medium" or lower set out as the management target reference level as part of the finfish harvest strategy 2020 – 2025. Where a High risk or a change in risk level occurs, the reasons for this must be reviewed within 3 months and a management response implemented as soon as practicable. The limit reference level has been identified as when fishing impacts are considered to generate an unacceptable level of risk (i.e. a Severe risk). At that time, an immediate management response is initiated to reduce the risk to an acceptable level as soon as practicable. Currently, the risk that the UoA presents to ETP is considered to be Negligible, and no additional management action has been triggered.

There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species. SG80 is met.

A comprehensive strategy is not in place; SG100 is not met.

## Management strategy in place (alternative)

b	Guide post	There are <b>measures</b> in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a <b>strategy</b> in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	NA	NA	NA
Ratior	nale			

Scoring issue (a) is scored, therefore (b) is not.

	Management strategy evaluation			
С	Guide post	The measures are <b>considered likely</b> to work, based on <b>plausible</b> <b>argument</b> (e.g.,general experience, theory or comparison with similar fisheries/species).	There is an <b>objective</b> <b>basis for confidence</b> that the measures/strategy will work, based on <b>information</b> directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a <b>quantitative analysis</b> supports <b>high</b> <b>confidence</b> that the strategy will work.
	Met?	Yes	Yes	No
Ratior	nale			

Some of the operational measures characterising the fishing method are considered likely to work for managing direct UoA impacts on ETP (e.g. the relatively low level of fishing capacity and effort). Further, an extremely low level of interactions have been detected in the fishery over time. In the 2020 ecological risk assessment conducted, the risk that this UoA presents to ETP was considered to be Negligible, and no additional management action has been triggered by that assessment's findings. There is an objective



basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved. SG60 and SG80 are met.

A quantitative analysis is not available to support high confidence that the strategy will work, and SG100 is not met.

	Management strategy implementation		
d	Guide post	There is some <b>evidence</b> that the measures/strategy is being implemented successfully.	<ul> <li>There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).</li> </ul>
	Met?	Yes	Νο
Ratior	nale		

Evidence for the low level of ETP interactions with the fishing operation is provided by monitoring information collected by DPIRD and fisher reporting of ETP interactions (a legal requirement).

There is some evidence that the measures/strategy is being implemented successfully. SG80 is met.

As yet, there is no clear evidence that the strategy is being implemented successfully and achieving its objective. SG100 is not met.

	Review of alternative measures to minimise mortality of ETP species			of ETP species
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	NA	NA	NA
Rationale				

Direct UoA-related mortality of ETP is negligible. Therefore, this scoring issue is not scored.

## References

DPIRD (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

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Graff, J. (2019). Shorebird disturbance on the Peel-Harvey Estuary. BirdLife Western Australia.

Draft scoring range	<u>&gt;</u> 80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator score	80
Condition number (if relevant)	NA

PI 2.3.3 – ETP species information – Blue swimmer crab, crab pots (UoA 1)

PI	2.3.3	<ul> <li>Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul> <li>Information for the development of the management strategy;</li> <li>Information to assess the effectiveness of the management strategy; and</li> <li>Information to determine the outcome status of ETP species</li> </ul> </li> </ul>		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Informa	ation adequacy for asse	ssment of impacts	
а	Guide post	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is <b>adequate</b> <b>to assess</b> the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. <b>OR</b> <b>If RBF is used to score</b> <b>PI 2.3.1 for the UoA:</b> Some quantitative information is <b>adequate</b> <b>to assess productivity</b> <b>and susceptibility</b> <b>attributes</b> for ETP species.	Quantitative information is available to assess with a high degree of certainty the <b>magnitude of UoA-</b> <b>related impacts,</b> <b>mortalities and injuries</b> <b>and the consequences</b> <b>for the status</b> of ETP species.
	Met?	Yes	Yes	No
Ratior	nale			

Quantitative information available to consider UoA impacts includes DPIRD monitoring, population status and life history information. In addition, fishers are required to report ETP interactions. Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. Therefore, SG60 and SG80 are met.

Quantitative information is not available to assess with a high degree of certainty the magnitude of UoArelated impacts, mortalities and injuries and the consequences for the status of ETP species. SG100 is not met.

	Information adequacy for management strategy			
b	Guide post	Information is adequate to support <b>measures</b> to manage the impacts on ETP species.	Information is adequate to measure trends and support a <b>strategy</b> to manage impacts on ETP species.	Information is adequate to support a <b>comprehensive</b> <b>strategy</b> to manage impacts, minimise mortality and injury of ETP species, and evaluate with a <b>high degree of</b>



				<b>certainty</b> whether a strategy is achieving its objectives.
	Met?	Yes	Yes	Νο
Ratior	nale			

Information is adequate to support measures to manage the impacts on ETP species, for example, the demonstrated selectivity of the fishing method and the nature of potential indirect effects (e.g. disturbance and prey availability). Information is also adequate to measure trends and support a strategy to manage impacts on ETP species. SG60 and SG80 are met.

Information is not adequate to support a comprehensive strategy to manage impacts, minimise mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives. SG100 is not met.

## References

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery.* Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. (2019). *Shorebird disturbance on the Peel-Harvey Estuary*. BirdLife Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator score	80
Condition number (if relevant)	ΝΑ

PI 2.3.3 – ETP species information – Blue swimmer crab, drop nets (UoA 2)

ΡI	2.3.3	<ul> <li>Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul> <li>Information for the development of the management strategy;</li> <li>Information to assess the effectiveness of the management strategy; and</li> <li>Information to determine the outcome status of ETP species</li> </ul> </li> </ul>			
Scorir	ng Issue	SG 60	SG 80	SG 100	
	Informa	ation adequacy for asse	ssment of impacts		
а	Guide post	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is <b>adequate</b> <b>to assess</b> the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. <b>OR</b> <b>If RBF is used to score</b> <b>PI 2.3.1 for the UoA:</b> Some quantitative information is <b>adequate</b> <b>to assess productivity</b> <b>and susceptibility</b> <b>attributes</b> for ETP species.	Quantitative information is available to assess with a high degree of certainty the <b>magnitude of UoA-</b> related impacts, mortalities and injuries and the consequences for the status of ETP species.	
	Met?	Yes	Yes	Νο	
Rationale					

There is no information on ETP interactions with drop nets. However, quantitative information available to consider impacts in the commercial crap pot fishery, which utilises similar gear, includes DPIRD monitoring, population status and life history information. (Commercial fishers are also required to report ETP interactions). Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. Therefore, SG60 and SG80 are met.

Quantitative information is not available to assess with a high degree of certainty the magnitude of UoArelated impacts, mortalities and injuries and the consequences for the status of ETP species. SG100 is not met.

	Inform	ation adequacy for man	agement strategy	
b	Guide post	Information is adequate to support <b>measures</b> to manage the impacts on ETP species.	Information is adequate to measure trends and support a <b>strategy</b> to manage impacts on ETP species.	Information is adequate to support a <b>comprehensive</b> <b>strategy</b> to manage impacts, minimise mortality and injury of

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				ETP species, and evaluate with a <b>high degree of</b> <b>certainty</b> whether a strategy is achieving its objectives.
	Met?	Yes	Νο	Νο
Rationale				

Information is adequate to support measures to manage the impacts on ETP species, for example, the demonstrated selectivity of the analogous crab pot fishing method used by commercial fishers (and extremely low levels of ETP captures detected over time), and the nature of potential indirect effects (e.g. disturbance). However, there is no information available to measure trends characterising the UoA as relevant to ETP interactions (e.g. in terms of fishing effort, intensity of use of fishing areas, UoA-specific information on captures/lack of captures, etc.). SG60 is met. SG80 is not.

Information is not adequate to support a comprehensive strategy to manage impacts, minimise mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives. SG100 is not met.

## References

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. (2019). Shorebird disturbance on the Peel-Harvey Estuary. BirdLife Western Australia.

Draft scoring range	60-79	
Information gap indicator	<b>More information sought</b> Information to measure trends relevant to a strategy for managing ETP impacts (scoring issue (b)).	

Overall Performance Indicator score	70
Condition number (if relevant)	18

PI 2.3.3 – ETP species information – Blue swimmer crab, scoop nets (UoA) 3)

PI	2.3.3	<ul> <li>Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul> <li>Information for the development of the management strategy;</li> <li>Information to assess the effectiveness of the management strategy; and</li> <li>Information to determine the outcome status of ETP species</li> </ul> </li> </ul>		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Informa	ation adequacy for asse	ssment of impacts	
а	Guide post	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is <b>adequate</b> <b>to assess</b> the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. <b>OR</b> <b>If RBF is used to score</b> <b>PI 2.3.1 for the UoA:</b> Some quantitative information is <b>adequate</b> <b>to assess productivity</b> <b>and susceptibility</b> <b>attributes</b> for ETP species.	Quantitative information is available to assess with a high degree of certainty the <b>magnitude of UoA-</b> related impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	Yes	Yes	Νο
Ration	nale			

There is no information on ETP interactions with scoop nets. However, the selectivity of the gear provides assurance that such interactions would be extremely rare if they ever occur. The gear is fished actively, does not work if unattended, and has a fixed hard "mesh" so is not entrapping. Information on the intensity of fisher use of sites around the Estuary, and shorebird monitoring data, are available to evaluate disturbance risks and impacts. Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. SG60 and SG80 are met.

Quantitative information is not available to assess with a high degree of certainty the magnitude of UoArelated impacts, mortalities and injuries and the consequences for the status of ETP species. SG100 is not met.

## Information adequacy for management strategy

-

Information is adequate to support **measures** to Guide manage the impacts on ETP species.

Information is adequate to measure trends and support a **strategy** to manage impacts on ETP species.

Information is adequate to support a comprehensive strategy to manage impacts, minimise

post

bio		ecta	qeinspecta		MSC Full As	21_390El sessment Reporting Templat	Ne
						mortality and injury of ETP species, and evaluate with a <b>high degree of</b> <b>certainty</b> whether a strategy is achieving its objectives.	
	Met?	Yes		Yes		No	
Ratior	hale						

Information is adequate to support measures to manage the impacts on ETP species, for example, the demonstrated selectivity of the gear, and intensity of use of sites around the Estuary by fishers. Information relevant to measuring trends and supporting a strategy for managing ETP impacts is focused on fisher use of various areas and disturbance impacts. SG60 and SG80 are met.

Information is not adequate to support a comprehensive strategy to manage impacts, minimise mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives. SG100 is not met.

### References

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. (2019). *Shorebird disturbance on the Peel-Harvey Estuary*. BirdLife Western Australia.

Draft scoring range	<u>&gt;</u> 80	
Information gap indicator	Information adequate to score PI	

Overall Performance Indicator score	80
Condition number (if relevant)	NA

## PI 2.3.3 – ETP species information – Sea mullet, haul nets (UoA 4)

PI	2.3.3	<ul> <li>Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul> <li>Information for the development of the management strategy;</li> <li>Information to assess the effectiveness of the management strategy; and</li> <li>Information to determine the outcome status of ETP species</li> </ul> </li> </ul>			
Scorir	ng Issue	SG 60	SG 80	SG 100	
	Informa	ation adequacy for asses	ssment of impacts		
а	Guide post	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is <b>adequate</b> <b>to assess</b> the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. <b>OR</b> <b>If RBF is used to score</b> <b>PI 2.3.1 for the UoA:</b> Some quantitative information is <b>adequate</b> <b>to assess productivity</b> <b>and susceptibility</b> <b>attributes</b> for ETP species.	Quantitative information is available to assess with a high degree of certainty the <b>magnitude of UoA-</b> related impacts, mortalities and injuries and the consequences for the status of ETP species.	
	Met?	Yes	Yes	Νο	
Ratio	hale				

There is some information relevant to ETP interactions with haul nets, from fisher reports and DPIRD monitoring conducted in 2017/18. However, the nature of the fishing method provides assurance that ETP interactions would be rare. The gear is fished actively when schools are located. The number of fishers is small, and fishers operate from inside vessels. Disturbance from the UoA was risk-assessed as Negligible. Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to the protection and recovery of the ETP species. SG60 and SG80 are met.

Quantitative information is not available to assess with a high degree of certainty the magnitude of UoArelated impacts, mortalities and injuries and the consequences for the status of ETP species. SG100 is not met.

	Information adequacy for management strategy				
b	Guide post	Information is adequate to support <b>measures</b> to manage the impacts on ETP species.	Information is adequate to measure trends and support a <b>strategy</b> to manage impacts on ETP species.	Information is adequate to support a <b>comprehensive</b> <b>strategy</b> to manage impacts, minimise mortality and injury of	

DIO		ecta qeinspecta	MSC Full As	21_390EN sessment Reporting Template	
				ETP species, and evaluate with a <b>high degree of</b> <b>certainty</b> whether a strategy is achieving its objectives.	
	Met?	Yes	Yes	Νο	
Ratior	Rationale				

Information is adequate to support measures to manage the impacts on ETP species, for example, the operational measures that characterise the UoA, and low level of interactions (with cormorants) known over time. Continued collection of information relevant to measuring trends is required, and it is noted that DPIRD monitoring (focused on "bycatch" i.e. primary and secondary species, but also detecting any ETP interactions) was planned five-yearly. Bimonthly monitoring is underway mid-2021, which will provide information to investigate changes over time (since 2017/18) and, with other information available, could support a strategy to manage ETP impacts. SG60 and SG80 are met.

Information is not adequate to support a comprehensive strategy to manage impacts, minimise mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives. SG100 is not met.

### References

DPIRD (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. (2019). *Shorebird disturbance on the Peel-Harvey Estuary*. BirdLife Western Australia.

Draft scoring range	60-79
Information gap indicator	Information adequate to score PI

Overall Performance Indicator score	80
Condition number (if relevant)	ΝΑ

## PI 2.3.3 – ETP species information – Sea mullet, gill nets (UoA 5)

PI	2.3.3	<ul> <li>Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul> <li>Information for the development of the management strategy;</li> <li>Information to assess the effectiveness of the management strategy; and</li> <li>Information to determine the outcome status of ETP species</li> </ul> </li> </ul>			
Scorir	ng Issue	SG 60	SG 80	SG 100	
	Informa	ation adequacy for asses	ssment of impacts		
а	Guide post	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is <b>adequate</b> <b>to assess</b> the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. <b>OR</b> <b>If RBF is used to score</b> <b>PI 2.3.1 for the UoA:</b> Some quantitative information is <b>adequate</b> <b>to assess productivity</b> <b>and susceptibility</b> <b>attributes</b> for ETP species.	Quantitative information is available to assess with a high degree of certainty the <b>magnitude of UoA-</b> related impacts, mortalities and injuries and the consequences for the status of ETP species.	
	Met?	Yes	Yes	Νο	
Dationala					

## Rationale

There is some information relevant to ETP interactions with gill nets, from fisher reports and DPIRD monitoring conducted in 2017/18. Disturbance from the UoA was risk-assessed as Negligible. The fishing effort in the UoA has declined in recent years, and the level of UoA interactions with ETP is extremely low, based on the information available. Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. SG60 and SG80 are met.

Quantitative information is not available to assess with a high degree of certainty the magnitude of UoArelated impacts, mortalities and injuries and the consequences for the status of ETP species. SG100 is not met.

	Informa	ation adequacy for man	agement strategy	
b	Guide post	Information is adequate to support <b>measures</b> to manage the impacts on ETP species.	Information is adequate to measure trends and support a <b>strategy</b> to manage impacts on ETP species.	Information is adequate to support a <b>comprehensive</b> <b>strategy</b> to manage impacts, minimise mortality and injury of

DIO	ainspe	ecta qoinspecta			
	9		MSC Full As	21_390EN sessment Reporting Template	
				ETP species, and evaluate with a <b>high degree of</b> <b>certainty</b> whether a strategy is achieving its	
	Met?	Yes	No	No	
Ration	Rationale				

Information is adequate to support measures to manage the impacts on ETP species, for example, the operational measures that characterise the UoA, and low level of interactions (with cormorants) known over time. Continued collection of information relevant to measuring trends is required, and it is noted that DPIRD monitoring (focused on "bycatch" i.e. primary and secondary species, but also detecting any ETP interactions) was planned five-yearly. SG60 is met. SG80 is not currently met, however, the intent to collect relevant information from the winter of 2021 is recognised.

Information is not adequate to support a comprehensive strategy to manage impacts, minimise mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives. SG100 is not met.

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DPIRD (2020). *Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025*. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development, Perth, Western Australia.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Graff, J. (2019). Shorebird disturbance on the Peel-Harvey Estuary. BirdLife Western Australia.

Draft scoring range	60-79
Information gap indicator	Information adequate to score PI

Overall Performance Indicator score	70
Condition number (if relevant)	19

## PI 2.4.1 – Habitats outcome – Blue swimmer crab, crab pots (UoA 1)

PI	2.4.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates				
Scoring Issue         SG 60         SG 80         SG 100				SG 100		
	Commo	Commonly encountered habitat status				
а	Guide post	The UoA is <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.		
	Met?	Yes	Yes	Yes		
Rationale						

Commonly Encountered habitats are sand, mud, macroalgae and the estuary water column. Fishing will only have transient effects on the water column. Traps do not retain benthos, which either pass through netting and/or are shaken off at the haul. Traps are light in weight, having a wire rim and a mesh frame. They are not weighted and are considered unlikely to damage the substrate.

Overall, the footprint of the UoA has been estimated at 33 km<sup>2</sup>. Crab traps sit on, but do not drag over benthic habitats. The distribution of fishing effort varies in the Estuary through the year, and there are closed periods and areas in place. The characteristics of the commonly encountered habitats, nature of the gear and its use, relatively small extent of the footprint, and dynamic nature of estuaries all limit the potential for significant habitat impacts.

Impacts of lost gear were considered negligible in the 2020 risk assessment. The extent of gear loss was previously reported as very low (in 2015), though specific information is not available.

Overall, there is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. SG60, SG80 and SG100 are met.

	VME ha	VME habitat status				
b	Guide post	The UoA is <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.		
	Met?	Yes	Yes	Yes		
Rationale						

Environmental changes have contributed to the expansion of seagrass beds including the colonisation of the southern Harvey Estuary by seagrass in 2017/18. An increase in seagrass biomass was recorded



(especially in the western Peel Inlet and northern Harvey Estuary) at the same time as a decline in Chlorophyta. Over time, the Estuary's macrophyte community has become dominated by seagrass rather than macroalgae.

Crab traps occasionally bring up seagrass when hauled. Traps are not weighted and are considered unlikely to significantly damage seagrass they sit atop of during fishing. The small footprint of the fishery further supports the conclusion that impacts on seagrass do not include serious or irreversible harm.

There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats (seagrass) to a point where there would be serious or irreversible harm. SG60, SG80 and SG100 are met.

	Minor habitat status			
с	Guide post			There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			NA
Ratior	nale			

No minor habitats are identified. This scoring issue is not scored.

#### References

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery.* Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). *Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery*. Department of Fisheries, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator score	100
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Condition number (if relevant)

NA

## PI 2.4.1 – Habitats outcome – Blue swimmer crab, drop nets (UoA 2)

PI	2.4.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scorir	ng Issue	ie SG 60 SG 80 SG 100		SG 100
	Commonly encountered habitat status			
а	Guide post	The UoA is <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	Yes	Yes
Rationale				

Commonly Encountered habitats are sand, mud, macroalgae and the estuary water column. Fishing will only have transient effects on the water column. Drop nets do not retain benthos, which either pass through netting and/or are shaken off at the haul. Nets are lightweight gear, having a wire rim, a mesh frame and no top. They are not weighted and are considered unlikely to damage the substrate, which they sit on top of. The characteristics of the commonly encountered habitats, nature of the gear and its use, and dynamic nature of estuary habitats all limit the potential for significant habitat impacts.

Impacts of lost gear are considered negligible in the 2020 risk assessment. Drop net fishers remain close to their gear and pull nets often. Consequently, they are considered unlikely to lose gear. Associated habitat impacts are expected to be not significant.

Overall, there is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. SG60, SG80 and SG100 are met.

	VME ha	bitat status		
Ь	Guide post	The UoA is <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	Yes	Yes
Ratior	nale			

Seagrass beds are identified as VMEs. Environmental changes have contributed to the expansion of seagrass beds in the Estuary, including the colonisation of the southern Harvey Estuary by seagrass in



2017/18. An increase in seagrass biomass was recorded (especially in the western Peel Inlet and northern Harvey Estuary) at the same time as a decline in chlorophyta. Over time, the Estuary's macrophyte community has become dominated by seagrass rather than macroalgae.

Commercial crab traps occasionally bring up seagrass when hauled, and it is reasonable to assume drop nets would too. However, nets are not weighted and are considered unlikely to damage seagrass they sit atop of during fishing to any more than a very minor extent.

There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats (seagrass) to a point where there would be serious or irreversible harm. SG60, SG80 and SG100 are met.

	Minor h	abitat status	
с	Guide post		There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?		NA
Ratior	nale		

No minor habitats are identified. This scoring issue is not scored.

## References

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

## PI 2.4.1 – Habitats outcome – Blue swimmer crab, scoop nets (UoA 3)

PI	2.4.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Commonly encountered habitat status			
а	Guide post	The UoA is <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	Yes	Yes
Rationale				

Commonly Encountered habitats are sand, mud, macroalgae and the estuary water column. Fishing will only have transient effects on the water column. Scoop nets may make contact with the substrate, but do not retain substrate material or benthos, which pass through the net as it is pulled up. Fishers wading at their fishing sites and moving to their fishing sites are likely to cause some habitat impacts. However, these are expected to be temporary, not comprising serious or irreversible harm. Research on the distribution of Estuary macrophyte biomass over time has shown that macroalgae (chlorophyta) biomass has increased in an area where scoop net fishing occurs, since the mid-1990s. The characteristics of the commonly encountered habitats, nature of the gear and its use, evidence of macroalgae biomass increase in scooping areas, and dynamic nature of estuary habitats all support the conclusion that habitat impacts are not serious or irreversible.

The 2020 risk assessment concluded that the risks of scoop net fishing to sand and mud, and macroalgae habitats were low and negligible respectively.

Impacts of lost gear are considered negligible in the 2020 risk assessment. Fishers must hold onto their gear to use it and are therefore considered unlikely to lose gear. Associated habitat impacts are expected to be not significant.

Overall, there is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. SG60, SG80 and SG100 are met.

	VME ha	bitat status		
b	Guide post	The UoA is <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	Yes	Yes	Yes



### Rationale

Seagrass beds are identified as VMEs. Environmental changes have contributed to the expansion of seagrass beds in the Estuary, including the colonisation of the southern Harvey Estuary by seagrass in 2017/18. An increase in seagrass biomass was recorded (especially in the western Peel Inlet and northern Harvey Estuary) at the same time as a decline in chlorophyta. Over time, the Estuary's macrophyte community has become dominated by seagrass rather than macroalgae. Scoop nets are manually deployed and may come into contact with the Estuary floor on occasion, as fishers try to catch crabs. However, such impacts are not considered to be of sufficient impact to cause serious or irreversible harm. Further, these impacts would not occur in the closed season. In the Peel Inlet, there are popular scoop netting areas where the biomass of seagrass, and extent of seagrass cover, have increased compared to historical levels.

The 2020 risk assessment concluded that the risks of scoop netting to seagrass habitats was Low, and the risk represented by lost gear was Negligible.

There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats (seagrass) to a point where there would be serious or irreversible harm. SG60, SG80 and SG100 are met.

	Minor h	abitat status		
с	Guide post		There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.	
	Met?		NA	
Ratior	nale			

No minor habitats are identified. This scoring issue is not scored.

#### References

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator score	100
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Condition number (if relevant)

NA

## PI 2.4.1 – Habitats outcome – Sea mullet, haul nets (UoA 4)

PI	2.4.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates			
Scorir	Scoring IssueSG 60SG 80SG 100				
	Commo	only encountered habitat	t status		
а	Guide post	The UoA is <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	
	Met?	Yes	Yes	Yes	
Rationale					

Commonly Encountered habitats are sand, mud, macroalgae and the Estuary water column. Fishing will only have transient effects on the water column. Areas with prolific algae or seagrass are avoided, because these add weight to the net at hauling if entangled, and must be shaken off. Nets do not retain benthos or sediments, which either pass through netting and/or are shaken off at the haul. The characteristics of the commonly encountered habitats, nature of the gear and its use, and dynamic nature of estuaries all limit the potential for significant habitat impacts.

The 2020 risk assessment assessed the risks to commonly encountered habitats as Low (sand and mud) and Negligible (macroalgae). Impacts of lost gear are considered negligible in the 2020 risk assessment, though specific information is not available.

Overall, there is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. SG60, SG80 and SG100 are met.

	VME habitat status				
b	Guide post	The UoA is <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	
	Met?	Yes	Yes	Yes	
Rationale					

Environmental changes have contributed to the expansion of seagrass beds including the colonisation of the southern Harvey Estuary by seagrass in 2017/18. An increase in seagrass biomass was recorded



(especially in the western Peel Inlet and northern Harvey Estuary) at the same time as a decline in Chlorophyta. Over time, the Estuary's macrophyte community has become dominated by seagrass rather than macroalgae.

Nets are unlikely to catch seagrass in large quantities (fishers prefer to fish over mud and sand) or to retain seagrass, which would be shaken off at the haul. The characteristics of the gear and its use, controlled amount of fishing effort in the UoA, and dynamic nature of estuaries all limit the potential for significant VME impacts.

There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats (seagrass) to a point where there would be serious or irreversible harm. SG60, SG80 and SG100 are met.

	Minor habitat status			
С	Guide post			There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			NA
Ratior	nale			

No minor habitats are identified. This scoring issue is not scored.

#### References

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

## PI 2.4.1 – Habitats outcome – Sea mullet, gill nets (UoA 5)

PI	2.4.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates			
Scorir	ng Issue	Sue SG 60 SG 80 SG 100			
	Commo	only encountered habitat	t status		
a	Guide post	The UoA is <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	
	Met?	Yes	Yes	Yes	
Rationale					

Commonly Encountered habitats are sand, mud, macroalgae and the Estuary water column. Fishing will only have transient effects on the water column. Areas with prolific algae or seagrass are avoided, because these add weight to the net at hauling if entangled and must be shaken off. Gill nets are generally set in deeper areas than haul nets and where fish movement is thought to occur, such as channels (noting that the Estuary's entrance channels are closed to commercial fishing). Nets do not retain benthos or sediments, which either pass through netting and/or are shaken off at the haul. The characteristics of the commonly encountered habitats, nature of the gear and extent of its use, and dynamic nature of estuaries all limit the potential for significant habitat impacts.

The 2020 risk assessment assessed the risks to commonly encountered habitats as Low (sand and mud) and negligible (macroalgae). Impacts of lost gear are considered negligible in the 2020 risk assessment, though specific information is not available.

Overall, there is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. SG60, SG80 and SG100 are met.

	VME habitat status				
b	Guide post	The UoA is <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	
	Met?	Yes	Yes	Yes	
Ratior	nale				

Environmental changes have contributed to the expansion of seagrass beds including the colonisation of the southern Harvey Estuary by seagrass in 2017/18. An increase in seagrass biomass was recorded



(especially in the western Peel Inlet and northern Harvey Estuary) at the same time as a decline in chlorophyta. Over time, the Estuary's macrophyte community has become dominated by seagrass rather than macroalgae.

Nets are unlikely to catch seagrass in large quantities (fishers prefer to fish over mud and sand) or to retain seagrass, which would be shaken off at the haul. The characteristics of the gear and its use, relatively small extent of fishing effort in the UoA in recent years, and dynamic nature of estuaries all limit the potential for significant VME impacts.

There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats (seagrass) to a point where there would be serious or irreversible harm. SG60, SG80 and SG100 are met.

	Minor habitat status			
с	Guide post			There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			ΝΑ
Ratior	nale			

No minor habitats are identified. This scoring issue is not scored.

## References

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Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	≥80	
Information gap indicator	Information sufficient to score PI	

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

PI 2.4.2 – Habitats management strategy – Blue swimmer crab, crab pots (UoA 1)

PI	2.4.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats			
Scoring IssueSG 60SG 80SG 100					
а	Manage	ement strategy in place			
	Guide post	There are <b>measures</b> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a <b>strategy</b> in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.	
	Met?	Yes	Yes	Νο	
Rationale					

Measures are in place that restrain habitat impacts, including trap design, fishing capacity limits, and spatial and temporal closures. Closures include a three-month temporal closure between 1 September and 30 November, no fishing on weekends, and spatial exclusions (see Figure 13) designed for stock management but with indirect benefits to habitat due to reduced disturbance impacts. While seagrass communities were identified as VMEs, move-on rules were not considered applicable for this fishery<sup>11</sup>. Pots sit on top of the substrate and do not retain VME indicator taxa. Habitat data shows that Estuary sea grass beds have expanded over time. The macrophyte community is now dominated by seagrass, rather than macroalgae (with changes analysed by Krumholz (2019), and determined to be correlated with declining concentrations of total nitrogen in estuary locations furthest from rivers).

The 2020 – 2025 harvest strategy for blue swimmer crab sets out a risk-based approach to managing habitat impacts. The stated management objective in the strategy is '*To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function*'. The risk-based approach considers the available information on the fishery, such as management arrangements, fishing effort, and footprint, together with any other research. Based on the available information, the risk of habitat impacts is assessed in relation to reference levels, with control rules applied at each level. Risk to benthic habitats is considered undesirable when High, which triggers a review within three months and a management response to reduce the risk as soon as practicable.

There are measures in place that are expected to achieve the Habitat Outcome 80 level of performance. SG60 is met.

There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. SG80 is met.

There does not appear to be a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats. SG100 is not met.

## **b** Management strategy evaluation

<sup>&</sup>lt;sup>11</sup> https://mscportal.force.com/interpret/s/article/Move-on-rules-at-SG60-for-PI2-4-2a-1527586956234 [Accessed 2 August 2021]



	Guide post	The measures are <b>considered likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some <b>objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on <b>information directly</b> <b>about the UoA and/or</b> <b>habitats</b> involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	Yes	Yes	Yes
Ratio	hale			

Fishing effort constraints, and gear specifications that limit habitat impacts, are considered likely to work based on plausible argument. Further, information collected on habitat changes in the Estuary over time supports this. Seagrass now dominates the macrophyte community, rather than macroalgae. Changes in macrophyte community composition have been analysed in the Estuary over a 40-year period by Krumholz (2019), who concluded that changes correlated with declining concentrations of total nitrogen in locations furthest from rivers. Overall, there is an objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved. SG60 and SG80 are met.

The partial strategy appears not to have been formally tested. However, research on Estuary habitat changes over time has shown that the broader changes have been driven by nitrogen and salinity changes, rather than any fishing impacts. SG100 is met.

	Manage	Management strategy implementation				
С	Guide post		There is <b>some</b> <b>quantitative evidence</b> that the measures/partial strategy is being implemented successfully.	There is <b>clear</b> <b>quantitative evidence</b> that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).		
	Met?		Yes	Yes		
Rationale						

Evidence that the measures are being implemented successfully include monitoring the extent of fishing effort, number of trap lifts, fishing location, and gear used by fishers, and compliance with closed areas and seasons. (A total of four offences were detected, across all offence types, in the commercial fishery 2016 – 2021, from 91 compliance contacts). There is clear quantitative evidence that the partial strategy is being implemented successfully. Further, information on habitat changes in the Estuary over time provides evidence that the partial strategy is achieving its objective. SG80 and SG100 are met.

Compliance with management requirements and other MSC UoAs'/non-MSC	С
fisheries' measures to protect VMEs	

d		There is <b>qualitative</b>	There is <b>some</b>	There is <b>clear</b>
-		evidence that the UoA	quantitative evidence	quantitative evidence
	Guide	complies with its	that the UoA complies	that the UoA complies with
	post	management	with both its management	both its management
		requirements to protect	requirements and with	requirements and with
		VMEs.	protection measures	protection measures



			afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Yes	Yes	Νο
<b>D</b> 11				

Rationale

Compliance with relevant management requirements to protect VMEs includes adhering to seasonal and area closures, gear specifications. A total of four offences were detected (across all offence types) in the commercial fishery 2016 – 2021, from 91 compliance contacts. There is some quantitative evidence that the measures/partial strategy is being implemented successfully. SG60 and SG80 are met.

Information available did not comprise clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant. SG100 is not met.

### References

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	90
Condition number (if relevant)	ΝΑ

PI 2.4.2 – Habitats management strategy – Blue swimmer crab, drop nets (UoA 2)

PI	2.4.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
Scoring Issue SG 60		SG 60	SG 80	SG 100
	Manage	ement strategy in place		
а	Guide post	There are <b>measures</b> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a <b>strategy</b> in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Yes	Yes	Νο
Rationale				

Measures in place that restrain habitat impacts including drop net design, and spatial and temporal closures. Closures include a three-month temporal closure between 1 September and 30 November designed for stock management but with indirect benefits to habitat due to reduced disturbance impacts. There are some gear limits (e.g. 10 nets per person, or 10 nets per boat), which may indirectly restrain impacts to a degree. While sea grass communities were identified as VMEs, move-on rules were not considered applicable for this fishery<sup>12</sup>. Drop nets are lightweight, sit on top of the substrate and do not retain VME indicator taxa. Habitat data shows that Estuary sea grass beds have expanded over time. The macrophyte community is now dominated by seagrass, rather than macroalgae (with changes analysed by Krumholz (2019), and determined to be correlated with declining concentrations of total nitrogen in estuary locations furthest from rivers).

The 2020 – 2025 harvest strategy for blue swimmer crab sets out a risk-based approach to managing habitat impacts. The stated management objective in the strategy is "*To ensure the effects of fishing do* 

<sup>&</sup>lt;sup>12</sup> https://mscportal.force.com/interpret/s/article/Move-on-rules-at-SG60-for-PI2-4-2a-1527586956234 [Accessed 2 August 2021]



not result in serious or irreversible harm to habitat structure and function". The risk-based approach considers the available information on the fishery, such as management arrangements, fishing effort, and footprint, and any other relevant research available. Based on the available information, the risk of habitat impacts is assessed in relation to reference levels, with control rules applied at each level. Risk to benthic habitats is considered undesirable when High, which triggers a review within 3 months and a management response to reduce the risk as soon as practicable. There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. The SG80 is met.

There are measures in place that are expected to achieve the Habitat Outcome 80 level of performance. The SG60 and SG80 are met.

There does not appear to be a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats. SG100 is not met.

	Manage	Management strategy evaluation				
b	Guide post	The measures are <b>considered likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some <b>objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on <b>information directly</b> <b>about the UoA and/or</b> <b>habitats</b> involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.		
	Met?	Yes	Yes	Yes		
Rationale						

Temporal and spatial closures and gear designs that limit habitat impacts are considered likely to work based on plausible argument. Further, information collected on habitat changes in the Estuary over time supports this. (Seagrass now dominates the macrophyte community, rather than macroalgae. Changes in macrophyte community composition have been analysed in the Estuary over a 40-year period by Krumholz (2019), who concluded that changes correlated with declining concentrations of total nitrogen in locations furthest from rivers). Overall, there is an objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved. SG60 and SG80 are met.

The partial strategy appears not to have been formally tested. However, research on Estuary habitat changes over time has shown that the broader changes have been driven by nitrogen and salinity changes, rather than any fishing impacts. SG100 is met.



Evidence that the measures are being implemented successfully include monitoring the extent of compliance with closed areas and seasons, and gear specifications. Non-compliance with closed seasons and gear requirements comprised 13 of 388 offences detected among recreational crab fishers (across all methods) in 2020/21. Further, information available on habitat changes over time in the Estuary supports the conclusion that the partial strategy is being implemented successfully.

There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective. SG80 and SG100 are met.

	Complia fisherie	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs				
d	Guide post	There is <b>qualitative</b> evidence that the UoA complies with its management requirements to protect VMEs.	There is <b>some</b> <b>quantitative evidence</b> that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is <b>clear</b> <b>quantitative evidence</b> that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.		
	Met?	Yes	Yes	Νο		
Rationale						

Compliance with relevant management requirements to protect VMEs includes adhering to seasonal and area closures, and gear specifications. As above, non-compliance with closed seasons and gear appears relatively low-level. There is some quantitative evidence that the measures/partial strategy is being implemented successfully. SG60 and SG80 are met.

Information available did not comprise clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant. SG100 is not met.

#### References

Daume, S. & Hartmann, K. (2019). *Western Australia Peel Harvest Estuarine Fishery Surveillance Report (Third Surveillance)*. Bio.inspecta.

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	90
Condition number (if relevant)	ΝΑ

# PI 2.4.2 – Habitats management strategy – Blue swimmer crab, scoop nets (UoA 3)

PI	2.4.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats			
Scoring Issue SG 60		SG 80	SG 100		
	Manage	ement strategy in place			
а	Guide post	There are <b>measures</b> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a <b>strategy</b> in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.	
	Met?	Yes	Yes	Νο	
Rationale					

Measures that restrain habitat impacts including net use (i.e. nets can only be actively deployed by hand), and spatial and temporal closures are in place (e.g. the closure from 1 September to 30 November annually).


The 2020 – 2025 harvest strategy for blue swimmer crab sets out a risk-based approach to managing habitat impacts. Based on the available information, the risk of habitat impacts is assessed in relation to reference levels, with control rules applied at each level. Risk to benthic habitats is considered undesirable when High, which triggers a review within 3 months and a management response to reduce the risk as soon as practicable.

While sea grass communities were identified as VMEs, move-on rules were not considered applicable for this fishery<sup>13</sup>. The habitat impacts resulting from scoop net fishing were analysed in the first certification period for this UoA (see Morison et al., 2016). Habitat data shows that Estuary sea grass beds have expanded over time. The macrophyte community is now dominated by seagrass, rather than macroalgae (with changes analysed by Krumholz (2019), and determined to be correlated with declining concentrations of total nitrogen in estuary locations furthest from rivers).

There are measures in place that are expected to achieve the Habitat Outcome 80 level of performance. SG60 is met. There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. SG80 is met. There does not appear to be a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats. SG100 is not met.

	Manage	Management strategy evaluation			
b	Guide post	The measures are <b>considered likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some <b>objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on <b>information directly</b> <b>about the UoA and/or</b> <b>habitats</b> involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.	
	Met?	Yes	Yes	Yes	
Ratior	nale				

Temporal and spatial closures and gear usage that limit habitat impacts are considered likely to work based on plausible argument. Further, in response to a condition on the previous certificate, spatial distribution of scoop netters in the peak season has been explored. Some confidence that the measures in place will work is provided by information available on habitats in areas where scoop netters are active (e.g. an increase in Chlorophyta in an area used by scoop net fishers).

Overall, there is an objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved. SG60 and SG80 are met.

The partial strategy appears not to have been tested explicitly. However, overlaying the scoop net fishery footprint with habitat information shows that Chlorophyta biomass has increased in an area in which scooping effort occurs in the southern Harvey Estuary. In the Peel Inlet, key scoop netting areas have experienced an increase in seagrass (a VME) cover and biomass relative to historical levels. SG100 is met.

С	Management strategy implementation		
	Guide	There is <b>some</b>	There is <b>clear</b>
	post	quantitative evidence	quantitative evidence

<sup>&</sup>lt;sup>13</sup> https://mscportal.force.com/interpret/s/article/Move-on-rules-at-SG60-for-PI2-4-2a-1527586956234 [Accessed 2 August 2021]

	<b>de</b> mspecta	MSC Full As	21_390EN sessment Reporting Template
		that the measures/partial strategy is being implemented successfully.	that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
Met?		Yes	Yes
Rationale			

Evidence that the measures are being implemented successfully include monitoring the extent of compliance with closed areas and seasons, and legal gear specifications. Non-compliance with closed seasons and gear requirements comprised 13 of 388 offences detected among recreational crab fishers (across all methods) in 2020/21. Further, information available on habitat changes over time in the Estuary supports the conclusion that the partial strategy is being implemented successfully.

There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective. SG80 and SG100 are met.

	Complia fisherie	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs		
d	Guide post	There is <b>qualitative</b> evidence that the UoA complies with its management requirements to protect VMEs.	There is <b>some</b> <b>quantitative evidence</b> that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is <b>clear</b> <b>quantitative evidence</b> that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Yes	Yes	Νο
Bationale				

Compliance with relevant management requirements to protect VMEs includes adhering to seasonal and area closures, and gear specifications. As above, non-compliance with closed seasons and gear appears relatively lower-level. There is some quantitative evidence that the measures/partial strategy is being implemented successfully. SG60 and SG80 are met.

Information available did not comprise clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant. SG100 is not met.

### References

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	90
Condition number (if relevant)	ΝΑ

## PI 2.4.2 – Habitats management strategy – Sea mullet, haul nets (UoA 4)

PI	2.4.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Manage	ement strategy in place		
а	Guide post	There are <b>measures</b> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a <b>strategy</b> in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Yes	Yes	Νο



### Rationale

Measures are in place that restrain habitat impacts of the UoA, including methods of gear operation, commercial fishing capacity limits, and spatial closures. While sea grass communities were identified as VMEs, move-on rules were not considered applicable for this UoA<sup>14</sup>. Habitat data shows that Estuary sea grass beds have expanded over time, with the macrophyte community now dominated by seagrass (rather than macroalgae). Haul net fishers actively avoid sea grass habitats because contacting these habitats makes nets harder to haul. Nets do not remain *in situ* unattended. The ecological risk assessment process supporting fishery management found that habitat risks (for sea grass) from this UoA were low.

The 2020 – 2025 harvest strategy for finfish sets out a risk-based approach to managing habitat impacts. The stated management objective in the strategy is '*To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function*'. The risk-based management approach considers the available information on the fishery, such as management arrangements, fishing effort, and areas fished, together with any other research. Based on the available information, the risk of habitat impacts is assessed in relation to reference levels, with control rules applied at each level. Risk to benthic habitats is considered undesirable when High, which triggers a review within 3 months and a management response to reduce the risk as soon as practicable.

There are measures in place that are expected to achieve the Habitat Outcome 80 level of performance. SG60 is met.

There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. SG80 is met.

There does not appear to be a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats. SG100 is not met.

	Management strategy evaluation			
Ь	Guide post	The measures are <b>considered likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some <b>objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on <b>information directly</b> <b>about the UoA and/or</b> <b>habitats</b> involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	Yes	Yes	Yes
Ratior	nale			

Fishing capacity limits, spatial closures and gear use that limits habitat impacts are considered likely to work based on plausible argument. Further, information collected on habitat changes in the Estuary over time supports this. Seagrass now dominates the macrophyte community, rather than macroalgae. Changes in macrophyte community composition have been analysed in the Estuary over a 40-year period by Krumholz (2019), who concluded that changes correlated with declining concentrations of total nitrogen in locations furthest from rivers). Overall, there is an objective basis for confidence that the

<sup>&</sup>lt;sup>14</sup> https://mscportal.force.com/interpret/s/article/Move-on-rules-at-SG60-for-PI2-4-2a-1527586956234 [Accessed 2 August 2021]

measures/partial strategy will work, based on information directly about the UoA and/or habitats involved. SG60 and SG80 are met.

The partial strategy appears not to have been formally tested. However, research on Estuary habitat changes over time has shown that the broader changes have been driven by nitrogen and salinity changes, rather than any fishing impacts. SG100 is met.

	Management strategy implementation			
С	Guide post		There is <b>some</b> <b>quantitative evidence</b> that the measures/partial strategy is being implemented successfully.	There is <b>clear</b> <b>quantitative evidence</b> that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		Yes	Yes
Ratior	nale			

Evidence that the measures are being implemented successfully includes compliance monitoring with closed areas/seasons and gear requirements and information on fishing locations. Findings of ecological risk assessments are also expected to reflect UoA risks to habitats, and consider pertinent information to draw conclusions. Two offences were detected in the commercial fishery 2014 – 2019, and these were unrelated to habitat management. Information on habitat changes in the Estuary over time provide further evidence that the partial strategy is achieving its objective.

There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective. SG80 and 100 are met.

	Complia fisherie	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs		
d	Guide post	There is <b>qualitative</b> evidence that the UoA complies with its management requirements to protect VMEs.	There is <b>some</b> <b>quantitative evidence</b> that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is <b>clear</b> <b>quantitative evidence</b> that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Yes	Yes	Νο
Rationale				

Compliance with relevant management requirements to protect VMEs includes adhering to spatial closures and gear specifications. A small number of netting offences were detected that related to closed areas and illegal gear among recreational net fishers. None were reported for commercial fishers. Based on currently available information, there is some quantitative evidence that the measures/partial strategy is being implemented successfully. SG60 and SG80 are met.



Information available on compliance did not comprise clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant. SG100 is not met.

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	90
Condition number (if relevant)	ΝΑ

## PI 2.4.2 – Habitats management strategy – Sea mullet, gill nets (UoA 5)

PI	2.4.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats			
Scorin	ng Issue	SG 60 SG 80 SG 100			
	Manage	ement strategy in place			
а	Guide post	There are <b>measures</b> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a <b>strategy</b> in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.	
	Met?	Yes	Yes	Νο	
Rationale					

Measures are in place that restrain habitat impacts of the UoA, including commercial fishing capacity limits, gear design, and spatial closures. While sea grass communities were identified as VMEs, moveon rules were not considered applicable for this UoA<sup>15</sup>. Habitat data shows that Estuary sea grass beds have expanded over time, with the macrophyte community now dominated by seagrass (rather than macroalgae). Gill net fishers targeting sea mullet actively avoid sea grass habitats because contacting these habitats makes nets harder to haul. The ecological risk assessment process supporting fishery management found that habitat risks (for sea grass) from this UoA were low.

The 2020 – 2025 harvest strategy for finfish sets out a risk-based approach to managing habitat impacts. The stated management objective in the strategy is '*To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function*'. The risk-based management approach considers the available information on the fishery, such as management arrangements, fishing effort, and areas fished, together with any other research. Based on the available information, the risk of habitat impacts is assessed in relation to reference levels, with control rules applied at each level. Risk to benthic habitats is considered undesirable when High, which triggers a review within three months and a management response to reduce the risk as soon as practicable.

There are measures in place that are expected to achieve the Habitat Outcome 80 level of performance. SG60 is met. There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. SG80 is met.

There does not appear to be a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats. SG100 is not met.

### Management strategy evaluation

<b>b</b> Gu po	uide ost	The measures are <b>considered likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some <b>objective</b> <b>basis for confidence</b> that the measures/partial strategy will work, based on <b>information directly</b> <b>about the UoA and/or</b> <b>habitats</b> involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
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<sup>&</sup>lt;sup>15</sup> https://mscportal.force.com/interpret/s/article/Move-on-rules-at-SG60-for-PI2-4-2a-1527586956234 [Accessed 2 August 2021]



Fishing capacity limits, spatial closures and gear design that limits habitat impacts are considered likely to work based on plausible argument. Further, information collected on habitat changes in the Estuary over time supports this. (Seagrass now dominates the macrophyte community, rather than macroalgae. Changes in macrophyte community composition have been analysed in the Estuary over a 40-year period by Krumholz 2019, who concluded that changes correlated with declining concentrations of total nitrogen in locations furthest from rivers). Overall, there is an objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved. SG60 and SG80 are met.

The partial strategy appears not to have been formally tested. However, research on Estuary habitat changes over time has shown that the broader changes have been driven by nitrogen and salinity changes, rather than any fishing impacts. SG100 is met.

	Management strategy implementation			
С	Guide post	There is <b>some</b> <b>quantitative evidence</b> that the measures/partial strategy is being implemented successfully.	There is <b>clear</b> <b>quantitative evidence</b> that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).	
	Met?	Yes	Yes	
Rationale				

Evidence that the measures are being implemented successfully includes compliance monitoring with closed areas/seasons and gear requirements, and information on fishing locations. Findings of ecological risk assessments are also expected to reflect UoA risks to habitats and consider pertinent information to draw conclusions. (A total of four offences were detected, across all offence types, in the commercial fishery 2016 – 2021, from 91 compliance contacts). There is clear quantitative evidence that the partial strategy is being implemented successfully. Further, information on habitat changes in the Estuary over time provides evidence that the partial strategy is achieving its objective. SG80 and SG100 are met.

	Complia fisherie	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs		
d	Guide post	There is <b>qualitative</b> evidence that the UoA complies with its management requirements to protect VMEs.	There is <b>some</b> <b>quantitative evidence</b> that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is <b>clear</b> <b>quantitative evidence</b> that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Yes	Yes	Νο
Rationale				

Compliance with relevant management requirements to protect VMEs includes adhering to spatial closures and gear specifications. A small number of netting offences were detected that related to closed areas and illegal gear among recreational net fishers. None were reported for commercial fishers (2014-2021). There is some quantitative evidence that the measures/partial strategy is being implemented successfully. SG60 and SG80 are met.

Information available on compliance did not comprise clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant. SG100 is not met.

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Daume, S. & Hartmann, K. (2020). *Western Australia Peel Harvest Estuarine Fishery Surveillance Report (Fourth Surveillance)*. Bio.inspecta.

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	90
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Condition number (if relevant)

NA

## PI 2.4.3 – Habitats information – Blue swimmer crab, crab pots (UoA 1)

PI	2.4.3	Information is adequate UoA and the effectivenes habitat	to determine the risk pos is of the strategy to mana	ed to the habitat by the ge impacts on the
Scorir	ng Issue	SG 60	SG 80	SG 100
	Informa	ation quality		
а	Guide post	The types and distribution of the main habitats are <b>broadly understood</b> . <b>OR</b> <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and <b>vulnerability</b> of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. <b>OR</b> <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	Yes	Yes	Yes
Ratior	nale			

A substantial body of information has been amassed on the types and distributions of habitats in the Estuary, including changes over time. Some of this information has been collected in contexts unrelated to the UoA (e.g. the creation of Dawesville Channel, investigation of environmental changes affecting macrophyte communities, and investigation of the Estuary's ecological character and environmental condition), but is nonetheless informative for managing and monitoring habitat impacts of the fishery.

The nature, distribution and vulnerability of the main habitats (i.e. commonly encountered habitats and VMEs) in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. SG60 and SG80 are met. The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats. SG100 is met.

	Informa	ation adequacy for asses	ssment of impacts	
b	Guide post	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear. OR	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	The physical impacts of the gear on all habitats have been quantified fully.

bio	q <sub>e</sub> inspecta

		<b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	OR <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Yes	Yes	Νο
Ratior	nale			

Fishers are required to report fishing location (start latitude and longitude per line of traps), mean depth, and soak time. Together with habitat distribution information, and the qualitative assessment of gear impacts, this body of information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. SG60 and SG80 are met.

The physical impacts of the gear on all habitats have not been quantified fully. SG100 is not met.

	Monitoring			
с	Guide post	Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.	
	Met?	Yes	Yes	
Ratior	nale			

Information on fishing effort, location, and compliance with gear requirements continue to be collected. This is adequate to detect any increase in risk to the main habitats. SG80 is met.

Ongoing data collection on estuary habitats is provided for. In January 2021, 457 sites were surveyed in the estuary by DWER. This survey will be repeated within four years, as part of the Healthy Estuaries WA programme. DWER will compare historical information (considering sampling methods as appropriate) to the newly acquired and future survey data. SG100 is met.

#### References

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	95
Condition number (if relevant)	ΝΑ

PI 2.4.3 – Habitats information – Blue swimmer crab, drop nets (UoA 2)

PI	2.4.3	Information is adequate UoA and the effectivenes habitat	to determine the risk pos is of the strategy to mana	ed to the habitat by the ge impacts on the
Scorin	ng Issue	SG 60	SG 80	SG 100
	Informa	ation quality		
а	Guide post	The types and distribution of the main habitats are <b>broadly understood</b> . <b>OR</b> <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and <b>vulnerability</b> of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. <b>OR</b> <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.



	Met?	Yes	Yes	Yes
Ration	ale			

A substantial body of information has been amassed on the types and distributions of habitats in the Estuary, including changes over time. Some of this information has been collected in contexts unrelated to the fishery (e.g. the creation of Dawesville Channel, investigation of environmental changes affecting macrophyte communities, and investigation of the Estuary's ecological character and environmental condition), but is nonetheless informative for managing and monitoring habitat impacts of the fishery.

The nature, distribution and vulnerability of the main habitats (i.e. commonly encountered habitats and VMEs) are known at a level of detail relevant to the scale and intensity of the UoA. SG60 and SG80 are met. The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats. SG100 is met.

	Informa	ation adequacy for asses	sment of impacts	
b	Guide post	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	The physical impacts of the gear on all habitats have been quantified fully.
		<b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	OR <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Yes	No	No
Ratior	nale			

Habitat distribution information, the qualitative assessment of gear impacts, locations of closed areas, and knowledge of fishing activities in the Estuary is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear. SG60 is met.

There is some information available from four Statewide Recreational Fishing Surveys on the location of use of the fishing gear, September - March. An example of this is shown in Figure 11 with further work underway. On-site surveys are planned to take place in the years the statewide surveys are not conducted. Camera monitoring also provides ongoing information on fisher presence in three high-use sites (with this method focusing on shore-based fishers).

While some information is available and this is accumulating, it does yet not appear to be at a scale andlevel of detail to comprise reliable information on the spatial extent of interaction and on the timing andApproval Date: 19.10.2020 05:53:29Page 229 of 470



location of use of the fishing gear. On-site work planned between statewide surveys will continue to build the information base. SG80 is not met for this UoA currently.

The physical impacts of the gear on all habitats have not been quantified fully. SG100 is not met.

	Monitoring			
с	Guide post	Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.	
	Met?	Yes	Yes	
Ratior	nale			

Compliance with gear requirements continues to be monitored in the UoA, and habitat-related research and monitoring have also occurred over time (at times unrelated to the Estuary fishery, but nonetheless informative in terms of evaluating habitat risks). Risk assessments are reviewed regularly and consider any new information available. Collectively, these actions are expected to be adequate to detect any increase in risk to the main habitats. SG80 is met.

Ongoing data collection on estuary habitats is provided for. In January 2021, 457 sites were surveyed in the estuary by DWER. This survey will be repeated within four years, as part of the Healthy Estuaries WA programme. DWER will compare historical information (considering sampling methods as appropriate) to the newly acquired and future survey data. SG100 is met.

### References

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Valesini, F.J., Hourston, M., Wildsmith, M.D., Coen, N.J. and Potter, I.C. (2010). New quantitative approaches for classifying and predicting local-scale habitats in estuaries. *Estuarine, Coastal and Shelf Science*, 86(4): 645-664.

Draft scoring range	60-79
Information gap indicator	<b>More information sought</b> Reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear (scoring issue (b)).

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	75
Condition number (if relevant)	20

PI 2.4.3 – Habitats information – Blue swimmer crab, scoop nets (UoA 3)

PI	2.4.3	Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Informa	ation quality		
а	Guide post	The types and distribution of the main habitats are <b>broadly understood</b> . <b>OR</b> <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the	The nature, distribution and <b>vulnerability</b> of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.

bio	<b>O</b> <sup>inspe</sup>	ecta q <sub>e</sub> inspecta	MSC Full Ass	21_390EN sessment Reporting Template
		types and distribution of the main habitats.	<b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	
	Met?	Yes	Yes	Yes
Ratior	nale			

A substantial body of information has been amassed on the types and distributions of habitats in the Estuary, including changes over time. Some of this information has been collected in contexts unrelated to the fishery (e.g. the creation of Dawesville Channel, investigation of environmental changes affecting macrophyte communities, and investigation of the Estuary's ecological character and environmental condition), but is nonetheless informative for managing and monitoring habitat impacts of the fishery.

The nature, distribution and vulnerability of the main habitats (i.e. commonly encountered habitats and VMEs) are known at a level of detail relevant to the scale and intensity of the UoA. SG60 and SG80 are met. The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats. SG100 is met.

	Informa	ation adequacy for asses	ssment of impacts	
Ь	Guide	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	The physical impacts of the gear on all habitats have been quantified fully.
	post	<b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	OR <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Yes	Yes	No
Ratior	nale			

Habitat distribution information, the qualitative assessment of gear impacts, locations of closed areas, and knowledge of the distribution of scoop net fishing in the Estuary in the high season is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear. SG60 is met.

Information collected in high season is valuable for understanding the impacts of scoop net fishing on habitats. Camera monitoring at three high-use sites provides additional information. SG80 is met. Sitebased surveys planned for the years when the Statewide Recreational Fishing Survey does not occur will add to this information base over time.

The physical impacts of the gear on all habitats have not been quantified fully. SG100 is not met.

	Monitoring			
С	Guide post	Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.	
	Met?	Yes	Yes	
Ratior	nale			

Compliance with gear requirements continues to be monitored in the UoA, and habitat-related research and monitoring have also occurred over time (at times unrelated to the Estuary fishery, but nonetheless informative in terms of evaluating habitat risks). Risk assessments are reviewed regularly and consider any new information available. Collectively, these actions are expected to be adequate to detect any increase in risk to the main habitats. SG80 is met.

Ongoing data collection on estuary habitats is provided for. In January 2021, 457 sites were surveyed in the estuary by DWER. This survey will be repeated within four years, as part of the Healthy Estuaries WA programme. DWER will compare historical information (considering sampling methods as appropriate) to the newly acquired and future survey data. SG100 is met.

### References

Desfosses, C.J., Blight, S.J., Denham, A.M., Taylor, S.M. (2021). Supplemented roving survey to quantify spatio-temporal recreational fishing effort in an estuarine Ramsar wetland. *Fisheries Research* 242(2021) 106042.

https://www.sciencedirect.com/science/article/pii/S0165783621001703?dgcid=author

DPIRD (2019). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 3. July 2019. Western Australian Marine Stewardship Council Report Series.

DPIRD (2020). Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 304. DPIRD, Perth.

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Hale, J. & Butcher, R. (2007). *Ecological Character Description of the Peel-Yalgorup Ramsar Site*, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth. Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). *Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery*. Department of Fisheries, Western Australia.

Krumholz, O. (2019). *Macrophyte communities in the Peel-Harvey Estuary: Historical trends and current patterns in biomass and distribution.* [Honours Thesis, Murdoch University], MurdochUniversity Repositor, Western Australia. https://researchrepository.murdoch.edu.au/id/eprint/50289/

Taylor, S.M., Blight, S.J., Desfosses, C.J., Steffe, A.S., Ryan, K.L., Denham, A.M. and Wise, B.S. (2018). Thermographic cameras reveal high levels of crepuscular and nocturnal shore-based recreational fishing effort in an Australian estuary. *ICES Journal of Marine Science* 75: 2107-2116

Draft scoring range	60-79
Information gap indicator	<b>More information sought</b> Reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear (outside the peak season summarised in Fisher et al. 2020) (scoring issue (b)).

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	95
Condition number (if relevant)	ΝΑ

## PI 2.4.3 - Habitats information - Sea mullet, haul nets (UoA 4)

ΡI	2.4.3	Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat		
Scorin	ng Issue	SG 60	SG 80	SG 100
	Informa	ation quality		
а	Guide post	The types and distribution of the main habitats are <b>broadly understood</b> . <b>OR</b> <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and <b>vulnerability</b> of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. <b>OR</b> <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.



	Met?	Yes	Yes	Yes
Ratior	ale			

A substantial body of information has been amassed on the types and distributions of habitats in the Estuary, including changes over time. Some of this information has been collected in contexts unrelated to the UoA (e.g. the creation of Dawesville Channel, investigation of environmental changes affecting macrophyte communities, and investigation of the Estuary's ecological character and environmental condition), but is nonetheless informative for managing and monitoring habitat impacts of the fishery.

The nature, distribution and vulnerability of the main habitats (i.e. commonly encountered habitats and VMEs) in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. SG60 and SG80 are met. The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats. SG100 is met.

	Informa	ation adequacy for asses	ssment of impacts	
Ь	Guide	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	The physical impacts of the gear on all habitats have been quantified fully.
	post	<b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	OR <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Yes	Yes	No
Ratior	nale			

In 2017/18, a 12-month programme was undertaken, during which net fishers reported shots from more than 60 sites in the Estuary. Around half of the effort reported in the Peel Inlet occurred in the southern parts around Boggy Bay and Roberts Bay. In the Harvey Estuary, the eastern and southern areas around Long Island were important for fishing. Fishing in the Peel Inlet took place throughout the year. In contrast, fishing was reported mostly in the southern parts of the Harvey during warmer months, and in the northern parts (around the Dawesville Channel) during the colder months. Together with habitat distribution information, and the qualitative assessment of gear impacts, this body of information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. SG60 and SG80 are met.

The physical impacts of the gear on all habitats have not been quantified fully. SG100 is not met.



Compliance with gear requirements continues to be monitored in the UoA, and habitat-related research and monitoring have also occurred over time (at times unrelated to the Estuary fishery, but nonetheless informative in terms of evaluating habitat risks). Risk assessments are reviewed regularly and consider any new information available. Collectively, these actions are expected to be adequate to detect any increase in risk to the main habitats. SG80 is met.

Ongoing data collection on estuary habitats is provided for. In January 2021, 457 sites were surveyed in the estuary by DWER. This survey will be repeated within four years, as part of the Healthy Estuaries WA programme. DWER will compare historical information (considering sampling methods as appropriate) to the newly acquired and future survey data. SG100 is not met.

References

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Hale, J. & Butcher, R. (2007). *Ecological Character Description of the Peel-Yalgorup Ramsar Site*, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth.

Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). *Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery.* Department of Fisheries, Western Australia.

Krumholz, O. (2019). *Macrophyte communities in the Peel-Harvey Estuary: Historical trends and current patterns in biomass and distribution.* [Honours Thesis, Murdoch University], MurdochUniversity Repositor, Western Australia. https://researchrepository.murdoch.edu.au/id/eprint/50289/

Draft scoring range	<u>&gt;</u> 80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 



Overall Performance Indicator score	95
Condition number (if relevant)	NA

## PI 2.4.3 – Habitats information – Sea mullet, gill nets (UoA 5)

PI	2.4.3	Information is adequate UoA and the effectivenes habitat	to determine the risk pos is of the strategy to mana	ed to the habitat by the ge impacts on the
Scorir	ng Issue	SG 60	SG 80	SG 100
	Informa	ation quality		
а	Guide post	The types and distribution of the main habitats are <b>broadly understood</b> . <b>OR</b> <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and <b>vulnerability</b> of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. <b>OR</b> <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	Yes	Yes	Yes
Ratior	nale			

A substantial body of information has been amassed on the types and distributions of habitats in the Estuary, including changes over time. Some of this information has been collected in contexts unrelated to the UoA (e.g. the creation of Dawesville Channel, investigation of environmental changes affecting macrophyte communities, and investigation of the Estuary's ecological character and environmental condition), but is nonetheless informative for managing and monitoring habitat impacts of the fishery.

The nature, distribution and vulnerability of the main habitats (i.e. commonly encountered habitats and VMEs) in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. SG60 and SG80 are met. The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats. SG100 is met.

	Informa	ation adequacy for asses	ssment of impacts	
b	Guide post	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the	The physical impacts of the gear on all habitats have been quantified fully.

bio	<b>o</b> inspe	ecta q <sub>e</sub> inspecta		21 300EN
	9		MSC Full As	sessment Reporting Template
		OR	timing and location of use of the fishing gear.	
		<b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	OR <b>If CSA is used to score</b> <b>PI 2.4.1 for the UoA:</b> Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Yes	Yes	No
Ratior	nale			

In 2017/18, a 12-month programme was undertaken, during which net fishers reported shots from more than 60 sites in the Estuary. Around half of the effort reported in the Peel Inlet occurred in the southern parts around Boggy Bay and Roberts Bay. In the Harvey Estuary, the eastern and southern areas around Long Island were important for fishing. Fishing in the Peel Inlet took place throughout the year. In contrast, fishing was reported mostly in the southern parts of the Harvey during warmer months, and in the northern parts (around the Dawesville Channel) during the colder months. Together with habitat distribution information, and the qualitative assessment of gear impacts, this body of information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. SG60 and SG80 are met.

The physical impacts of the gear on all habitats have not been quantified fully. SG100 is not met.

	Monitoring			
С	Guide post	Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.	
	Met?	Yes	Yes	
Ratior	nale			

Compliance with gear requirements continues to be monitored in the UoA, and habitat-related research and monitoring have also occurred over time (at times unrelated to the Estuary fishery, but nonetheless informative in terms of evaluating habitat risks). Risk assessments are reviewed regularly and consider any new information available. Collectively, these actions are expected to be adequate to detect any increase in risk to the main habitats. SG80 is met.

Ongoing data collection on estuary habitats is provided for. In January 2021, 457 sites were surveyed in the estuary by DWER. This survey will be repeated within four years, as part of the Healthy Estuaries WA programme. DWER will compare historical information (considering sampling methods as appropriate) to the newly acquired and future survey data. SG100 is met.

### References

DPIRD (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Hale, J. & Butcher, R. (2007). *Ecological Character Description of the Peel-Yalgorup Ramsar Site*, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth.

Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). *Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery.* Department of Fisheries, Western Australia.

Krumholz, O. (2019). *Macrophyte communities in the Peel-Harvey Estuary: Historical trends and current patterns in biomass and distribution.* [Honours Thesis, Murdoch University], MurdochUniversity Repositor, Western Australia. https://researchrepository.murdoch.edu.au/id/eprint/50289/

Draft scoring range	<u>&gt;</u> 80
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	95
Condition number (if relevant)	ΝΑ

## PI 2.5.1 – Ecosystem outcome – Blue swimmer crab, crab pots (UoA1)

PI	2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scorir	Scoring Issue SG 60 SG 80		SG 100	
	Ecosyst	em status		
а	Guide post	The UoA is <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Yes	Yes	Yes
Rationale				

The key elements underlying ecosystem structure and function are physico-chemical characteristics of the estuarine waters, and drivers of those characteristics. Specifically, salinity, dissolved oxygen and water temperature are all affected by the riverine inputs to the estuary, rainfall and climate more broadly (including climate change). The UoA will not affect any of these, and its impact on the ecosystem would be driven by removal of target species biomass. The fish fauna of the estuary is diverse, and UoA removals are not considered likely to result in ecosystem disruption (including when explored through ecosystem modelling). Unrelated to the UoA, the trophic linkages have increased since the Dawesville Channel opened. Fishery-independent data shows high abundance of juvenile (sub-legal) blue swimmer crabs and the sea mullet stock is estimated to be at a level close to its unfished biomass.

The Ecological Risk Assessment conducted in 2020 identified a low risk of the UoA to trophic interactions, and a negligible risk resulting from gear loss. Garbage was also considered a Negligible risk, with commercial fishers conducting day trips only, and not using packaged bait.

There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. SG60, SG80 and SG100 are met.

#### References

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Fretzer, S. (2013). Analysing the effects of anthropogenic activities on two aquatic ecosystems in *Western Australia and identifying sustainable policies for ecosystem based management* [Ph.D. Thesis, Murdoch University], . Murdoch University Repository, Australia. https://researchrepository.murdoch.edu.au/id/eprint/21292/

Hale, J. & Butcher, R. (2007). *Ecological Character Description of the Peel-Yalgorup Ramsar Site*, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth.

Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). *Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery*. Department of Fisheries, Western Australia.

Thomson, C.E.(2019). *Regional Estuaries Initiative, Estuary condition report: Peel-Harvey 2016/17.* Department of Water and Environmental Regulation, Joondalup, Western Australia.

Draft scoring range	<u>&gt;</u> 80
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

## PI 2.5.1 – Ecosystem outcome – Blue swimmer crab, drop nets (UoA 2)

PI	2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scorin	oring Issue SG 60 SG 80 SG 100		SG 100	
	Ecosyst	em status		
а	Guide post	The UoA is <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Yes	Yes	Yes
Ratior	nale			

The key elements underlying ecosystem structure and function are physico-chemical characteristics of the estuarine waters and drivers of those characteristics. Specifically, salinity, dissolved oxygen and water temperature are all affected by the riverine inputs to the estuary, rainfall and climate more broadly (including climate change). The UoA will not affect any of these, and its impact on the ecosystem would be driven by removal of target species biomass. The fish fauna of the estuary is diverse, and UoA removals are not considered likely to result in ecosystem disruption (including when explored through ecosystem modelling). Fishery-independent data shows high abundance of juvenile (sub-legal) blue swimmer crabs and the sea mullet stock is estimated to be at a level close to its unfished biomass. Unrelated to the UoA, the trophic linkages have increased since the Dawesville Channel opened.

The Ecological Risk Assessment conducted in 2020 identified a low risk of the UoA to trophic interactions, and a negligible risk resulting from gear loss. Garbage was considered a low risk, with recreational fishers sometimes using packaged bait (the wrappings of which could be dumped onsite).

There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. SG60, SG80 and SG100 are met.

### References

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Fretzer, S. (2013). *Analysing the effects of anthropogenic activities on two aquatic ecosystems in Western Australia and identifying sustainable policies for ecosystem based management*[Doctoral Thesis, Murdoch University], https://researchrepository.murdoch.edu.au/id/eprint/21292/.

Hale, J. & Butcher, R. (2007). *Ecological Character Description of the Peel-Yalgorup Ramsar Site*, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth.

Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). Approval Date: 19.10.2020 05:53:29 Page 241 of 470 Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Department of Fisheries, Western Australia.

Thomson, C.E. (2019). *Regional Estuaries Initiative, Estuary condition report: Peel-Harvey 2016/17*, Department of Water and Environmental Regulation, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

PI 2.5.1 – Ecosystem outcome – Blue swimmer crab, scoop nets (UoA 3)

PI	2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
	Ecosyst	tem status		
а	Guide post	The UoA is <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Yes	Yes	Yes
Ratio	nale			

The key elements underlying ecosystem structure and function are physico-chemical characteristics of the estuarine waters, and drivers of those characteristics. Specifically, salinity, dissolved oxygen and water temperature are all affected by the riverine inputs to the estuary, rainfall and climate more broadly (including climate change). The UoA will not affect any of these, and its impact on the ecosystem would be driven by removal of target species biomass. The fish fauna of the estuary is diverse, and UoA removals are not considered likely to result in ecosystem disruption (including when explored through ecosystem modelling). Unrelated to the UoA, the trophic linkages have increased since the Dawesville Channel opened. Fishery-independent data shows high abundance of juvenile (sub-legal) blue swimmer crabs and the sea mullet stock is estimated to be at a level close to its unfished biomass. Unrelated to the UoA, the trophic linkages have increased since the Dawesville Channel opened.

The Ecological Risk Assessment conducted in 2020 identified a low risk of the UoA to trophic interactions, and a negligible risk resulting from gear loss. Garbage was considered a low risk, with recreational fishers sometimes using packaged bait (the wrappings of which could be dumped onsite).



There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. SG60, SG80 and SG100 are met.

#### References

DPIRD. 2020. Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 304. DPIRD, Perth.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Fretzer, S. (2013). *Analysing the effects of anthropogenic activities on two aquatic ecosystems in Western Australia and identifying sustainable policies for ecosystem based management*[Doctoral Thesis, Murdoch University], https://researchrepository.murdoch.edu.au/id/eprint/21292/.

Hale, J. & Butcher, R. (2007). *Ecological Character Description of the Peel-Yalgorup Ramsar Site*, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth.

Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Department of Fisheries, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

## PI 2.5.1 – Ecosystem outcome – Sea mullet, haul nets (UoA 4)

PI	2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function					
Scori	ng Issue	SG 60	SG 80	SG 100			
	Ecosyst	Ecosystem status					
а	Guide post	The UoA is <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.			

bio	cta q <sub>e</sub> inspecta	MSC Full As	21_390EN sessment Reporting Template
Met?	Yes	Yes	Yes

### Rationale

The key elements underlying ecosystem structure and function are physico-chemical characteristics of the estuarine waters, and drivers of those characteristics. Specifically, salinity, dissolved oxygen and water temperature are all affected by the riverine inputs to the estuary, rainfall and climate more broadly (including climate change). The UoA will not affect any of these, and its impact on the ecosystem would be driven by removal of target species biomass. The fish fauna of the estuary is diverse, and UoA removals are not considered likely to result in ecosystem disruption (including when explored through ecosystem modelling). The sea mullet stock is considered to be at a level close to its unfished biomass. Unrelated to the UoA, the trophic linkages have increased since the Dawesville Channel opened.

The Ecological Risk Assessment conducted in 2020 identified a low risk of the UoA to trophic interactions, and a negligible risk resulting from gear loss. Garbage was also considered a Negligible risk, with commercial fishers conducting day trips only, and not using packaged bait.

There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. SG60, SG80 and SG100 are met.

### References

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Fretzer, S. (2013). *Analysing the effects of anthropogenic activities on two aquatic ecosystems in Western Australia and identifying sustainable policies for ecosystem based management*[Doctoral Thesis, Murdoch University], https://researchrepository.murdoch.edu.au/id/eprint/21292/.

Hale, J. & Butcher, R. (2007). *Ecological Character Description of the Peel-Yalgorup Ramsar Site*, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth.

Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Department of Fisheries, Western Australia.

Thomson, C.E. (2019). *Regional Estuaries Initiative, Estuary condition report: Peel-Harvey 2016/17*, Department of Water and Environmental Regulation, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
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Condition number (if relevant)

NA

## PI 2.5.1 – Ecosystem outcome – Sea mullet, gill nets (UoA 5)

PI	2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
	Ecosyst	em status		
а	Guide post	The UoA is <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is <b>highly</b> <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is <b>evidence</b> that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Yes	Yes	Yes
Rationale				

The key elements underlying ecosystem structure and function are physico-chemical characteristics of the estuarine waters and drivers of those characteristics. Specifically, salinity, dissolved oxygen and water temperature are all affected by the riverine inputs to the estuary, rainfall and climate more broadly (including climate change). The UoA will not affect any of these, and its impact on the ecosystem would be driven by removal of target species biomass. The fish fauna of the estuary is diverse, and UoA removals are not considered likely to result in ecosystem disruption (including when explored through ecosystem modelling). The sea mullet stock is considered to be at a level close to its unfished biomass. Unrelated to the UoA, the trophic linkages have increased since the Dawesville Channel opened.

The Ecological Risk Assessment conducted in 2020 identified a low risk of the UoA to trophic interactions, and a negligible risk resulting from gear loss. Garbage was also considered a Negligible risk, with commercial fishers conducting day trips only, and not using packaged bait.

There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. SG60, SG80 and SG100 are met.

### References

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Fretzer, S. (2013). *Analysing the effects of anthropogenic activities on two aquatic ecosystems in Western Australia and identifying sustainable policies for ecosystem based management*[Doctoral Thesis, Murdoch University], https://researchrepository.murdoch.edu.au/id/eprint/21292/.

Hale, J. & Butcher, R. (2007). *Ecological Character Description of the Peel-Yalgorup Ramsar Site*, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth. Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Department of Fisheries, Western Australia.

Thomson, C.E. (2019). *Regional Estuaries Initiative, Estuary condition report: Peel-Harvey 2016/17*, Department of Water and Environmental Regulation, Western Australia.

Draft scoring range	≥80	
Information gap indicator	Information sufficient to score PI	

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

PI 2.5.2 – Ecosystem management strategy – Blue swimmer crab, crab pots (UoA 1)

PI	2.5.2	There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue SG 60 SG 80 SG 10			SG 100	
	Manage	ement strategy in place		
а	Guide post	There are <b>measures</b> in place, if necessary which take into account the <b>potential impacts</b> of the UoA on key elements of the ecosystem.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, which takes into account <b>available</b> <b>information and is</b> <b>expected to restrain</b> <b>impacts</b> of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a <b>strategy</b> that consists of a <b>plan</b> , in place which contains measures to <b>address all</b> <b>main impacts of the</b> <b>UoA</b> on the ecosystem, and at least some of these measures are in place.
	Met?	Yes	Yes	Yes
Rationale				

The blue swimmer crab and finfish harvest strategies both include objectives, performance indicators, reference levels and control rules relevant to ecosystem impacts of the UoA. Reference levels are risk-based, and performance indicators include the available information. Given the nature of potential UoA impacts on ecosystems, measures relate to the fishing operation, e.g. capacity, catch and effort restrictions, spatial and temporal closures, and reporting.

There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place. SG60, SG80 and SG100 are met.

	Management strategy evaluation				
b	Guide post	The <b>measures</b> are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is <b>some objective</b> <b>basis for confidence</b> that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.	
	Met?	Yes	Yes	Νο	
Rationale					

The management measures in place are likely to work to restrain ecosystem impacts of the UoA, based on plausible argument. For example, catch controls and effort restrictions, and spatial and temporal closures, are ubiquitous fishery management measures. SG60 is met and the UoA has been managed with such measures for an extended period.

As for other components, the harvest strategies' response timeframes are not explicit for ecosystem impacts, being "as soon as practicable". This creates uncertainty regarding the efficacy of the strategy. However, overall the ecosystem appears relatively resilient to fishing impacts, given the findings of ecosystem modelling. This provides some objective basis for confidence that the measures/partial strategy will work. SG60 and SG80 are met.

The strategy does not appear to have been tested. SG100 is not met.

	Manage	ement strategy impleme	ntation	
с	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Yes	Νο
Ratio	nale			

Evidence that the strategy is being implemented successfully includes fishery performance indicators, such as catch and effort, and compliance information. There is some evidence that the measures/partial strategy is being implemented successfully. SG80 is met.

The strategy does not appear to have been tested for the UoA. SG100 is not met.

### References

DPIRD. (2020). Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020
- 2025. Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia

DPIRD. (2020). Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 303.Department of Primary Industries and Regional Development, Perth, Western Australia

Earl, J., Gorfine, H., Duffy, R., Krueck, N. (2021). *Yelloweye Mullet*, Aldrichetta forsteri. FRDC Species Report. https://fish.gov.au/report/379-Yelloweye-Mullet-2020 [Accessed 20 June 2021]

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	85
Condition number (if relevant)	ΝΑ

PI 2.5.2 – Ecosystem management strategy – Blue swimmer crab, drop nets (UoA 2)

PI	2.5.2	There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Manage	ement strategy in place		
а	Guide post	There are <b>measures</b> in place, if necessary which take into account the <b>potential impacts</b> of the UoA on key elements of the ecosystem.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, which takes into account <b>available</b> <b>information and is</b> <b>expected to restrain</b> <b>impacts</b> of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a <b>strategy</b> that consists of a <b>plan</b> , in place which contains measures to <b>address all</b> <b>main impacts of the</b> <b>UoA</b> on the ecosystem, and at least some of these measures are in place.
	Met?	Yes	Yes	Yes
Rationale				

The blue swimmer crab and finfish harvest strategies both include objectives, performance indicators, reference levels and control rules relevant to ecosystem impacts of the UoA. Reference levels are risk-based, and performance indicators include the available information. Given the nature of potential UoA impacts on ecosystems, measures relate to fishing operations, e.g. capacity, catch and effort restrictions, spatial and temporal closures, and reporting. Catch share allocation between sectors is covered in the harvest strategy for blue swimmer crabs; this is important for managing ecosystem-level UoA impacts.

There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place. SG60, SG80 and SG100 are met.

	Manage	ement strategy evaluation	on	
b	Guide post	The <b>measures</b> are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is <b>some objective</b> <b>basis for confidence</b> that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	Yes	Yes	Νο
Rationale				

The strategy in place is likely to work to restrain ecosystem impacts of the UoA, based on plausible argument. For example, gear controls, catch shares among sectors, and spatial and temporal closures are ubiquitous fishery management measures. Ecosim modelling (while now slightly dated) has shown that overall, reducing recreational fishing effort in the Estuary would not benefit the majority of functional groups. There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved. SG60 and SG80 are met.

The strategy does not appear to have been tested for the UoA. SG100 is not met.

	Management strategy implementation				
с	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its objective as set out in scoring issue (a).	
	Met?		Yes	Νο	
Ratio	nale				

Evidence that the strategy is being implemented successfully includes fishery performance indicators, such as compliance information. There is some evidence that the measures/partial strategy is being implemented successfully. SG80 is met.

There is not recent clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a). SG100 is not met.

### References

DPIRD. (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia

DPIRD. (2020). Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 303.Department of Primary Industries and Regional Development, Perth, Western Australia



Fretzer, S. (2013). Analysing the effects of anthropogenic activities on two aquatic ecosystems in *Western Australia and identifying sustainable policies for ecosystem based management*[Doctoral Thesis, Murdoch University], https://researchrepository.murdoch.edu.au/id/eprint/21292/.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	85
Condition number (if relevant)	NA

PI 2.5.2 – Ecosystem management strategy – Blue swimmer crab, scoop nets

PI	2.5.2	There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function				
Scoring Issue		SG 60	SG 80	SG 100		
	Manage	agement strategy in place				
a	Guide post	There are <b>measures</b> in place, if necessary which take into account the <b>potential impacts</b> of the UoA on key elements of the ecosystem.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, which takes into account <b>available</b> <b>information and is</b> <b>expected to restrain</b> <b>impacts</b> of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a <b>strategy</b> that consists of a <b>plan</b> , in place which contains measures to <b>address all</b> <b>main impacts of the</b> <b>UoA</b> on the ecosystem, and at least some of these measures are in place.		
	Met?	Yes	Yes	Yes		
Rationale						

The blue swimmer crab harvest strategy includes objectives, performance indicators, reference levels and control rules relevant to ecosystem impacts of the UoA. Reference levels are risk-based, and performance indicators include the available information. Given the nature of potential UoA impacts on ecosystems, measures relate to fishing operations, e.g. gear restrictions and spatial and temporal closures. Catch share allocation between sectors is covered in the harvest strategy for blue swimmer crabs; this is important for effective management of ecosystem-level UoA impacts.

There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place. SG60, SG80 and SG100 are met.

### **b** Management strategy evaluation



	Guide post	The <b>measures</b> are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is <b>some objective</b> <b>basis for confidence</b> that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	Yes	Yes	No
Ratior	nale			

The strategy in place is likely to work to restrain ecosystem impacts of the UoA, based on plausible argument. For example, gear controls, catch shares among sectors, and spatial and temporal closures are ubiquitous fishery management measures. Ecosim modelling (while now slightly dated) has shown that overall, reducing recreational fishing effort in the Estuary would not benefit the majority of functional groups. There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved. SG60 and SG80 are met.

The strategy does not appear to have been tested for the UoA. SG100 is not met.

	Management strategy implementation			
С	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Yes	Νο
Ratior	nale			

Evidence that the strategy is being implemented successfully includes fishery performance indicators, such as compliance information. There is some evidence that the measures/partial strategy is being implemented successfully. SG80 is met.

There is not recent clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a). SG100 is not met.

### References

DPIRD. (2020). Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020
- 2025. Fisheries Management Paper No. 304. Department of Primary Industries and Regional
Development, Perth, Western Australia

DPIRD. (2020). Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 303.Department of Primary Industries and Regional Development, Perth, Western Australia



Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	85
Condition number (if relevant)	ΝΑ

PI 2.5.2 – Ecosystem management strategy – Sea mullet, haul nets (UoA 4)

PI	2.5.2	There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
	Manage	ement strategy in place		
а	Guide post	There are <b>measures</b> in place, if necessary which take into account the <b>potential impacts</b> of the UoA on key elements of the ecosystem.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, which takes into account <b>available</b> <b>information and is</b> <b>expected to restrain</b> <b>impacts</b> of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a <b>strategy</b> that consists of a <b>plan</b> , in place which contains measures to <b>address all</b> <b>main impacts of the</b> <b>UoA</b> on the ecosystem, and at least some of these measures are in place.
	Met?	Yes	Yes	Yes
Rationale				

The finfish harvest strategy includes objectives, performance indicators, reference levels and control rules relevant to ecosystem impacts of the UoA, and ecosystem components (identified as target, retained, bycatch and ETP species, and habitats). Reference levels are risk-based, and performance indicators include the available information. Given the nature of potential UoA impacts on ecosystems, measures relating to the fishing operation are most relevant to restraining ecosystem impacts, e.g. fishing capacity, catch and effort restrictions, spatial closures, and reporting.

There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place. SG60, SG80 and SG100 are met.

### **b** Management strategy evaluation


	Guide post	The <b>measures</b> are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is <b>some objective</b> <b>basis for confidence</b> that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	<b>Testing</b> supports <b>high</b> <b>confidence</b> that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	Yes	Yes	Νο
Ratior	nale			

The management measures in place are likely to work to restrain ecosystem impacts of the UoA, based on plausible argument. For example, controlling fishing capacity, catch and effort restrictions, and spatial closures are ubiquitous fishery management measures. The UoA has been managed with such measures for an extended period. As for other components, the harvest strategies' response timeframes are not explicit for ecosystem impacts, being "*as soon as practicable*". This creates uncertainty regarding the efficacy of the strategy. However, overall the ecosystem appears relatively resilient to fishing impacts, given the findings of ecosystem modelling. This provides some objective basis for confidence that the measures/ partial strategy will work. SG60 and SG80 are met.

The strategy does not appear to have been tested. SG100 is not met.

	Manage	ement strategy impleme	ntation		
с	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its objective as set out in scoring issue (a).	
	Met?		Yes	No	
Rationale					

Evidence that the strategy is being implemented successfully includes fishery performance indicators, such as catch and effort, and compliance information. There is some evidence that the measures/partial strategy is being implemented successfully. SG80 is met.

The strategy does not appear to have been tested for the UoA. SG100 is not met.

References

DPIRD. (2020). *Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020 – 2025.* Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development, Perth, Western Australia

DPIRD. (2020). Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 303.Department of Primary Industries and Regional Development, Perth, Western Australia

Earl, J., Gorfine, H., Duffy, R., Krueck, N. (2021). *Yelloweye Mullet*, Aldrichetta forsteri. FRDC Species Report. https://fish.gov.au/report/379-Yelloweye-Mullet-2020 [Accessed 20 June 2021]

Draft scoring range	≥80	
Information gap indicator	Information sufficient to score PI	

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	85
Condition number (if relevant)	ΝΑ

PI 2.5.2 – Ecosystem management strategy – Sea mullet, gill nets (UoA 5)

PI	2.5.2	There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
	Manage	ement strategy in place		
а	Guide post	There are <b>measures</b> in place, if necessary which take into account the <b>potential impacts</b> of the UoA on key elements of the ecosystem.	There is a <b>partial</b> <b>strategy</b> in place, if necessary, which takes into account <b>available</b> <b>information and is</b> <b>expected to restrain</b> <b>impacts</b> of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a <b>strategy</b> that consists of a <b>plan</b> , in place which contains measures to <b>address all</b> <b>main impacts of the</b> <b>UoA</b> on the ecosystem, and at least some of these measures are in place.
	Met?	Yes	Yes	Yes
Dationalo				

Rationale

b

The finfish harvest strategy includes objectives, performance indicators, reference levels and control rules relevant to ecosystem impacts of the UoA, and ecosystem components (identified as target, retained, bycatch and ETP species, and habitats). Reference levels are risk-based, and performance indicators include the available information. Given the nature of potential UoA impacts on ecosystems, measures relating to the fishing operation are most relevant to restraining ecosystem impacts, e.g. fishing capacity, catch and effort restrictions, spatial closures, and reporting.

There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place. SG60, SG80 and SG100 are met.

#### Management strategy evaluation

Guide	The <b>measures</b> are considered likely to work,	There <b>basis</b>
post	based on plausible	that t

There is **some objective Dasis for confidence** that the measures/ partial

**Testing** supports **high confidence** that the partial strategy/ strategy

bio	<b>O</b> <sup>inspe</sup>	ecta q <sub>e</sub> inspecta	MSC Full Ass	21_390EN sessment Reporting Template		
		argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	will work, based on information directly about the UoA and/or ecosystem involved.		
	Met?	Yes	Yes	Νο		
Ratior	Rationale					

The management measures in place are likely to work to restrain ecosystem impacts of the UoA, based on plausible argument. For example, controlling fishing capacity, catch and effort restrictions, and spatial closures are ubiquitous fishery management measures. The UoA has been managed with such measures for an extended period. As for other components, the harvest strategies' response timeframes are not explicit for ecosystem impacts, being "as soon as practicable". This creates uncertainty regarding the efficacy of the strategy. However, overall the ecosystem appears relatively resilient to fishing impacts, given the findings of ecosystem modelling. This provides some objective basis for confidence that the measures/ partial strategy will work. SG60 and SG80 are met.

The strategy does not appear to have been tested. SG100 is not met.

	Manage	ement strategy impleme	ntation		
C	Guide post		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented</b> <b>successfully</b> .	There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented</b> successfully and is achieving its objective as set out in scoring issue (a).	
	Met?		Yes	No	
Rationale					

Evidence that the strategy is being implemented successfully includes fishery performance indicators, such as catch and effort, and compliance information. There is some evidence that the measures/partial strategy is being implemented successfully. SG80 is met.

The strategy does not appear to have been tested for the UoA. SG100 is not met.

#### References

DPIRD. (2020). Blue Swimmer Crab Resource of South-west Western Australia Harvest Strategy 2020
2025. Fisheries Management Paper No. 304. Department of Primary Industries and Regional
Development, Perth, Western Australia

DPIRD. (2020). Estuarine and Nearshore Finfish Resource of South-west Western Australia Harvest Strategy 2020 – 2025. Fisheries Management Paper No. 303.Department of Primary Industries and Regional Development, Perth, Western Australia

Draft scoring range	≥80	
Information gap indicator	Information sufficient to score PI	

Approval Date: 19.10.2020 05:53:29



## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	85
Condition number (if relevant)	ΝΑ



PI 2.5.3 – Ecosystem information – Blue swimmer crab, crab pots (UoA 1)

PI	2.5.3	There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue SG 60		SG 60	SG 80	SG 100
	Informa	ation quality		
а	Guide post	Information is adequate to <b>identify</b> the key elements of the ecosystem.	Information is adequate to <b>broadly understand</b> the key elements of the ecosystem.	
	Met?	Yes	Yes	
Rationale				

A large body of information is available on the Estuary from a variety of sources (e.g. see Hale and Butcher 2007, Fretzer 2013, Fisher et al. 2020, and references therein). Information is adequate to identify and broadly understand the key elements of the ecosystem. SG60 and SG80 are met.

	Investi	gation of UoA impacts		
Ь	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but <b>have not been</b> <b>investigated</b> in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and <b>some have been</b> <b>investigated in detail</b> .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and <b>have</b> <b>been investigated in</b> <b>detail</b> .
	Met?	Yes	Yes	Yes
Rationale				

The main impact of the UoA is removal of the target stock, and bait use. Ecosim modelling, while now somewhat dated, explored the impacts of increasing and decreasing commercial crab fishing effort on other ecosystem elements (considered as functional groups). Bait stocks are part of the ecosystem, and subject to stock status and risk assessments. The influence of climate change on the ecosystem the UoA occurs in has been identified (e.g. rainfall events, changes in fish distributions). Main interactions between the UoA and ecosystem elements can be inferred from existing information and have been investigated in detail. SG60, SG80, and SG100 are met.

	Understanding of component functions			
С	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are <b>known</b> .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are <b>understood</b> .
	Met?		Yes	Yes



#### Rationale

The main functions of components in the ecosystem are known, for example, from ecological characterisation work done in the Estuary as well as broader biological research of the components. Impacts of the UoA on the components are identified (e.g. through catch reporting and fishery monitoring), and the main functions of the component in the ecosystem are understood (e.g. through ecological characterisation work). Lost gear is considered to be minimal, and garbage from UoA operations has been assessed as a negligible risk. SG80 and SG100 are met.

	Informa		
d	Guide post	Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components <b>and</b> <b>elements</b> to allow the main consequences for the ecosystem to be inferred.
	Met?	Yes	Yes
Ratior	nale		

The impacts of the UoA are known from fishery-dependent and fishery-independent information. This includes, for example, fishery removals, bait use and habitat impacts. Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred. SG80 is met.

The elements of the ecosystem have also been characterised, and UoA impacts considered, for example, in terms of ecosystem impacts on functional groups of species. Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred. SG100 is met.

	Monitoring		
e	Guide post	Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?	Yes	Yes
Ratior	nale		

Commercial catch landings are reported by fishers and DPIRD conducts monthly monitoring. Fishing locations are also reported. Compliance activities are ongoing, prioritised by risk. Adequate data continue to be collected to detect any increase in risk level and information is adequate to support the development of strategies to manage ecosystem impacts. SG80 and SG100 are met.

#### References

DPIRD. (2020). *West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4*. November 2020. Western Australian Marine Stewardship Council Report Series.

Fisher, E.A., Evans, S.N., Desfosses, C.J., Johnston, D.J., Duffy, R., Smith, K.A. (2020). *Ecological Risk Assessment for the Peel-Harvey Estuarine Fishery*. Fisheries Research Report No. 311. Department of Primary Industries and Regional Development, Hillarys, Western Australia.

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Krumholz, O. (2019.) *Macrophyte communities in the Peel-Harvey Estuary: Historical trends and current patterns in biomass and distribution*. [Honours Thesis, Murdoch University]. https://researchrepository.murdoch.edu.au/id/eprint/50289/

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

PI 2.5.3 – Ecosystem information – Blue swimmer crab, drop nets (UoA 2)

PI	2.5.3	There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
	Informa	ation quality		
а	Guide post	Information is adequate to <b>identify</b> the key elements of the ecosystem.	Information is adequate to <b>broadly understand</b> the key elements of the ecosystem.	
	Met?	Yes	Yes	
Ratio	nale			

A large body of information is available on the Estuary from a variety of sources (e.g. see Hale and Butcher 2007, Fretzer 2013, Fisher et al. 2020, and references therein). Information is adequate to identify and broadly understand the key elements of the ecosystem. SG60 and SG80 are met.

	Investi	Investigation of UoA impacts					
Ь	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but <b>have not been</b> <b>investigated</b> in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and <b>some have been</b> <b>investigated in detail</b> .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and <b>have</b> <b>been investigated in</b> <b>detail</b> .			
	Met?	Yes	Yes	Νο			
Ratior	nale						

The main impact of the UoA is removal of the target stock, and bait use. Ecosim modelling, while now somewhat dated, explored the impacts of increasing and decreasing recreational fishing effort on other ecosystem elements (considered as functional groups). Bait stocks are part of the ecosystem, and subject to stock status and risk assessments. The influence of climate change on the ecosystem the UoA occurs in has been identified (e.g. rainfall events, changes in fish distributions). Main interactions between the UoA and ecosystem elements can be inferred from existing information and have been investigated in detail. SG60, SG80 are met.

Main interactions between the UoA and these ecosystem elements can be inferred from existing information but have not been investigated in detail (for the UoA specifically). SG100 is not met.

	Unders	Understanding of component functions		
С	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are <b>known</b> .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are <b>understood</b> .
	Met?		Yes	Yes
Ratior	nale			

The main functions of components in the ecosystem are known, for example, from ecological characterisation work done in the Estuary as well as broader biological research of the components. Impacts of the UoA on the components are identified (e.g. through catch documentation in the UoA noting that this information is now dated), and the main functions of the component in the ecosystem are understood (e.g. through ecological characterisation work). Lost gear is considered to be minimal, and garbage from UoA operations has been assessed as a Low risk. Drop net gear lies flat on the substrate until pulled up, and so is extremely unlikely to ghost-fish. SG80 and SG100 are met.

d	Informa	Information relevance				
-	Guide		Adequate information is available on the impacts	Adequate information is available on the impacts		
Approval	Date: 10.10	2020 05:53:20		Page 260 of 470		

Approval Date: 19.10.2020 05:53:29

Omenspecta	qeinspecta	MSC Full As	21_390EN sessment Reporting Template
post		of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	of the UoA on the components <b>and</b> <b>elements</b> to allow the main consequences for the ecosystem to be inferred.
Met?		Yes	No
Rationale			

The impacts of the UoA are known from a relatively limited amount of UoA-dependent information, and a wide range of other information (including on the commercial fishery, for which some UoA impacts are broadly analogous). This includes, for example, fishery removals, bait use and habitat impacts, noting that fishery information on catch and bait is now dated. Given the large body of other information available on the Estuary, adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred. SG80 is met. While the fishery may not have changed significantly in terms of catch composition in recent years, adequate information is not available on the impacts of the UoA on the main consequences for the ecosystem to allow the main consequences for the uoA on the elements to allow the main consequences for the UoA on the elements to allow the main consequences for the UoA on the elements to allow the main consequences for the UoA on the elements to allow the main consequences for the UoA on the elements to allow the main consequences for the UoA on the elements to allow the main consequences for the ecosystem to be inferred. SG100 is not met.

	Monitor	ing		
e	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		Νο	Νο
Ratior	nale			

There is some information available from four Statewide Recreational Fishing Surveys on the location of the fishing gear, September - March. An example of this is shown in Figure 11 with further work underway. On-site surveys are planned to take place in future years when the statewide surveys are not conducted. Some bait information is collected on an ongoing basis through the voluntary Western Australia Recreational Angler Program (Table 17). Camera monitoring also provides ongoing information on fisher presence in three high-use sites (with this method focusing on shore-based fishers).

These data sources would contribute to the detection of an increase in risk presented by the UoA, but are not currently considered adequate to detect any increase in risk level. SG80 and SG100 are not met.

#### References

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DPIRD. (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

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Fretzer, S. (2013). *Analysing the effects of anthropogenic activities on two aquatic ecosystems in Western Australia and identifying sustainable policies for ecosystem based management*[Doctoral Thesis, Murdoch University], https://researchrepository.murdoch.edu.au/id/eprint/21292/.

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Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Department of Fisheries, Western Australia.

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Draft scoring range	60-79	
Information gap indicator	<b>More information sought</b> The limited amount of UoA-specific information has become dated. Further information is sought regarding data collection relevant to the UoA, to detect any increase in ecosystem risk level.	

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	75
Condition number (if relevant)	21

PI 2.5.3 – Ecosystem information – Blue swimmer crab, scoop nets (UoA 3)

PI	2.5.3	There is adequate knowledge of the impacts of the UoA on the ecosystem				
Scoring IssueSG 60SG 80SG 100				SG 100		
	Informa	ation quality				
а	Guide post	Information is adequate to <b>identify</b> the key elements of the ecosystem.	Information is adequate to <b>broadly understand</b> the key elements of the ecosystem.			
	Met?	Yes	Yes			
Rationale						

A large body of information is available on the Estuary from a variety of sources (e.g. see Hale and Butcher 2007, Fretzer 2013, Fisher et al. 2020, and references therein). Information is adequate to identify and broadly understand the key elements of the ecosystem. SG60 and SG80 are met.

	Investig	gation of UoA impacts		
Ь	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but <b>have not been</b> <b>investigated</b> in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and <b>some have been</b> <b>investigated in detail</b> .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and <b>have</b> <b>been investigated in</b> <b>detail</b> .
	Met?	Yes	Yes	Νο
Ratior	nale			

The main impact of the UoA is removal of the target stock. Ecosim modelling, while now somewhat dated, explored the impacts of increasing and decreasing recreational fishing effort on other ecosystem elements (considered as functional groups). The influence of climate change on the ecosystem the UoA occurs in has been identified (e.g. impacts of changing rainfall patterns). Main interactions between the UoA and ecosystem elements can be inferred from existing information and have been investigated in detail. SG60, SG80 are met.

Main interactions between the UoA and these ecosystem elements can be inferred from existing information, but have not been investigated in detail (for the UoA specifically). SG100 is not met.

	Understanding of component functions					
с	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are <b>known</b> .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are <b>understood</b> .		
	Met?		Yes	Yes		
Rationale						

The main functions of components in the ecosystem are known, for example, from ecological characterisation work done in the Estuary as well as broader biological research of the components. Impacts of the UoA on the components are broadly identified (e.g. through catch documentation in the UoA noting that this information is now dated), and the main functions of the component in the ecosystem are understood (e.g. through ecological characterisation work). Lost gear is considered to be minimal, and garbage from UoA operations has been assessed as a Low risk. SG80 and SG100 are met.

	Informa	Information relevance					
d	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components <b>and</b> <b>elements</b> to allow the main consequences for the ecosystem to be inferred.			

bio inspecta	q <sub>e</sub> inspecta				
					21_390EN
			MSC Full Ass	sessment Reportin	g Template
Met?		Yes		Νο	
Rationale					

The impacts of the UoA are known from a relatively limited amount of UoA-dependent information, and a wide range of other information (including on the commercial fishery, for which some UoA impacts are broadly analogous). This includes, for example, fishery removals, noting that fishery information on catch and bait is now dated. Given the large body of other information available on the Estuary, adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred. SG80 is met.

The elements of the ecosystem have also been characterised, and UoA impacts considered. However, information has become dated, such that adequate information is not available from recent years on the impacts of the UoA on the elements to allow the main consequences for the ecosystem to be inferred. SG100 is not met.

	Monitoring						
e	Guide post	Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.				
	Met?	Yes	Yes				
Ratior	nale						

Data collected to enable detection of an increase in UoA-specific risk level includes camera monitoring information (collected at three high-use sites). UoA-specific information is also collected through compliance contacts with fishers. Previous investigation of scoop netter effort in different parts of the estuary also enables future comparisons. Adequate data continue to be collected to detect any increase in risk level and information is adequate to support the development of strategies to manage ecosystem impacts. SG80 and SG100 are met.

While not yet underway, on-site surveys are planned to take place in future years when the statewide recreational fishing surveys are not conducted and these could contribute additional information.

#### References

Desfosses, C.J., Blight, S.J., Denham, A.M., Taylor, S.M. (2021). Supplemented roving survey to quantify spatio-temporal recreational fishing effort in an estuarine Ramsar wetland. *Fisheries Research* 242(2021) 106042.

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Taylor, S.M., Blight, S.J., Desfosses, C.J., Steffe, A.S., Ryan, K.L., Denham, A.M. and Wise, B.S., (2018). Thermographic cameras reveal high levels of crepuscular and nocturnal shore-based recreational fishing effort in an Australian estuary. ICES Journal of Marine Science 75: 2107-2116.

Draft scoring range	60-79
Information gap indicator	<b>More information sought</b> The limited amount of UoA-specific information has become dated. Further information is sought regarding data collected of relevance to the UoA, to detect any increase in ecosystem risk level.

## **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	95
Condition number (if relevant)	ΝΑ

### PI 2.5.3 – Ecosystem information – Sea mullet, haul nets (UoA 4)

PI	2.5.3	There is adequate knowledge of the impacts of the UoA on the ecosystem			
Scoring Issue         SG 60         SG 80         SG 100					
	Informa	ation quality			
а	Guide post	Information is adequate to <b>identify</b> the key elements of the ecosystem.	Information is adequate to <b>broadly understand</b> the key elements of the ecosystem.		
	Met?	Yes	Yes		
Rationale					

A large body of information is available on the Estuary from a variety of sources (e.g. see Hale and Butcher 2007, Fretzer 2013, Fisher et al. 2020, and references therein). Information is adequate to identify and broadly understand the key elements of the ecosystem. SG60 and SG80 are met.

	Investi	gation of UoA impacts		
b	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but <b>have not been</b> <b>investigated</b> in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and <b>some have been</b> <b>investigated in detail</b> .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and <b>have</b> <b>been investigated in</b> <b>detail</b> .
	Met?	Yes	Yes	Yes
Ratior	nale			

The main impact of the UoA is removal of the catch. Ecosim modelling, while now somewhat dated, explored the impacts of increasing and decreasing commercial fishing with gill nets on other ecosystem elements (considered as functional groups). The influence of climate change on the ecosystem the UoA occurs in has been identified (e.g. rainfall events, changes in fish distributions). Main interactions between the UoA and ecosystem elements can be inferred from existing information, and have been investigated in detail. SG60, SG80, and SG100 are met.

	Understanding of component functions					
с	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are <b>known</b> .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are <b>understood</b> .		
	Met?		Yes	Yes		
Rationale						

The main functions of components in the ecosystem are known, for example, from ecological characterisation work done in the Estuary as well as broader biological research of the components. Impacts of the UoA on the components are identified (e.g. through catch reporting and fishery monitoring), and the main functions of the component in the ecosystem are understood (e.g. through ecological characterisation work). Lost gear is considered to be minimal, and garbage from UoA operations has been assessed as a negligible risk. SG80 and SG100 are met.

	Information relevance						
d	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components <b>and</b> <b>elements</b> to allow the main consequences for			



			the ecosystem to be inferred.
	Met?	Yes	Yes
Ratior	nale		

The impacts of the UoA are known from fishery-dependent and fishery-independent information. This includes, for example, fishery removals, and habitat impacts. Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred. SG80 is met.

The elements of the ecosystem have also been characterised, and UoA impacts considered, for example, in terms of ecosystem impacts on functional groups of species. Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred. SG100 is met.

	Monitoring						
e	Guide post	Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.				
	Met?	Yes	Yes				
Ratior	nale						

Commercial catch landings are reported by fishers, while discarded catch is not routinely quantified. A monitoring programme for non-target catch was conducted in 2017/18. This comprised fishery-dependent reporting through monthly log sheets and bi-monthly trips by DPIRD staff on commercial vessels to verify reported data and included the collection of discard information. This monitoring programme recommenced in early 2021. Compliance activities are ongoing, prioritised by risk.

Adequate data is collected to detect any increase in risk level and to support the development of strategies to manage ecosystem impacts. SG80 and SG100 are met.

#### References

DPIRD. (2020). West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Addendum 4. November 2020. Western Australian Marine Stewardship Council Report Series.

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Fretzer, S. (2013). *Analysing the effects of anthropogenic activities on two aquatic ecosystems in Western Australia and identifying sustainable policies for ecosystem based management*[Doctoral Thesis, Murdoch University], https://researchrepository.murdoch.edu.au/id/eprint/21292/.

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Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

PI 2.5.3 – Ecosystem information – Sea mullet, gill nets (UoA 5)

PI	2.5.3	There is adequate knowledge of the impacts of the UoA on the ecosystem			
Scoring Issue		SG 60	SG 60 SG 80		
	Informa	ation quality			
а	Guide post	Information is adequate to <b>identify</b> the key elements of the ecosystem.	Information is adequate to <b>broadly understand</b> the key elements of the ecosystem.		
	Met?	Yes	Yes		
Ratio	nale				

A large body of information is available on the Estuary from a variety of sources (e.g. see Hale and Butcher 2007, Fretzer 2013, Fisher et al. 2020, and references therein). Information is adequate to identify and broadly understand the key elements of the ecosystem. SG60 and SG80 are met.

b	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but <b>have not been</b> <b>investigated</b> in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and <b>some have been</b> <b>investigated in detail</b> .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and <b>have</b> <b>been investigated in</b> <b>detail</b> .
	Met?	Yes	Yes	Yes
Ratior	nale			

The main impact of the UoA is removal of the catch. Ecosim modelling, while now somewhat dated, explored the impacts of increasing and decreasing commercial fishing with gill nets on other ecosystem elements (considered as functional groups). The influence of climate change on the ecosystem the UoA occurs in has been identified (e.g. rainfall events, changes in fish distributions). Main interactions



between the UoA and ecosystem elements can be inferred from existing information, and have been investigated in detail. SG60, SG80, and SG100 are met.

	Unders	derstanding of component functions			
с	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are <b>known</b> .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are <b>understood</b> .	
	Met?		Yes	Yes	
Ratior	nale				

The main functions of components in the ecosystem are known, for example, from ecological characterisation work done in the Estuary as well as broader biological research of the components. Impacts of the UoA on the components are identified (e.g. through catch reporting and fishery monitoring), and the main functions of the component in the ecosystem are understood (e.g. through ecological characterisation work). Lost gear is considered to be minimal, and garbage from UoA operations has been assessed as a negligible risk. SG80 and SG100 are met.

	Informa	ation relevance		
d	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components <b>and</b> <b>elements</b> to allow the main consequences for the ecosystem to be inferred.
	Met?		Yes	Yes
Ratior	nale			

The impacts of the UoA are known from fishery-dependent and fishery-independent information. This includes, for example, fishery removals, and habitat impacts. Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred. SG80 is met.

The elements of the ecosystem have also been characterised, and UoA impacts considered, for example, in terms of ecosystem impacts on functional groups of species. Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred. SG100 is met.

_	Monitoring						
е	Guide post	Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies				

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						to manage ecosystem impacts.	
	Met?			No		Νο	
Ratior	nale						

Commercial catch landings are reported by fishers, while discarded catch is not routinely quantified. A monitoring programme for non-target catch was conducted in 2017/18. This comprised fishery-dependent reporting through monthly log sheets and bi-monthly trips by DPIRD staff on commercial vessels to verify reported data and included the collection of discard information. The intent to repeat this monitoring from mid-2021 is stated, which, together with additional data collection on fishing location would be adequate to detect any increase in risk level. Compliance activities are ongoing, prioritised by risk. SG80 and SG100 are not currently met.

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Hale, J. & Butcher, R. (2007). *Ecological Character Description of the Peel-Yalgorup Ramsar Site*, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth.

Johnston, D.J., Smith, K.A., Brown, J.I., Travaille, K.L., Crowe, F., Oliver, R.K. and Fisher, E.A. (2015). Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Department of Fisheries, Western Australia.

Draft scoring range	60-79
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	75
Condition number (if relevant)	22

## 7.4 Principle 3

### 7.4.1 Principle 3 background

#### **Area and Target Species**

The Peel-Harvey Estuary Fishery (PHE) is conducted in Area 2 of the West Coast Estuarine Managed Fishery (WCEMF). The commercial fishery for sea mullet and blue swimmer crab and the recreational fishery for blue swimmer crab is conducted in the Peel-Harvey Estuary and Murray, Serpentine, Harvey and Dandalup Rivers and their tributaries (see Figure 13). The commercial fishery is conducted within three nautical miles of the coast and falls within the sole jurisdiction of the Western Australian Government, which also has sole jurisdiction for the regulation of recreational fishing for blue swimmer crab.



Figure 13: The boundaries, extent and closed areas of the WCEMF Area 2 (From Johnston et al., 2015).



#### Jurisdiction

The Offshore Constitutional Settlement 1995 (OCS) sets out arrangements between the different Australian jurisdictions regarding responsibilities for fisheries. Under the OCS, the Australian states and the Northern Territory manage fisheries out to 3 nm from the coast, and for the Australian Government to manage fisheries from three to 200 nm (which is the extent of Australia's Exclusive Economic Zone (EEZ). The settlement is not set out in a single document rather it is found multiple pieces of legislation that implements it. The OCS arrangements provide for the Commonwealth, the States and the NT to agree to adjust these arrangements by passing management responsibility for particular fisheries exclusively to the Commonwealth or to the adjacent States/Northern Territories (NT); or alternatively, for the Commonwealth and the States/NT to jointly manage a fishery in waters relevant to the Commonwealth and one or more States/NT (Borthwick, 2012). These are binding arrangements in their respective jurisdictions.

Under the OCS (Brayford & Lyon 1995), WA retains control of crustacean resources out to the 200 nm limit of the EEZ and therefore the Peel-Harvey Estuary (PHE) falls entirely within the management jurisdiction of the WA Government.

#### **National Legislation and International Obligations**

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC 1999) is the Australian Commonwealth Government's central piece of environmental legislation. The EPBC Act is administered by the Commonwealth Department responsible for environment (currently the Department of Agriculture, Water and the Environment, hereafter DAWE) and provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places — defined in the EPBC Act as matters of national environmental significance (MNES).

Australia is a signatory to a number of international agreements and conventions (which it applies within its EEZ), such as:

- United Nations Convention on the Law of the Sea (UNCLOS 1982);
- Convention on Biological Diversity (CBD 1992);
- Convention on International Trade in Endangered Species of Wild Fauna and Flora Flora (CITES 1973);
- FAO Code of Conduct for Responsible Fisheries (1995);
- United Nations Fish Stocks Agreement (1995); and
- State Member of the International Union for Conservation of Nature (IUCN).

The DAWE's Environment Division is responsible for acting on international obligations on a national level, by enacting policy and/or legislation to implement strategies to address those obligations.

The legal rights for people dependent on fishing for food (non-commercial use) is enshrined in the *Native Title Act 1993*. This allows special provision for 'traditional fishing' to be made where they might apply in the context of both Commonwealth and State Fisheries Law.

#### Management framework and objectives

Western Australian fisheries are managed by Western Australia's Department of Primary Industries and Regional Development (DPIRD) under the following primary pieces of legislation:

- Fish Resources Management Act 1994 (FRMA); and
- Fish Resources Management Regulations 1995 (FRMR).

These functions were previously performed by the Department of Fisheries (DOF) prior to a government restructuring process which resulted in the amalgamation of several government functions, including the DOF, into the Department of Primary Industries and Regional Development (DPIRD).

The fishery-specific management framework for the fishery is outlined in the *West Coast Estuarine Managed Fishery Management Plan* (Management Plan), the Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 (DPIRD, 2020a) and the Estuarine and Nearshore Finfish Resource of South-West Western Australia Harvest Strategy 2020-2025 (DPRID 2020b). These arrangements are applied under powers of the FRMA and the FRMR. The management objectives within the tiers of the management are explicit, clear and consistent. These are outlined below.

The Western Australian government is currently in the preparatory phases of introducing an *Aquatic Resources Management Act 2016* (ARMA) which will become the primary legislation used to manage fishing, aquaculture, pearling and aquatic resources in Western Australia. The ARMA will replace the FRMA (and the *Pearling Act 1990*), providing a set of new management methods and a modern, flexible framework designed to deliver more effective, efficient and integrated fisheries and aquatic resource management. It will allow for existing management arrangements for commercial and recreational fishing sectors to remain in place to enable a smooth transition between legislative frameworks.

The new Act was scheduled for commencement on 1 January 2019, however, this has been delayed due to required amendments to address some structural issues and to ensure DPIRD can continue to manage at the sub-resource level eg: zones or different TACCs for specific species.

#### Fish Resources Management Act 1994

The FRMA provides the overarching legislative framework to implement the management arrangements for the PHE fishery and contains the head powers to determine a Management Plan.

The objects of the FRMA are:

- a) to develop and manage fisheries and aquaculture in a sustainable way; and
- b) to share and conserve the State's fish and other aquatic resources and their habitats for the benefit of present and future generations.

The FRMA sets out that the two primary objects will be achieved, in particular, by the following means:

- a) conserving fish and protecting their environment;
- ensuring that the impact of fishing and aquaculture on aquatic fauna and their habitats is ecologically sustainable and that the use of all aquatic resources is carried out in a sustainable manner;



- c) enabling the management of fishing, aquaculture, tourism that is reliant on fishing, aquatic ecotourism and associated non-extractive activities that are reliant on fish and the aquatic environment;
- d) fostering the sustainable development of commercial and recreational fishing and aquaculture, including the establishment and management of aquaculture facilities for community or commercial purposes;
- e) achieving the optimum economic, social and other benefits from the use of fish resources;
- f) enabling the allocation of fish resources between users of those resources, their reallocation between users from time to time and the management of users in relation to their respective allocations;
- g) providing for the control of foreign interests in fishing, aquaculture and associated industries;
- h) enabling the management of fish habitat protection areas and the Abrolhos Islands reserve

#### Fish Resources Management Regulations 1995

The *Fish Resources Management Regulations 1995* (FRMR) contain a number of requirements pertaining to all commercial fisheries in WA. For example, regulation 64 requires commercial fishers to submit mandatory catch returns in the form approved for that fishery. The West Coast Estuarine Managed Fishery (WCEMF) Management Plan provides the framework for the management measures for the fishery.

#### West Coast Estuarine Managed Fishery Management Plan 2014

The management arrangements for the West Coast Estuarine resources are formalised in *West Coast Estuarine Managed Fishery Management Plan 2014.* WA Management Plans are subsidiary legislation which set out the operational rules that control managed commercial fishing activities. The Management Plan provides the power to issue and restrict the number of authorisations, to set the capacity of the fishery and to regulate other conditions and grounds relating to fishing.

The Management Plan provided the power to grant licenses to those that met criteria specified in the plan, divided the total fishing area into 3 areas, limited effort through specifying upper limits for the amount/length of gears, and determined a range of other gear specifications.

The 2014 Management Plan for the fishery does not contain objectives rather it contains the management measures for the fishery, to administer and apply the harvest control rules outlined in the Harvest Strategy, amongst other things. More details of the Management Plan are contained in the Section: *Details of individuals or groups granted rights of access to the fishery and particulars of the nature of those rights.* 

#### Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025

The long-term ecological objectives of the fishery, consistent with the overarching objective of the FRMA, are defined in the Harvest Strategy (DPIRD, 2020a) are as follows:

Ecological sustainability objectives:

a) To maintain spawning stock biomass of the target species (i.e. blue swimmer crabs) at a level where the main factor affecting recruitment is the environment;

- b) To maintain spawning stock biomass of each other retained species at a level where the main factor affecting recruitment is the environment;
- c) To ensure fishing impacts do not result in serious or irreversible harm to bycatch species populations;
- d) To ensure fishing impacts do not result in serious or irreversible harm to endangered, threatened and protected (ETP) species populations;
- e) To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function; and
- f) To ensure the effects of fishing do not result in serious or irreversible harm to ecological processes.

Economic and social objectives:

- a) To provide commercial fisheries with reasonable opportunities to maximise their livelihood in supplying seafood to the community, within the constraints of ecological sustainability; and
- b) To provide fishing participants with reasonable opportunities to maximise cultural, recreational and lifestyle benefits of fishing, within the constraints of ecological sustainability.

Long-term management objectives are typically operationalised as short-term (e.g. annual or periodic) objectives through one or more performance indicators that can be measured and assessed against predefined reference levels to ascertain actual performance. Within the context of the long-term ecological objectives outlined above, operational objectives aim to maintain each resource above the threshold level (and, where relevant, close to the target level), or rebuild the resource if it has fallen below the threshold or the limit levels.

#### Estuarine and Nearshore Finfish Resource of South-West Western Australia Harvest Strategy 2020-2025

The long-term ecological objectives of the fishery, consistent with the overarching objective of the FRMA, are defined in the Harvest Strategy (DPIRD, 2020b) are as follows:

Ecological sustainability objectives:

- a) To maintain spawning stock biomass of the target species (i.e. blue swimmer crabs) at a level where the main factor affecting recruitment is the environment;
- b) To maintain spawning stock biomass of each other retained species at a level where the main factor affecting recruitment is the environment;
- c) To ensure fishing impacts do not result in serious or irreversible harm to bycatch species populations;
- d) To ensure fishing impacts do not result in serious or irreversible harm to endangered, threatened and protected (ETP) species populations;
- e) To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function; and
- f) To ensure the effects of fishing do not result in serious or irreversible harm to ecological processes.

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Long-term management objectives are typically operationalised as short-term (e.g. annual or periodic) objectives through one or more performance indicators that can be measured and assessed against predefined reference levels to ascertain actual performance. Within the context of the long-term ecological objectives outlined above, operational objectives aim to maintain each resource above the threshold level (and, where relevant, close to the target level), or rebuild the resource if it has fallen below the threshold or the limit levels.

#### Environmental Risk Assessment

A risk-based Ecosystem Based Fisheries Management (EBFM) process forms part of the WCEF management framework. The framework assesses the impacts of fishing on all parts of the marine environment, including target species, retained non-target species, bycatch, ETP species, habitats and the ecosystem. A periodic risk assessment is undertaken for the fishery which is employed to prioritise research, data collection, monitoring needs and management actions for this fishery, with the objective of fishing activities that are managed both sustainably and efficiently.

#### Other relevant legislation

In addition to the FRMA, FRMR and the Management Plan, fishers must also comply with these pieces of legislation

- Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act);
- Western Australian Marine Act 1982; and
- West Australian Wildlife Conservation Act 1950

#### **Recognised interest groups and consultation**

The recognised interest groups for the commercial and recreational fisheries in the PHE are:

- DPIRD
- The Western Australian Fishing Industry Council (WAFIC) representing the interests of commercial fishers
- The Mandurah Licensed Fishermen's Association (MLFA), of which all commercial licence holders in the PHE are members
- Recfishwest representing the interests of recreational fishers
- Research bodies including the Western Australian Marine Science Institution
- Department of Parks and Wildlife, Western Australia
- Department of Water, Western Australia
- Local Government bodies including the City of Mandurah and the Shire of Murray
- Representatives from the conservation sector, including the Peel-Harvey Catchment Council and the Conservation Council of Western Australia and Birdlife Australia
- South West Land and Sea Council, representing native title interests
- Fish processors, retailers and consumers
- The wider community.

The DPIRD's approach to stakeholder engagement follows its Stakeholder Engagement Guideline (DOF, 2016) designed to assist with selecting the appropriate level of engagement for different stakeholder groups. The framework consists of four levels of engagement as set out in Table 23 below.

Table 23 –	Level of Sta	keholder	Fngagement	(from	DOF.	2016)
	Level 01 Sta	ikenoiuei	Lingagement	(II OIII	DUF,	2010)

	Goal	Promise to stakeholder	Methods of engagement
COLLABORATE	To collaborate with key stakeholders on the development of project outcomes.	We will work with you in formulating solutions and will incorporate your advice and recommendations into the outcomes to the maximum extent possible.	Collaboration through a tasked working group, panel, committee, workshop, meeting or other form of project-specific discussion.
INVOLVE	To work directly with key stakeholders to ensure that their concerns and needs are understood and considered.	We will actively seek your involvement to ensure your concerns and aspirations contribute to the outcomes and will provide feedback on how stakeholder input influenced the outcomes.	Seek advice prior to or during the development process; and/or Seek key stakeholder input on draft document(s).
CONSULT	To obtain public feedback on analysis, alternatives and/or outcomes.	We will keep you informed, listen to, acknowledge and consider your concerns and aspirations and will provide feedback on how stakeholder input influenced the outcomes.	Seek input on draft document(s) as part of a public consultation process (e.g. through the Department's website or targeted input).
INFORM	To provide interested parties with balanced, objective and accurate information to assist them in understanding the issues.	We will keep you informed.	Publication of a decision/policy (e.g. in the Government Gazette, Annual Report, fishery status reports or on the Department's website).

The WA Minister for Fisheries and DPIRD are responsible for advising licensees, WAFIC and Recfishwest of Ministerial/Departmental decisions, including proposed changes to recreational fisheries management, and is advised of Ministerial/Departmental decisions which are the subject of a consultation process.

The WA Government formally recognises WAFIC and Recfishwest as the key sources of coordinated industry advice for the commercial and recreational sectors, respectively. The Department or Minister may seek and provide advice directly through these peak bodies and/or sector associations. WAFIC and Recfishwest undertake the statutory consultation functions, such as those associated with developing and amending Management Plans, on behalf of DPIRD under service level agreements (SLAs). They have direct input into the annual planning and priority setting process used to determine management, compliance, research and other priorities.

#### Commercial Fishery for Blue Swimmer Crab and Sea Mullet

WAFIC is the peak industry body representing professional fishing, pearling and aquaculture enterprises, as well as processors and exporters in WA. WAFIC works in partnership with the WA Government to set the direction for the management of commercial fisheries in WA. In relation to WAFIC's consultation role, the Department provides annual funding to WAFIC, equivalent to 0.5% of WA commercial fishing gross

value of production (based on a three year average), plus a pro-rata amount equivalent to 10% of water access fees paid by aquaculture and pearling operators.

WAFIC's responsibilities can be summarised as:

- Providing effective professional representation of commercial fishing interests and the commercial fishing sector to Government, industry, other relevant organisations and the community, by engaging, facilitating and consulting as necessary. WAFIC representatives attend WCEMF Annual Management Meetings to advocate on behalf of commercial fishers
- Providing representation of commercial fishing interests on fisheries management and Ministerial committees, as required;
- Documenting priority issues for commercial fishing interests (by 30 March) each year to DPIRD;
- Providing feedback to DPIRD on proposed deliverables and budget priorities for expenditure of the Fisheries Research and Development account;
- Engaging with Recfishwest and other appropriate parties with a view to identifying joint priorities and solutions to issues of shared concern; and
- Engaging in promotion, education and awareness of key sustainability messages consistent with best practice fisheries management and the objectives of the FRMA.

#### Recreational Fishery for Blue Swimmer Crab

Recfishwest is an incorporated association and receives 15% of the revenue raised from recreational fishing licence fees to advocate for and represent the recreational fishing sector. Recfishwest undertakes numerous key roles including consultation on management reforms, advocating for the sector on significance issues, education, and overseeing recreational fishing initiatives. Recfishwest's peak body operations and its representation role include:

- Effective representation of the WA recreational fishing community;
- Provision of professional advice to Government on issues affecting recreational fishing;
- Coordination of recreational fishing stakeholder views on management proposals;
- Advice on use of the Recreational Fishing Account; and
- Assistance with education of fishers and promotion of responsible fishing through, for example, the recreational fishing clinics held by Recfishwest in Mandurah.

Recfishwest's monthly electronic newsletter reaches over 32,000 recreational fishers, keeping subscribers up to date with recreational fishing initiatives, research results and issues affecting the recreational fishing sector.

DPIRD holds Annual Management Meetings with fishery licensees to discuss research, management, compliance and other specific issues affecting the fishery. These meetings are usually held at the start or the end of the licensing year and are attended by DPIRD personnel, WAFIC and licence holders, but are also open to other stakeholder groups such as Recfishwest, processors, universities, other government departments, the conservation sector and the general public.

DPIRD also seeks public comment on research, management and discussion papers from time to time.

# Details of individuals or groups granted rights of access to the fishery and particulars of the nature of those rights

The PHE fishery is a limited entry fishery and there are currently seven Managed Fishery Licence (MFL) holders, licensed issued under the Management Plan. Currently, the quota is consolidated onto three vessels.

#### Commercial Fishery for Blue Swimmer Crab and Sea Mullet

There are currently 11 licensed commercial fishers in the WCEMF Area 2 who use haul and gillnets to target a mix of temperate estuarine finfish species. Sea mullet generally comprises around 50% of the total annual finfish catch. The majority of catch is taken using haul nets and visual targeting of schools.

Different net lengths and mesh sizes are used to target different species and different sized fish. Gillnets are also set overnight when targeting species such as cobbler and whiting. Ten of the eleven licensed commercial fishers are also permitted to retain blue swimmer crab which is taken using crab traps. Over 99% of the annual trap catch is comprised of blue swimmer crab.

Some shore-based recreational net fishing also occurs in the PHE, with fishers primarily using gillnets to target sea mullet. A Recreational Net Fishing Licence (RNFL) is required for all recreational net fishing using set (gill) nets, haul nets or throw nets.

#### Recreational Fishery for Blue Swimmer Crab

The proximity of the PHE to the cities of Mandurah and Perth makes it one of the most popular estuaries for recreational fishing in the south-west of Western Australia. Blue swimmer crabs are the most-commonly targeted species by recreational fishers in the PHE. Most recreational fishers use baited drop nets from boats to capture blue swimmer crab. Drop nets are also set from bridges, jetties and canal houses. Shore-based recreational fishers primarily use wire scoop nets to catch crabs in shallow water areas of the estuary. There is no limit on the number of recreational fishers that may fish for blue swimmer crabs. There is no species-specific recreational fishing licence for blue swimmer crab.

#### **Regulation of Fishing**

The WCEMF Area 2 is managed by DPIRD under the following legislation:

- The FRMA
- The FRMR
- WCEMF Management Plan
- FRMA Section 43 Order Closed Waters Professional Netting (Rivers, Estuaries, Inlets and Lakes South of 230 South Latitude) Notice 1992.

The FRMA provides the overarching legislative framework to implement the management arrangements for the WCEMF and contains the head powers to determine a management plan (section 54). WA management plans are subsidiary legislation that set out the operational rules that control managed commercial fishing activities. The management plan provides the power to issue and restrict the number of authorisations, to set the capacity of the fishery and to regulate other conditions and grounds relating to fishing.

The FRMR contains a number of requirements pertaining to all commercial fisheries in WA. For example, regulation 64 requires commercial fishers to submit mandatory catch returns in the form approved for that fishery.

The WCEMF Management Plan provides the framework for the management measures for the commercial fishery in the PHE. The Plan imposes the following restrictions on commercial operators.

#### 1. Gear restrictions:

- Operators may only fish using a set net, haul net, beam tide prawn net or a hand dip net.
- Haul nets must have a mesh size  $\geq$  51 mm or:

- $\circ$  A mesh size of ≥ 28 mm but < 44 mm if the net is 55 metres (m) or less in length;
- A mesh size of ≥ 44 mm but < 47 mm if the net is 110 m in length; or
- A mesh size of  $\geq$  47 mm but < 51 mm if the net is 500 m or less in length
- Set nets must have a mesh size ≥ 51 mm and ≤ 114 mm. If the mesh size is ≥ 57 mm, the net must have a depth of 50 meshes or less; if the mesh size is < 57 mm, the net must have a depth of 33 meshes or less.
- Blue swimmer crabs may only be targeted using traps, which must have an internal volume of ≤ 0.31 m 3 or, in the case of a cylindrical trap, have a diameter of ≤ 1 m.

#### 2. Effort controls:

- The maximum number of boats specified on a licence is three; however, only one boat may be used by each licence holder at any time. All boats used in the fishery are limited to a maximum size of 6.5 m length.
- The total capacity of fishing gear in the WCEMF Area 2 is restricted to the following:
  - 12,000 m of haul net;

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- $\circ$  12,000 m of set net; o 96 m of beam-tide prawn net; and
- $\circ$   $\,$  420 crab traps.
- Additionally, an operator must not set, pull or haul more than 1000 m (total combined length) of set and hauls nets in the WCEMF Area 2 at any one time.

3. Seasonal closure: There is a seasonal fishing closure for blue swimmer crabs from 1 September to 30 November each year (both commercial and recreational sectors).

4. Temporal closures: Specific weekend and daytime closures are in place for both the net and trap commercial fisheries.

- Set and haul nets must not be used between 0800 hours on any Saturday and 0500 hours on the following Monday.
- Crab traps may not be set nor remain in the water:
  - From 1 November to 31 March at any time between 0900 hours on any Saturday and 0330 hours on the following Monday. o
  - From 1 April to 31 August at any time between 1000 hours on any Saturday and 0330 hours on the following Monday.
- Daily time restrictions also limit when permit holder fishers can set or retrieve their crab traps. Fishers must not pull a crab trap:
  - At any time before 0330 hrs or after 0900 hrs from 1 November to 31 March; or
  - At any time before 0330 hrs or after 1000 hrs from 1 April to 31 August.
- Spatial closures: There are a number of closed areas throughout the WCEMF Area 2 (see Figure 17), including within the channel entrance (Area A), Serpentine River (Area B), Harvey River (Area C), Yunderup Canals (Area D), Murray River (Area E) and the Dawesville Channel (Area F).
- The Closed Waters Professional Netting (Rivers, Estuaries, Inlets and Lakes South of 23 o South Latitude) Notice 1992 prohibits all people, other than specified professional fishermen (such as licensees in the WCEMF Area 2), from taking fish by means of set (gill) net, hauling gill net or throw net in the waters described in this notice.

The MLFA has also developed a Code of Practice (see Appendix F, Johnston et al. 2015) which is a voluntary agreement between the licensees of the WCEMF (Area 2) to:

- Demonstrate the highest level of stewardship possible;
- At all times act as environmental custodians;

- Ensure the use of fishing practices that are environmentally sustainable;
- Lead the way in community education by providing valuable information through the EMS;
- Aid in present and future research projects; and

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• Comply with the Departmental Management Plan at all times whilst ensuring new entrants are practicing sustainable fishing methods within the regulations. The Code of Practice includes operational guidelines for fishing methodology and vessel operations and voluntary management resolutions for resource sharing between commercial and recreational fishers.

#### Recreational fishery for blue swimmer crab

The PHE Blue Swimmer Crab Recreational Sector is managed by DPIRD under the following legislation:

• FRMA;

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- FRMR; and
- FRMA Section 43 Order Prohibition on Fishing for Crabs (Peel Inlet and Harvey Estuary) Order 2007.

As with commercial fishers, recreational fishers must also comply with the requirements of:

- The EPBC Act;
- Western Australian Marine Act 1982; and
- Western Australian Wildlife Conservation Act 1950.

The FRMA provides the overarching legislative framework to implement the management arrangements for recreational fishing. The power to regulate recreational fishing is in Section 258 (1)(b), while Section 257 (1)(b) provides the power to license recreational fishers. Fish are protected from recreational fishing under Section 45 (1)(c) of the FRMA. Under Section 43 the Minister may prohibit fishing by order published in the Government Gazette.

The FRMR outlines the permitted ways for recreational fishers to fish for blue swimmer crabs and also outlines the legal (commercial and recreational) size restrictions and (recreational) bag/boat limits in place for many species:

- Recreational gear/method restrictions: Recreational fishers are only permitted to catch blue swimmer crabs by hand, wire hook, drop net or scoop net. There is a maximum limit of 10 drop nets per person or 10 drop nets per boat, regardless of how many people are on board.
- Size, condition and species limits: Blue swimmer crabs have a minimum size limit of 127 mm carapace width. All berried or undersize crabs are totally protected and must be returned to the water within five minutes of catching them. All protected crabs caught in drop nets must be released before any more drop nets are pulled.
- Bag/boat limits: A daily bag limit of 10 crabs and a daily boat limit of 20 crabs (where two or more people are fishing from the boat) applies to all recreational fishers in the West coast Bioregion (WCB) in which the PHE is located.

Within WA, recreational fishers are not required to hold a general recreational fishing licence, unless fishing from a powered boat, in which case a Recreational Fishing Boat Licence (RFBL) is required. Species-specific recreational fishing licences apply for some species, but there is no requirement for such a licence for blue swimmer crab.

The Prohibition on Fishing for Crabs (Peel Inlet and Harvey Estuary) Order 2007 closes the PHE to recreational fishing for blue swimmer crabs from 1 September to 30 November each year.



Recfishwest and the Department of Fisheries undertake a range of communications and extension activities focused on promoting sustainable and best practice recreational crab fishing practices. These materials and activities include dedicated crab fishing brochures in multiple languages, on site signage and awareness campaigns during peak fishing times, distribution of free crab measuring gauges as well as social media and YouTube education features.

#### Integrated Fisheries Management (IFM)

The Department's IFM policy aims to address how fish resources in WA are shared between competing users within the broad context of Ecologically Sustainable Development (ESD). The Integrated Fisheries Allocation Advisory Committee, established under section 42 of the FRMA, makes recommendations on resource allocation issues and on optimal resource use. The recommendations generally relate to proportional allocations based on historical catch shares of a resource between fishing sectors (e.g. commercial, recreational and customary).

The blue swimmer crab resource of the lower west coast (including the PHE) is currently being considered by Integrated Fisheries Allocation Advisory Committee in order to make recommendations on how future blue swimmer crab catches in the region should be allocated between the commercial and recreational fishing sectors.

The revised harvest strategy reflects the agreed objectives regarding catch of the south-west WA blue swimmer crab resource between the commercial and recreational sectors. Furthermore, the recent Voluntary Fishery Adjustment Scheme (VFAS) has reduced the number of commercial crab trap licenses in the Peel-Harvey Estuary from 10 to six to reallocate a component of the resource to recreational fishers and the ecosystem. Noting this and the agreed objectives within the revised harvest strategy, the formalisation under the IFM policy is not currently required.

#### **Decision Making Processes**

The FRMA, together with the WCEMF Management Plan, provide the framework for decision-making on long-term management of the commercial fisheries for blue swimmer crab and sea mullet and recreational for blue swimmer crab in the PHE. Decision-making roles and responsibilities are well defined. Decisions are generally taken by the Director General of DPIRD or the Minister, after consultation with commercial and recreational fishers. However, the FRMA provides for decisions to be taken without such consultation where there is an urgent need for action.

The 2020 harvest strategies define two interrelated decision-making processes:

- A formal review of targeted stocks and other ecological assets against defined reference levels determines performance against management objectives relating to ecological sustainability. This process assesses the status of relevant target stocks and performance in relation to each ecological objective. Suitable indicators have been selected to determine the status against defined reference levels established to separate acceptable from unacceptable performance.
- An annual fishery-level review determines whether the current catch/effort by each of the relevant fisheries/sectors is consistent with the levels expected when ecological objectives are met.

#### **Review and Evaluation of Management**

There are mechanisms in place for monitoring and evaluating the performance of various aspects of the management system of the WCEMF, including:

(1) Strategic Planning and Risk Assessments



- An internal Department strategic management planning meeting is held annually prior to Annual Management Meetings to discuss the issues of importance to the management of the fishery. Such reviews may identify management or compliance projects or may indicate the need for major changes to the management system.
- Aquatic Reosurce Program Briefs outline annual operations, short and long-term projects, workload requirements, priorities and risks associated with the West Coast Inshore Crustacean Resource.
- Ecosystem-Based Fisheries Management (EBFM) risk assessments are reported on every year in the Status Reports of the Fisheries and Aquatic Resources of Western Australia (DPIRD, 2020b).
- Internal Department compliance risk assessment meetings are held annually.
- Internal Department committees that convert Department and stakeholder (WAFIC and Recfishwest) priorities into operational deliverables set within the budget context.

#### (2) Review Workshops

- Annual Management Meetings are held with all WCEMF Area 2 licence holders and stakeholders (Recfishwest) to discuss current research programs, management changes and future research needs. Additional meetings may also be held, on an as needs basis, throughout the year to address specific issues or initiatives.
- Where appropriate, research workshops are held with stakeholder groups. An example of this is the workshop held in September 2011 to review the blue swimmer crab Development and Better Interest Fund project.
- (3) An annual evaluation of the performance of fisheries is undertaken by Departmental research, management and compliance staff, with outcomes used to assess the extent to which the management system has met both the long- and short-term objectives of the fisheries.
- (4) To evaluate how well the Department is meeting the overarching long-term objectives, performance against its key performance indicators is measured annually, with results published in the Department's Annual Report to Parliament (see, for example, DPIRD 2020a).
- (5) Performance against fishery-specific short-term (operational) objectives for fishery has been measured annually using the performance indicators, reference levels and management control rules that are explicitly identified in the previous 2015-2020 harvest strategy and will continue under the newly revised Harvest Strategy 2020-2025.
- (6) Harvest Strategies for finfish and blue swimmer crab in the PHE was reviewed in 2020
- (7) The broader management framework for fisheries in WA has been internally reviewed as part of the publication of several Departmental reports:
  - Management directions for WA's estuarine and marine embayment fisheries a strategic approach to management (DoF, 1999);
  - Management strategies /approaches for recreational fishing on the west coast of WA (Harrison 1999, 2001; DoF 2012b); and
  - Implementation of ESD for fisheries and aquaculture within WA (DoF 2002a).
- (8) Ecological risk assessments (ERAs) for the WCEMF and the PHE Blue Swimmer Crab Recreational Sector will be undertaken every 3–5 years to reassess any current or new issues that may arise in the fisheries; however, a risk assessment can also be triggered if there are significant changes identified in fishery operations or management activities or controls.
- (9) There have been a number of reviews of the legislative framework (Act and regulations) under which the WCEMF and the PHE Blue Swimmer Crab Recreational Fishery operate, and on the effectiveness of compliance/enforcement.

Neither the FRMA nor the WCEMF Management Plan provide for the review of the WCEMF Management Plan.

#### Monitoring, Control and Surveillance

The FRMA provides a wide range of compliance powers and controls relating to entry, search, inspection, seizure, arrest, prosecution, forfeiture and penalties, including imprisonment. These powers are exercised by Fisheries Officers appointed under the relevant legislation.

#### Compliance Strategy

Compliance planning and implementation in WA fisheries is directed by the Western Australian Fisheries Compliance Strategy (the Compliance Strategy) which has been developed to: *provide an understanding of the principles underlying the Department's compliance role and how its compliance services are delivered to the Western Australian community.* The Strategy aligns with, and complements, the Department's Compliance Framework and Risk Assessment Policy which informs the risk-based model, *compliance planning and the governance structure applied to fisheries compliance services.* 

The Department's compliance model is based on the Australian Fisheries National Compliance Strategy 2016-2020 (National Strategy). Senior compliance fisheries practitioners across Australia and New Zealand were consulted in the production of the National Strategy.

The Department's compliance program promotes three key compliance strategies recommended by the National Strategy: (1) maximising voluntary compliance; (2) effective deterrence; and (3) organisational capability and capacity.

#### Enforcement tools and their application

A set of enforcement tools exist and may be taken in respect to offenders under Fisheries legislation:

- Infringement Warning Notice involves issuing a written warning in lieu of a penalty;
- Infringement Notices involves a penalty;
- Letter of Warning a written warning in lieu of a prosecution; and
- Prosecution instigation of legal proceedings and/or proposed court action.

In addition to these enforcement tools, Fisheries Officers also have the power to seize fish and fishing gear that on reasonable grounds is believed to be the subject of or used in the commission of an offence. Likewise, Fisheries Officers may seize any item where the item may afford evidence of the commission of an offence.

The compliance program deploys a wide range of tools to encourage compliant behaviour with the Department's control measures, ranging of encouraging voluntary compliance through educative means, through to the use of sophisticated compliance tools such as covert surveillance and covert operations.

#### Resourcing compliance

The Department has a regionalised compliance model to support the need for a compliance presence statewide. Four compliance regions have been defined: Northern; Gascoyne Mid-West; Metropolitan; and Southern. Regional compliance staff operate from four regional and 13 district offices. Within these regions, Fisheries Officers and Community Education Officers are generally located in coastal towns. Regional Compliance Managers oversee and support the works of the Fisheries Officers. Further support is provided by Perth-based specialist compliance units which provide intelligence, prosecution, surveillance and investigation, training, quality control and governance services.

The compliance program comprises about 120 Fisheries Officers, in addition to eight regional Compliance Managers and four Regional Managers.

Fisheries Officers raise community awareness and provide advice, in relation to:

- liaise with the fishing and marine industry, community groups, volunteer organisations, clubs, the public and other government agencies and advise on fisheries matters;
- the public and other government agencies and advise on fisheries matters;
- provide advice and assist with the effective delivery of volunteer programs if required; and
- promote fisheries initiatives and messages through liaison, presentations and provision of advice.

Fisheries Officers also lead compliance actions, including:

- undertake inspections, investigations and enforce legislation;
- plan and lead patrols, issue notices and infringements; and
- apprehend and prosecute offenders, seize illegal equipment and evidence as authorised.

Compliance resources are allocated in accordance with the Regional Services Division's Compliance Framework and Risk Assessment Policy.

#### Compliance risk assessments

The Department conducts compliance risk assessments every 1 - 2 years in major fisheries or those perceived to be at high risk and every 3 - 5 years in minor fisheries such as the PHE fishery. The risk assessment process regularly involves DPIRD management staff, field based FMOs and researchers. If appropriate, the process could also include commercial and recreational fishers, fish processors and representatives from other interested stakeholder groups. The risk assessment process is a significant input into the development of an Operational Compliance Plan (OCP) for the fishery, which provides the formal framework for the delivery of specific compliance services that remove or mitigate those identified risks.

The Department also uses the State-wide Tasking Coordination Group as an oversight body for statewide high priority investigations and operations. STCG provides advice on the allocation of high priority intelligence for investigation, allocating resources, monitoring and reviewing outcomes and operational assessments, managing risks and recommending process improvements.

#### Operational Compliance in the PHE

Ongoing annual or seasonal review of compliance service delivery in the PHE is undertaken using a compliance risk assessment process, which may involve the participation of management, field-based FMOs, researchers, commercial and recreational fishers, fish processors and representatives from other interested stakeholder groups. The risk assessment process feeds into an OCP, which provides the formal framework for the delivery of specific compliance services that remove or mitigate those identified risks.

OCPs are available for both the commercial and recreational sectors in the PHE. Each OCP is reviewed following a compliance risk assessment. Compliance activities are prioritised in accordance with risk, budget and resourcing considerations. The recreational and commercial sector OCPs for the PHE were reviewed and updated during 2014/15. Staff located at Mandurah Regional Office provide the primary on-ground compliance and educative delivery for the WCEMF and the PHE Blue Swimmer Crab Recreational Fishery. Flexibility within the compliance resources across the WCB provides for allocation of additional resources to respond to changes, such as the need for a planned tactical operation in response to fresh intelligence. Compliance activities in the PHE are delivered via:

- On-water enforcement (by three dedicated compliance vessels, e.g. checking for interference with commercial fishing gear by unauthorised people);
- Land-based enforcement (at landing locations);

- Recreational mobile patrols that operate along the shores of the estuary;
- Road-side check points (in collaboration with the WA Police) for protected species (e.g. undersize fish / crabs or berried female crabs);
- Processor factory inspections of catches;

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- Wholesale retail inspections of catches; and
- Attending industry meetings.

#### Commercial fishing compliance

Compliance of the commercial fishing sector is monitored via both on water and on-land inspections, with the majority of checks being carried out at the point of landing (i.e. boat ramps). Individual commercial vessel inspections focus on checking that:

- The vessel and fisher hold current authorisations and have a valid commercial fishing licence
- The gear used by the operator complies with relevant requirements
- The operator is compliant with minimum legal size and protected fish requirements (e.g. berried crabs)
- No bycatch has been retained (e.g. blue swimmer crabs when fishing using haul and gillnets)
- There is no fishing in closed areas.

#### Recreational fishing compliance

Recreational Fishery includes crabbing from boats, crabbing from shore and diving. Compliance of the recreational fishing sector is monitored via on-water and on-land inspections, both through checks at points of landing (boat ramps) and along the foreshore area of the PHE. The inspections focus on checking that recreational fishers:

- Are compliant with minimum legal size and protected fish requirements (i.e. berried crabs), and bag/boat limits (e.g. 10 blue swimmer crabs per person, 20 crabs per boat if more than one person is in the boat)
- Are compliant with the seasonal closure;
- If relevant, hold a current RFBL (when fishing from a boat)
- If relevant, hold a recreational skippers ticket (inspection done on behalf of the Department of Transport Marine Safety
- Use gear compliant with relevant requirements
- Retain no totally protected species.

Compliance activities in the PHE Blue Swimmer Crab Recreational Sector are primarily focused on the peak summer period, between December and January. All available compliance staff are directed to peak period compliance programs, which include daily 10-hour shifts of evening, night and early morning patrols, with extra staff deployed over the weekend periods. Weekend compliance activity is rostered consistently from October until April, which is considered to be the end of the peak recreational fishing period for blue swimmer crabs in the PHE.

### **7.4.2 Principle 3 Performance Indicator scores and rationales**

### PI 3.1.1 – Legal and/or customary framework

## UoAs: Blue-swimmer crab – commercial crab pot (UoA 1); Sea mullet – haul net (UoA 4); sea mullet – gillnet (UoA 5)

ΡI	3.1.1	<ul> <li>The management system exists within an appropriate legal and/or customary framework which ensures that it: <ul> <li>Is capable of delivering sustainability in the UoA(s);</li> <li>Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and</li> <li>Incorporates an appropriate dispute resolution framework</li> </ul> </li> </ul>				
Scoring Issue		SG 60	SG 80	SG 100		
	Compatibility of laws or standards with effective management					
а	Guide post	There is an effective national legal system <b>and</b> <b>a framework for</b> <b>cooperation</b> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and <b>organised and effective</b> <b>cooperation</b> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and <b>binding procedures</b> governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.		
	Met?	Yes	Yes	Yes		
Rationale						

In accordance with the Offshore Constitutional Settlement 1995 (OCS) (Brayford and Lyon 1995), the WCEF falls under the management jurisdiction of the WA Government. The WA Government provides management, licensing (where applicable), research and compliance and education services for commercial fisheries, recreational fisheries and customary fishing.

Under the OSC, the Commonwealth Government retains responsibility for implementing Australia's commitments under a range of international fisheries legislation and instruments. This responsibility is undertaken through the Commonwealth EPBC Act.

The key legislative elements of the fisheries management system in WA are the FRMA, the FRMR and the statutory Fishery Management Plan. Commercial fishers must also comply with the requirements of the *Western Australian Marine Act 1982* and the *Wildlife Conservation Act 1950* (WA).

These legislative instruments are supported by a range of high level policies including:

- The WA Government's Fisheries Policy Statement (DOF, 2012);
- The Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia (DOF, 2015);
- Ecosystem Based Fisheries Management (as described in DPIRD 2020b).

The Minister for Fisheries is the responsible Minister in the WA Government and has legislative power to act upon knowledge and advice he is provided with. Administration of the management arrangements is the responsibility of the Deputy Director General (DDG) of the Department of Primary Industries and

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Regional Development (DPIRD). DPIRD is governed by the *Public Sector Management Act 1994*, which requires, among other things, that DPIRD provide an Annual Report to Parliament that includes an assessment of the extent to which the Department has achieved its goal of conserving and sustainably developing the State's aquatic resources (e.g. DPRID, 2020a).

There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2. The fishery meets the requirements of SG 60, 80 and 100.

	Resolution of disputes				
b	Guide post	The management system incorporates or is subject by law to a <b>mechanism</b> for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a <b>transparent</b> <b>mechanism</b> for the resolution of legal disputes which is <b>considered to be</b> <b>effective</b> in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a <b>transparent</b> <b>mechanism</b> for the resolution of legal disputes that is appropriate to the context of the fishery and has been <b>tested and proven</b> <b>to be effective</b> .	
	Met?	Yes	Yes	Yes	
Rationale					

The following is noted regarding mechanisms for the resolution of legal disputes:

- Changes to existing or new fisheries legislation, including subsidiary legislation such as the Fishery Management Plans, are potentially subject to review through the disallowance process of State Parliament. All subsidiary legislation is also reviewed by the Joint Standing Committee on Delegated Legislation, which may seek further advice on the reasons for the legislation and potentially move to disallow. These processes provide for parliamentary and public scrutiny of all fisheries legislation.
- There are well-established formal dispute mechanisms for administrative and legal appeals of decisions taken in respect to fisheries (contained in Part 14 of the FRMA).
- Most decisions made by the DDG of the DPIRD and disputes regarding the implementation and administration of fisheries legislation can be taken to the Western Australian State Administrative Tribunal (SAT) for review, or to the WA (and Commonwealth) Court System. The decisions of the SAT and Courts are binding on DPIRD, and all SAT decisions must be carried out by the Department (under section 29(5) of the State Administrative Tribunal Act 2004). These mechanisms have been used and tested.
- Dispute resolution mechanisms have been used and tested in Western Australian fisheries.
- Resource allocation between commercial and recreational sectors represents a source of potential dispute. Proposed changes to these regulations and proposals for resource allocation are subject to consultation by DPIRD or the Integrated Fisheries Allocation Advisory Committee with WAFIC, which is charged with consulting with its constituents. This consultation process seeks to avoid disputes.
- Disputes in the fishery are also informally avoided or addressed through a system of ongoing of communication and consultation processes between the fishery's management and research staff and industry.


The assessment team saw no evidence of ongoing disputes or disagreements between DDG and WAFIC, commercial fishers or other individuals or sectors. This suggests that the mechanisms for dispute resolution are effective. The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective. The fishery meets the requirements of SG 60, 80 and 100.

	Respect	t for rights			
с	Guide post	The management system has a mechanism to <b>generally respect</b> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to <b>observe</b> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to <b>formally commit</b> to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	
	Met?	Yes	Yes	Yes	
Rationale					

The management system provides access rights to the commercial fishery by way of the issue of a limited number of licences. These licences are issued in accordance with the WCEMF Management Plan which derives its power from the FRMA.

In 1992, the High Court of Australia recognised native title, i.e. that Indigenous Australians may continue to hold native title and to be uniquely connected to the land. Australian law recognises that native title exists where Aboriginal people have maintained a traditional connection to their land and waters, since sovereignty, and where acts of government have not removed it. Indigenous rights are formally committed to in WA by the Aboriginal Heritage Act of 1972, which recognizes Aboriginal peoples' strong relationships to the land and provides automatic protection for all places and objects in Western Australia.

A 2013 High Court decision concluded that State fisheries legislation in South Australia did not extinguish native title rights to fish. It is likely that this decision also means that DPIRD legislation does not extinguish native title rights to fish where that right is exercised for a traditional, non-commercial purpose by an Aboriginal person. There are currently no native title claims that relate to the sea mullet or blue swimmer crab resources of the PHE.

The rights of Aboriginal persons fishing for customary purposes are recognised under Section 6 of the FRMA and S258(1)(ba) of the Act provides the power to make regulation to manage customary fishing.

DPIRD's Integrated Fisheries Management (IFM) policy (DoF 2009a) seeks to share resources between fishing sectors i.e. commercial, recreational and customary.

The Aquatic Resources Management Bill (which, when enacted will replace the FRMA) provides for a quantity of an aquatic resource to be reserved for conservation and reproductive purposes before setting a sustainable harvest level for by the fishing sectors. It is proposed that this 'reserve' include an allowance for customary fishing if required.

The Department of Fisheries of Western Australia also has a customary fishing policy. This applies to those of aboriginal descent, fishing in a traditional manner, for non-commercial needs. This requires fisheries policy and management to provide specific and appropriate consideration of management

practices in customary fisheries. Reference to custodial rights is explicitly set out in the FRMA as are the specific protection of aboriginal rights.

The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2 and the requirements of SG60, 80 and 100 are met.

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#### **Draft scoring range**

≥80

Information gap indicator

Information sufficient to score PI

# Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

# UoAs: Blue-swimmer crab – recreational drop net (UoA 2); blueswimmer crab – recreational scoop (UoA 3)

PI	3.1.1	<ul> <li>The management system exists within an appropriate legal and/or customary framework which ensures that it: <ul> <li>Is capable of delivering sustainability in the UoA(s);</li> <li>Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and</li> <li>Incorporates an appropriate dispute resolution framework</li> </ul> </li> </ul>				
Scorin	ng Issue	SG 60	SG 80	SG 100		
	Compat	Compatibility of laws or standards with effective management				
а	Guide post	There is an effective national legal system <b>and</b> <b>a framework for</b> <b>cooperation</b> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and <b>organised and effective</b> <b>cooperation</b> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and <b>binding procedures</b> governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.		
	Met?	Yes	Yes	Yes		
Ratior	Rationale					

The following is noted in relation to the legal and/or customary framework for management:

- The Responsible Minister in the WA Government is the Minister for fisheries who has legislative power to act upon knowledge and advice he is provided with. Administration of the management arrangements is the responsibility of the Deputy Director General (DDG) of DPIRD. The Department is governed by the *Public Sector Management Act 1994*, which requires among other things that DPIRD provide an Annual Report to Parliament that includes an assessment of the extent to which the Department has achieved its goal of conserving and sustainably developing the State's aquatic resources.
- The Commonwealth Government retains responsibility for implementing Australia's commitments under a range of international fisheries legislation and instruments. This responsibility is undertaken through the Commonwealth EPBC Act. Recreational fishing for blue swimmer crab in the PHE is subject to the requirements of that Act in so far as it interacts with species protected under the Act.
- Section 258 of the FRMA provides the WA Minister for Fisheries with the power to regulate recreational fishing.

- The other key legislative components of the DPIRD management system that relate to the PHE recreational sector for blue swimmer crab are the FRMR and the FRMA Section 43 Order Prohibition on Fishing for Crabs (Peel Inlet and Harvey Estuary) Order 2007.
- Recreational fishers must comply with the requirements of the Western Australian *Marine Act 1982* and the Western Australian *Wildlife Conservation Act 1950*. These legislative instruments are supported by a range of high level policies including:
  - the WA Government's Fisheries Policy Statement (DoF 2012a)

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- the Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia (DoF 2015c)
- Ecosystem Based Fisheries Management (as described in Fletcher and Santoro 2014)
- A Resource-Based Management Approach for Recreational Fishing in Western Australia 2012
   2017 (DoF 2012b)

There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2 and the requirements of SG60, 80 and 100 are met.

	Resolut	ion of disputes		
b	Guide post	The management system incorporates or is subject by law to a <b>mechanism</b> for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a <b>transparent</b> <b>mechanism</b> for the resolution of legal disputes which is <b>considered to be</b> <b>effective</b> in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a <b>transparent</b> <b>mechanism</b> for the resolution of legal disputes that is appropriate to the context of the fishery and has been <b>tested and proven</b> <b>to be effective</b> .
	Met?	Yes	Yes	Νο
Rationale				

All changes to or new fisheries legislation, including subsidiary legislation, are potentially subject to review through the disallowance process of State Parliament. All subsidiary legislation is also reviewed by the Joint Standing Committee on Delegated Legislation, which may seek further advice on the reasons for the legislation and potentially move to disallow. In this way, there is Parliamentary and public scrutiny of all fisheries legislation.

Most decisions made by the DDG of the Department and disputes regarding the implementation and administration of fisheries legislation, including decisions taken on the issue of a recreational fishing licence, can be taken to the Western Australian State Administrative Tribunal (SAT) for review, or to the WA (and Commonwealth) Court System. The decisions of the SAT and Courts are binding on the Department, and all SAT decisions must be carried out by the Department (under section 29(5) of the State Administrative Tribunal Act 2004). However, these mechanisms have not been used and tested in relation to recreational fishing disputes.

Most decisions with respect to recreational fishing relate to changes to prescribed gear, fishing methods, limits on size, condition or species of fish, and bag/boat limits. Resource allocation between commercial and recreational sectors also represents a source of potential dispute. Proposed changes to these regulations and proposals for resource allocation are subject to consultation by DPIRD or the Integrated



Fisheries Allocation Advisory Committee with Recfishwest, which is charged with consulting with its constituents. This consultation process seeks to avoid disputes.

The assessment team saw no evidence of ongoing disputes or disagreements between DPIRD and Recfishwest or recreational fishers generally. This suggests that the above mechanisms for dispute resolution are effective.

The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery and the requirements of SG60 and 80 are met. However not all aspects of the dispute resolution system have been tested and the management system does not, therefore, meet all the requirements of SG 100.

	Respec	t for rights		
С	Guide post	The management system has a mechanism to <b>generally respect</b> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to <b>observe</b> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to <b>formally commit</b> to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	Yes	Yes	Yes
Rationale				

The management system provides access rights to the commercial fishery by way of the issue of a limited number of licences. These licences are issued in accordance with the WCEMF Management Plan which derives its power from the FRMA.

In 1992, the High Court of Australia recognised native title, i.e. that indigenous Australians may continue to hold native title and to be uniquely connected to the land. Australian law recognises that native title exists where Aboriginal people have maintained a traditional connection to their land and waters, since sovereignty, and where acts of government have not removed it. Indigenous rights are formally committed to in WA by The Aboriginal Heritage Act of 1972, which recognizes Aboriginal peoples' strong relationships to the land and provides automatic protection for all places and objects in Western Australia.

A 2013 High Court decision concluded that State fisheries legislation in South Australia did not extinguish native title rights to fish. It is likely that this decision also means that DPIRD legislation does not extinguish native title rights to fish where that right is exercised for a traditional, non-commercial purpose by an Aboriginal person. There are currently no native title claims that relate to the sea mullet or blue swimmer crab resources of the PHE.

The rights of Aboriginal persons fishing for customary purposes are recognised under Section 6 of the FRMA and S258(1)(ba) of the Act provides the power to make regulation to manage customary fishing.

DPIRD's Integrated Fisheries Management (IFM) policy (DoF 2009a) seeks to share resources between fishing sectors i.e. commercial, recreational and customary.

The Aquatic Resources Management Bill (which, when enacted will replace the FRMA) provides for a quantity of an aquatic resource to be reserved for conservation and reproductive purposes before setting a sustainable harvest level for by the fishing sectors. It is proposed that this 'reserve' include an allowance for customary fishing if required.

The Department of Fisheries of Western Australia also has a customary fishing policy. This applies to those of aboriginal descent, fishing in a traditional manner, for non-commercial needs. This requires fisheries policy and management to provide specific and appropriate consideration of management practices in customary fisheries. Reference to custodial rights is explicitly set out in the FRMA as are the specific protection of aboriginal rights.

The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2 and the requirements of SG60, 80 and 100 are met.

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	95
Condition number (if relevant)	ΝΑ

#### PI 3.1.2 – Consultation, roles and responsibilities

## UoAs: Blue-swimmer crab – commercial crab pot (UoA 1); Sea mullet – haul net (UoA 4); sea mullet – gillnet (UoA 5)

PI	3.1.2	The management system has effective consultation processes that are open to interested and affected parties The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Roles a	nd responsibilities		
а	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>generally understood</b> .	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>explicitly defined and</b> <b>well understood for</b> <b>key areas</b> of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>explicitly defined and</b> <b>well understood for all</b> <b>areas</b> of responsibility and interaction.
	Met?	Yes	Yes	Yes
Detionale				

Rationale

The following is noted regarding the functions, role and responsibilities of organisations and individuals involved in the management of the fishery:

• The roles and responsibilities of the Commonwealth and WA Governments in the management of fisheries resources are well articulated in the OCS (Brayford and Lyons, 1995).



- The Commonwealth EPBC Act sets out in the roles and responsibilities of the Commonwealth Government with respect to ecological sustainability and conservation of marine resources in WA marine waters.
- The FRMA sets out the roles and responsibilities of the WA Government in relation to the management of Western Australian commercial fisheries are set out in. DPIRD has identified the key organisations and individual positions relevant in the Department and their roles and responsibilities are clearly articulated.

Within the State Government, the key roles and responsibilities are well described and understood:

- DPIRD provides management, licensing, research and compliance and education services for commercial fisheries, recreational fisheries, customary fishing, pearling and aquaculture in all State waters (including marine parks) and the fish processing and charter boat industries.
- The Minister for Fisheries has legislative power to turn knowledge and advice he is provided with into action, while the administration of these management arrangements is the responsibility of the DDG of the Department, and the Department more generally.

DPIRD is structured around three key service delivery areas:

- Aquatic Management: provides management, policy development, licensing and legislation related to the State's commercial and recreational fisheries, pearling, aquaculture, fish processing, the charter boat industry, customary fishing and protection of aquatic ecosystems;
- Compliance and Education: provides state-wide fisheries compliance and community education, in accordance with the provisions of relevant legislation; and
- Research and Monitoring: provides timely, quality scientific knowledge and advice to support the conservation and sustainable use of the State's fish resources and aquatic systems.

The roles and responsibilities of each of these areas are outlined in more detail out in the DPIRD's Annual Report to Parliament (for example, DPIRD, 2020a).

The Western Australian Fishing Industry Council (WAFIC) is the peak industry body representing professional fishing, pearling and aquaculture enterprises, as well as processors and exporters in WA. WAFIC is an incorporated association, created by the industry more than 40 years ago to work in partnership with Government to set the directions for the management of commercial fisheries in WA. WAFIC plays a central role in the management system of commercial fisheries as the Government's principle source of coordinated advice from the commercial fishing industry. A Service Level Agreement with DPIRD formalises and outlines WAFIC's consultation roles and responsibilities and interactions with DPIRD.

WAFIC's responsibilities include coordinating Government funding for industry representation and taking on a leadership role for matters which involve or impact on or across a number of fisheries, or are of an industry-wide or generic nature. WAFIC also represents those commercial fishing sectors that do not have capability of self-representation.

Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction. The fishery therefore meets the requirements of SG 60, 80 and 100.

Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction and the requirements of SG60, 80 and 100 are met.

#### **b** Consultation processes

DIO	21_390 MSC Full Assessment Reporting Templ			21_390EN sessment Reporting Template
	Guide post	The management system includes consultation processes that <b>obtain</b> <b>relevant information</b> from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that <b>regularly</b> <b>seek and accept</b> relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that <b>regularly</b> <b>seek and accept</b> relevant information, including local knowledge. The management system demonstrates consideration of the information and <b>explains</b> <b>how it is used or not</b> <b>used</b> .
	Met?	Yes	Yes	Yes
Ratio	Rationale			

hio - inspecta - a inspecta

The following is noted regarding consultation processes included in the management system:

- The WA Government's commitment to consultation with stakeholders is stated in the Government's Fisheries Policy Statement (2012) which specifies that WAFIC and Recfishwest are the key sources of coordinated industry advice for the commercial and recreational fishing sectors respectively. Under Service Level Agreements, these two peak sector bodies work in partnership with DPIRD to ensure adequate consultation is conducted with their constituents on broad or fishery/specific species policy issues.
- The FRMA requires the Minister to consult with 'affected persons' (commercial licence holders) when developing a new Management Plan or amending an existing plan (Sections 64 and 65, FRMA).
- Annual Management Meetings are held with licensees in managed fisheries throughout WA, including the PHE fishery. These meetings provide an opportunity for fishers, managers and researchers to discuss and exchange information on the fishery.
- DPIRD seeks public comment on research, management and discussion papers from time to time. Draft Fisheries Management Papers are released for public comment and those comments must be taken into account before a decision is made on future management (e.g. http://www.fish.wa.gov.au/About-Us/Public-Comment/Pages/default.aspx).
- The Department published its Stakeholder Engagement Guidelines in August 2016, which outlined the processes through which the Department is to provide opportunities for all interested and affected parties to be involved (DOF, 2016).
- The Stakeholder Engagement Guidelines sets out the overarching processes through which the Department seeks out relevant information from, and involvement by, stakeholders and interested parties on proposals relating to the management of WAs aquatic resources. The guideline was an outcome of the Non-Fisher Stakeholder Engagement Project, which included a key stakeholder consultation phase during which more than 20 key stakeholders were interviewed. The Stakeholder Engagement Guidelines suggests levels of stakeholder engagement for each stakeholder group and for each of a number of key processes associated with the management of the State's fisheries and aquatic resources.
- DPIRD has created a public comment space on its website (see link), which provides for interested and affected parties to view information and make submissions on draft documents released for public.

The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained. The fishery therefore meets the requirements of SG 60, 80 and 100.

The management system demonstrates consideration of the information obtained and the requirements of SG60, 80 and 100 are met.

	Participation		
с	Guide post	The consultation process <b>provides opportunity</b> for all interested and affected parties to be involved.	The consultation process provides <b>opportunity</b> <b>and encouragement</b> for all interested and affected parties to be involved, and <b>facilitates</b> their effective engagement.
	Met?	Yes	Yes
Ratior	nale		

At the management system level, there are both statutory and non-statutory consultation processes in place. In particular the legislation requires that the Minister be consulted with respect to changes to management plans.

The mechanisms related to involvement of non fishing stakeholders are noted:

- In August 2016, the Department published its Stakeholder Engagement Guidelines (SEG) which outlined the processes through which the Department will provide opportunities for all interested and affected parties to be involved (DoF 2016). The SEG sets out the overarching processes through which the Department seeks out relevant information from, and involvement by, stakeholders and interested parties on proposals relating to the management of WAs aquatic resources. The guideline was an outcome of the Non-Fisher Stakeholder Engagement Project, which included a key stakeholder consultation phase during which more than 20 key stakeholders were interviewed.
- The SEG suggested levels of stakeholder engagement for each stakeholder group and for each of a number of key processes associated with the management of the State's fisheries and aquatic resources.
- The Department conducts external communications through corporate Facebook and Twitter accounts.
- DPIRD has created a public comment space on its website (http://www.fish.wa.gov.au/About-Us/Public-Comment/Pages/default.aspx), which provides for interested and affected parties to view information and make submissions on draft documents released for public.

At the fourth surveillance audit, it was noted that, in 2016, a meeting regarding the finfish harvest strategy for the Peel Harvey Estuarine Fishery was held which focussed on yellowfin whiting. Only license holders, Recfishwest, WAFIC and DPIRD staff attended the meeting. An information sheet regarding yellowfin whiting was developed following that briefing and distributed via the department's website. However, no specific consultation via any of the departments forums was provided to non-fishing stakeholders at that time.

The yellowfin whiting stock assessment was then completed and the team was expecting that results and conclusions will be communicated to the wider stakeholder community in due course through appropriate channels as indicated by the SEG. In this instance, the SEG policy did not appear to have been implemented to its full extend. As a result the Fourth Surveillance audit resulted in the recommendation: "*The surveillance team recommends that the department consults widely with non-fishing stakeholder on the outcome of the latest yellowfin whiting stock assessment..."* 

Following the issuing of the recommendation, the following is noted with regards to further effects to consult on the matter of the yellowfin whiting assessment specifically, and more broadly regarding participatory mechanisms:

- While there is not focussed independent yellowfin whiting stock assessment available for publication, information is available on the Departments website within FMP No.303 and the Departments Annual State of the Fisheries Reports. Both are publicly available online online (see link 1 and link 2).
- DPIRD undertook consultation during the development of the revised Harvest Strategies for Blue Swimmer Crab and Finfish. DPIRD advised that they consulted on widely with all interested stakeholders and groups invited to comment. The draft Harvest Strategies were also posted on the DPIRD website inviting comment.
- Mechanisms to negotiate catch shares between the commercial and recreational sector have been included in the Harvest Strategy, i.e. tolerance levels are agreed to by commercial and recreational sectors and should the agreed 'trigger level' be reached, the Department initiates a meeting between stakeholders to evaluate the appropriateness of the tolerance level for the present season, in the context of existing environmental and fishing factors.
- A Blue Swimmer Crab Working Group has been established which includes representatives from Recfishwest and WAFIC, assists in identifying and addressing potential conflicts both within Peel-Harvey and at the resource level.
- In the undertaking of the September 2020 ERA, DPIRD directly contacted and encouraged participation from a range of non-fisher organisations including local and regional community groups, universities and conservation groups.
- In the development of the revised Harvest Strategy in 2020, DPIRD directly contacted and encouraged participation from a range of non-fisher organisations including local and regional community groups, universities, and conservation groups

There are significant opportunities for commercial and recreational sectors to be involved and engaged in the fishery's management. There are also some opportunities provided for non-industry sectors to be involved. In particular, DPIRD provided the opportunity and encouragement for all interested and affected parties to be involved in the undertaking of the ERA and Harvest Strategy revision in 2020 and that DPIRD facilitated their engagement. Hence the SG80 and SG100 are met.

Going forward, DPIRD are transitioning to resource level management, meaning the management and consultation engagement will occur at the regional, not fishery, level. DPIRD recognise that approaching the management from a resource scale may create challenges to effective stakeholder engagement given many stakeholders operate on/or have interests at a local/fishery level.

#### References

Brayford, H. and Lyon, G. (1995). Offshore Constitutional Settlement 1995. Fisheries Management Paper 77, WA Department of Fisheries, Perth.

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http://www.fish.wa.gov.au/Documents/corporate\_publications/wa\_govt\_fisheries\_policy\_statement.pdf

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http://www.fish.wa.gov.au/Documents/management\_papers/fmp139.pdf.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

#### **Overall Performance Indicator scores added from Client and Peer Review Draft Report** stage

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

# UoAs: Blue-swimmer crab – recreational drop net (UoA 2); blueswimmer crab - recreational scoop (UoA 3)

PI	3.1.2	The management system has effective consultation processes that are open to interested and affected parties The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties			
Scorin	ng Issue	SG 60	SG 80	SG 100	
	Roles and responsibilities				
а	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>generally understood</b> .	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>explicitly defined and</b> <b>well understood for</b> <b>key areas</b> of	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>explicitly defined and</b> well understood for all	



		responsibility and interaction.	areas of responsibility and interaction.
Met?	Yes	Yes	Yes

The following is noted regarding the functions, role and responsibilities of organisations and individuals involved in the management of the fishery:

- The roles and responsibilities of the Commonwealth and WA Governments in the management of fisheries resources are well articulated in the OCS (Brayford and Lyons, 1995).
- The Commonwealth EPBC Act sets out in the roles and responsibilities of the Commonwealth Government with respect to ecological sustainability and conservation of marine resources in WA marine waters.
- The FRMA sets out the roles and responsibilities of the WA Government in relation to the management of Western Australian commercial fisheries are set out in. DPIRD has identified the key organisations and individual positions relevant in the Department and their roles and responsibilities are clearly articulated.

Within the State Government, the key roles and responsibilities are well described and understood:

- DPIRD provides management, licensing, research and compliance and education services for commercial fisheries, recreational fisheries, customary fishing, pearling and aquaculture in all State waters (including marine parks) and the fish processing and charter boat industries.
- The Minister for Fisheries has legislative power to turn knowledge and advice he is provided within into action, while the administration of these management arrangements is the responsibility of the DDG of the Department, and the Department more generally.

DPIRD is structured around three key service delivery areas:

- Aquatic Management: provides management, policy development, licensing and legislation related to the State's commercial and recreational fisheries, pearling, aquaculture, fish processing, the charter boat industry, customary fishing and protection of aquatic ecosystems;
- Compliance and Education: provides state-wide fisheries compliance and community education, in accordance with the provisions of relevant legislation; and
- Research and Monitoring: provides timely, quality scientific knowledge and advice to support the conservation and sustainable use of the State's fish resources and aquatic systems.

The roles and responsibilities of each of these areas are outlined in more detail out in the DPIRD's Annual Report to Parliament (for example, DPIRD, 2020a).

Recfishwest is an incorporated association and receives 15 % of the revenue raised from recreational fishing licence fees to advocate for, and represent, the recreational fishing sector. Key roles undertaken by Recfishwest include undertaking consultation on management reforms, advocating for the sector on issues of significance, education, and overseeing recreational fishing initiatives.

Recfishwest plays a central role in the management system of recreational fisheries since it is the Governments principle source of coordinated advice from the recreational fishing sector. Recfishwest's consultation roles and responsibilities and interaction with DPIRD are defined in an SLA with the Department.

Recfishwest's peak body operations and its representation role includes:

- Effective representation of the Western Australian recreational fishing community;
- Provision of professional advice to Government on issues affecting recreational fishing. For example, Recfishwest representatives will co-ordinate and facilitate the consultation with the recreational sector on the allocation proposals for the PHE blue swimmer crab resource with the Integrated Fisheries Allocation Advisory Committee;
- Coordination of recreational fishing stakeholder views on management proposals;
- Advice on use of the Recreational Fishing Account; and

inspecta qoinspecta

• Assistance with education of fishers and promotion of responsible fishing. An example of this is recreational fishing clinics held by Recfishwest in Mandurah.

Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction and the requirements of SG60, 80 and 100 are met.

	Consult	tation processes		
Ь	Guide post	The management system includes consultation processes that <b>obtain</b> <b>relevant information</b> from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that <b>regularly</b> <b>seek and accept</b> relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that <b>regularly</b> <b>seek and accept</b> relevant information, including local knowledge. The management system demonstrates consideration of the information and <b>explains</b> <b>how it is used or not</b> <b>used</b> .
	Met?	Yes	Yes	Yes
Rationale				

The following is noted regarding consultation processes included in the management system:

- The FRMA requires the Minister to consult with 'affected persons' (commercial licence holders) when developing a new Management Plan or amending an existing plan (Sections 64 and 65, FRMA).
- The Department is required as part of the Act to receive consultation responses and 'genuinely' consider these before making a final decision. Giving effect to this, the management system includes consultation processes that regularly seek and accept relevant information, including local knowledge on key fisheries policy matters and initiatives. A number of activities proactively include stakeholder participation and respond directly to their inputs. These include the ERA workshops, which thereafter provide input to the Bycatch Action Plan; In season arrangements consultation and in season review process.
- DPIRD seeks public comment on research, management and discussion papers from time to time. Draft Fisheries Management Papers are released for public comment and those comments must be taken into account before a decision is made on future management (DOF, 2016).
- The WA Government's commitment to consultation with stakeholders is stated in the Government's Fisheries Policy Statement (2012) which specifies that WAFIC and Recfishwest are the key sources of coordinated industry advice for the commercial and recreational fishing sectors respectively. Under Service Level Agreements, these two peak sector bodies work in partnership

with DPIRD to ensure adequate consultation is conducted with their constituents on broad or fishery/specific species policy issues.

- Recfishwest coordinates recreational fishing stakeholder views on management proposals. In order to effectively represent the views of the recreational fishing community, Recfishwest undertakes consultation throughout WA using a number of different methods:
  - Face to face meetings
    - Recfishwest visits all major regional coastal centres over a 12 month period and meets one on one with fishing clubs, industry contacts and community groups o
    - Recfishwest attends major community events such as fishing tournaments and boat shows to speak one on one with fishers
  - Reference groups designed to attract recreational fishers who have a great deal of expertise in specific fisheries. Recfishwest utilises the knowledge that these groups provide to guide Board decisions and help in identifying strategic goals for particular fisheries.
  - Electronic surveys on issues such as changes to fishing rules and expenditure of licence money have elicited very positive responses from the community (Recfishwest 2015)
- The Stakeholder Engagement Guidelines sets out the overarching processes through which the Department seeks out relevant information from, and involvement by, stakeholders and interested parties on proposals relating to the management of WAs aquatic resources. The guideline was an outcome of the Non-Fisher Stakeholder Engagement Project, which included a key stakeholder consultation phase during which more than 20 key stakeholders were interviewed. The Stakeholder Engagement Guidelines suggests levels of stakeholder engagement for each stakeholder group and for each of a number of key processes associated with the management of the State's fisheries and aquatic resources.
- DPIRD has created a public comment space on its website (see link), which provides for interested and affected parties to view information and make submissions on draft documents released for public.

The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained. The fishery therefore meets the requirements of SG 60, 80 and 100.

	Participation				
С	Guide post	The consultation process <b>provides opportunity</b> for all interested and affected parties to be involved.	The consultation process provides <b>opportunity</b> <b>and encouragement</b> for all interested and affected parties to be involved, and <b>facilitates</b> their effective engagement.		
	Met?	Yes	Yes		
Ratior	nale				

At the management system level, there are both statutory and non-statutory consultation processes in place. In particular the legislation requires that the Minister be consulted with respect to changes to management plans.

The mechanisms related to involvement of non-fishing stakeholders are noted:



- In August 2016, the Department published its Stakeholder Engagement Guidelines (SEG) which outlined the processes through which the Department will provide opportunities for all interested and affected parties to be involved (DoF 2016). The SEG sets out the overarching processes through which the Department seeks out relevant information from, and involvement by, stakeholders and interested parties on proposals relating to the management of WAs aquatic resources. The guideline was an outcome of the Non-Fisher Stakeholder Engagement Project, which included a key stakeholder consultation phase during which more than 20 key stakeholders were interviewed.
- The SEG suggested levels of stakeholder engagement for each stakeholder group and for each of a number of key processes associated with the management of the State's fisheries and aquatic resources.
- The Department conducts external communications through corporate Facebook and Twitter accounts.
- DPIRD has created a public comment space on its website (http://www.fish.wa.gov.au/About-Us/Public-Comment/Pages/default.aspx), which provides for interested and affected parties to view information and make submissions on draft documents released for public.

At the fourth surveillance audit, it was noted that, in 2016, a meeting regarding the finfish harvest strategy for the Peel Harvey Estuarine Fishery was held which focussed on yellowfin whiting. Only license holders, Recfishwest, WAFIC and Department staff attended the meeting. An information sheet regarding yellowfin whiting was developed following that briefing and distributed via the department's website. However, no specific consultation via any of the departments forums was provided to non-fishing stakeholders at that time.

The yellowfin whiting stock assessment was then completed, and the team was expecting that results and conclusions will be communicated to the wider stakeholder community in due course through appropriate channels as indicated by the SEG. In this instance, the SEG policy did not appear to have been implemented to its fully extend. As a result the Fourth Sureillance audit resulted in the recommendation: "*The surveillance team recommends that the department consults widely with nonfishing stakeholder on the outcome of the latest yellowfin whiting stock assessment..."* 

Following the issuing of the recommendation, the following is noted with regards to further effects to consult on the matter of the yellowfin whiting assessment specifically, and more broadly regarding participatory mechanisms:

- While there is not focussed independent yellowfin whiting stock assessment available for publication, information is available on the Departments website within FMP No.303 and the Departments Annual State of the Fisheries Reports. Both are publicly available online at http://www.fish.wa.gov.au/Documents/management\_papers/fmp303.pdf and http://www.fish.wa.gov.au/About-Us/Publications/Pages/State-of-the-Fisheries-report.aspx (respectively).
- DPIRD undertook consultation during the development of the revised Harvest Strategies for Blue Swimmer Crab and Finfish. DPIRD advised that they consulted on widely with all interested stakeholders and groups invited to comment. The draft Harvest Strategies were also posted on the DPIRD website inviting comment.
- Mechanisms to negotiate catch shares between the commercial and recreational sector have been included in the Harvest Strategy, i.e. tolerance levels are agreed to by commercial and recreational sectors and should the agreed 'trigger level' be reached, the Department initiates a meeting between stakeholders to evaluate the appropriateness of the tolerance level for the present season, in the context of existing environmental and fishing factors.



- A Blue Swimmer Crab Working Group has been established which includes representatives from Recfishwest and WAFIC, assists in identifying and addressing potential conflicts both within Peel-Harvey and at the resource level.
- In the undertaking of the September 2020 ERA, DPIRD directly contacted and encouraged participation from a range of non-fisher organisations including local and regional community groups, universities, and conservation groups.
- In the development of the revised Harvest Strategy in 2020, DPIRD directly contacted and encouraged participation from a range of non-fisher organisations including local and regional community groups, universities, and conservation groups.

There are significant opportunities for commercial and recreational sectors to be involved and engaged in the fishery's management. There are also some opportunities provided for non-industry sectors to be involved. In particular, DPIRD provided the opportunity and encouragement for all interested and affected parties to be involved in the undertaking of the ERA and Harvest Strategy revision in 2020 and that DPIRD facilitated their engagement. Hence SG100 is met.

Going forward, DPIRD are transitioning to resource level management, meaning the management and consultation engagement will occur at the regional, not fishery, level. DPIRD recognise that approaching the management from a resource scale may create challenges to effective stakeholder engagement given many stakeholders operate on/or have interests at a local/fishery level.

#### References

Brayford, H. and Lyon, G. (1995). *Offshore Constitutional Settlement 1995*. Fisheries Management Paper 77, WA Department of Fisheries, Perth, Western Australia

DOF (2012). Western Australian Government Fisheries Policy Statement March 2012. Department of Fisheries, Western Australia.

http://www.fish.wa.gov.au/Documents/corporate\_publications/wa\_govt\_fisheries\_policy\_statement.pdf

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
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Condition number (if relevant)

NA

#### PI 3.1.3 – Long term objectives

### UoAs: Blue-swimmer crab – commercial crab pot (UoA 1); Sea mullet – haul net (UoA 4); sea mullet – gillnet (UoA 5)

PI	3.1.3	The management policy has clear long-term objectives to guide decision- making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scorin	ng Issue	SG 60	SG 80	SG 100
	Objecti	ves		
а	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are <b>implicit</b> within management policy.	<b>Clear</b> long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are <b>explicit</b> within management policy.	<b>Clear</b> long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are <b>explicit</b> within <b>and required by</b> management policy.
	Met?	Yes	Yes	Yes
Ratior	nale			

The long-term objectives of the management system are specified in the FRMA (see section 3.5.4) and are consistent with the MSC Principles and Criteria. Section 4A of the FRMA requires that the precautionary principle be applied in exercising functions or powers under the Act.

The long-term objectives are reflected in DPRID's Strategic Intent 2018-2021 document (DPRID 2018) which outlines the following goals:

- Protect To manage and provide for sustainable use of our natural resources and soils, and to protect Western Australia's brand and reputation as a reliable producer of premium, clean and safe food, products and services.
- Grow To enable the primary industries sector and regions to increase international competitiveness, and grow in value and social amenity, strengthening these key pillars of the State's economy.
- Innovate To support a culture of scientific inquiry, innovation and adaptation across primary industries and regions to boost industry transformation, economic growth and employment.

The Strategic Intent document also includes fisheries specific initiatives and targets:

- Sustainable fisheries management WA benefits from sustainable fisheries that support and optimise social, economic and environmental outcomes
- Natural resource management planning and assessment WA's natural resources are sustainably used and managed using a sound risk-based planning and assessment approach, incorporating partnerships with traditional landowners and custodians

The legislative long-term objectives are translated into clearly defined operational arrangements and procedures for commercial resource/fisheries in the form of harvest strategies (see Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia (DOF, 2015)). Harvest Strategies relevant to the were first implemented in 2015. Revised Harvest Strategies were finalised in 2020 and are now in force. The Harvest Strategy for Estuarine and Nearshore Finfish Resource of South-West Western Australia (DPIRD, 2020c) and Blue Swimmer Crab Resource of South-West Western Australia (DPIRD, 2020b) contain long term ecological sustainability objectives:

- a. To maintain spawning stock biomass of the target species (i.e. blue swimmer crabs) at a level where the main factor affecting recruitment is the environment;
- b. To maintain spawning stock biomass of each other retained species at a level where the main factor affecting recruitment is the environment;
- c. To ensure fishing impacts do not result in serious or irreversible harm to bycatch species populations;
- d. To ensure fishing impacts do not result in serious or irreversible harm to endangered, threatened and protected (ETP) species populations;
- e. To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function; and
- f. To ensure the effects of fishing do not result in serious or irreversible harm to ecological processes.

The harvest strategy also contains the following the economic and social objectives:

- g. To provide commercial fisheries with reasonable opportunities to maximise their livelihood in supplying seafood to the community, within the constraints of ecological sustainability; and
- h. To provide fishing participants with reasonable opportunities to maximise cultural, recreational and lifestyle benefits of fishing, within the constraints of ecological sustainability.

A practical, risk-based framework for use with regional-level management of marine resources has been developed by the Department to enable cross / multiple fishery management at the bioregional level to fully implement Ecosystem Based Fisheries Management (EBFM) (Fletcher, 2014).

The available evidence indicates that clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy. The fishery therefore meets the requirements of SG 60, 80 and 100.

#### References

DOF (2015). *Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia.* Fisheries Management Paper No. 271 Department of Fisheries, Western Australia.

DPIRD (2018). *DPIRD Strategic Intent*. Department of Primary Industries and Regional Development, Western Australia. https://dpird.wa.gov.au/our-strategic-intent

DPIRD (2020b). Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0. ) Fisheries Management Paper No. 304 . Department of Primary Industries and Regional Development. Western Australia.DPIRD (2020c) Estuarine and Nearshore Finfish



Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0. Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development. Western Australia.

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

## UoAs: Blue-swimmer crab – recreational drop net (UoA 2); blueswimmer crab – recreational scoop (UoA 3)

PI	3.1.3	The management policy has clear long-term objectives to guide decision- making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
	Objecti	ves		
а	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are <b>implicit</b> within management policy.	<b>Clear</b> long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are <b>explicit</b> within management policy.	<b>Clear</b> long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are <b>explicit</b> within <b>and required by</b> management policy.
	Met?	Yes	Yes	Yes
Rationale				

The long-term objectives of the management system are specified in the FRMA (see section 3.5.4) and are consistent with the MSC Principles and Criteria. Section 4A of the FRMA requires that the precautionary principle be applied in exercising functions or powers under the Act.

The long-term objectives are reflected in DPRID's Strategic Intent 2018-2021 document (DPRID 2018) which outlines the following goals:

- Protect To manage and provide for sustainable use of our natural resources and soils, and to protect Western Australia's brand and reputation as a reliable producer of premium, clean and safe food, products and services.
- Grow To enable the primary industries sector and regions to increase international competitiveness, and grow in value and social amenity, strengthening these key pillars of the State's economy.
- Innovate To support a culture of scientific inquiry, innovation and adaptation across primary industries and regions to boost industry transformation, economic growth and employment.

The Strategic Intent document also includes fisheries specific initiatives and targets:

- Sustainable fisheries management WA benefits from sustainable fisheries that support and optimise social, economic and environmental outcomes
- Natural resource management planning and assessment WA's natural resources are sustainably used and managed using a sound risk-based planning and assessment approach, incorporating partnerships with traditional landowners and custodians

The legislative long-term objectives are translated into clearly-defined operational arrangements and procedures for commercial resource/fisheries in the form of harvest strategies (see Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia (DOF, 2015)). A Harvest Strategies for Finfish and Blue Swimmers Crabs of the South-West Western Australia were first implemented in 2015. Revised Harvest Strategies were finalised in 2020 and are now in force. The Harvest Strategies (DPIRD, 2020 b&c) contains long term ecological sustainability objectives:

- a. To maintain spawning stock biomass of the target species at a level where the main factor affecting recruitment is the environment;
- b. To maintain spawning stock biomass of each other retained species at a level where the main factor affecting recruitment is the environment;
- c. To ensure fishing impacts do not result in serious or irreversible harm to bycatch species populations;
- d. To ensure fishing impacts do not result in serious or irreversible harm to endangered, threatened and protected (ETP) species populations;
- e. To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function; and
- f. To ensure the effects of fishing do not result in serious or irreversible harm to ecological processes.

The economic and social objectives 2020 harvest strategies are:

- g. To provide commercial fisheries with reasonable opportunities to maximise their livelihood in supplying seafood to the community, within the constraints of ecological sustainability; and
- h. To provide fishing participants with reasonable opportunities to maximise cultural, recreational and lifestyle benefits of fishing, within the constraints of ecological sustainability.

Management arrangements demonstrate a precautionary approach, particularly in the absence of information. A practical, risk-based framework for use with regional-level management of marine resources has been developed by the Department to enable cross / multiple fishery management at the bioregional level to fully implement Ecosystem Based Fisheries Management (EBFM) (Fletcher, 2014).

The available evidence indicates that clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy. The fishery therefore meets the requirements of SG 60, 80 and 100.

References

DOF (2015). *Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia*. Fisheries Management Paper No. 271. Department of Fisheries, Western Australia.

DPIRD (2018). *DPIRD Strategic Intent*. Department of Primary Industries and Regional Development, Western Astralia. https://dpird.wa.gov.au/our-strategic-intent

DPIRD (2020b) Fisheries Management Paper No. 304 Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0. Government of Western Australia

DPIRD (2020c) *Estuarine and Nearshore Finfish Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0.* Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development. Western Australia.

DPIRD (2020a). *Annual Report to Parliament 2020.* Department of Primary Industries and Regional Development. Western Australia. https://www.dpird.wa.gov.au/sites/default/files/2020-10/DPIRD%20Annual%20Report%202020%20-%20PDF.pdf

Fletcher, W.J. (2014), Review and refinement of an existing qualitative risk assessment method for application within an ecosystem-based management framework. *ICES Journal of Marine Science*, 72 (3) 1043–1056. doi: 10.1093/icesjms/fsu 142

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

#### PI 3.2.1 – Fishery-specific objectives

## UoAs: Blue-swimmer crab – commercial crab pot (UoA 1); Sea mullet – haul net (UoA 4); sea mullet – gillnet (UoA 5)

PI	3.2.1	The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scorin	ng Issue	SG 60	SG 80	SG 100
	Objecti	ves		
а	Guide post	<b>Objectives</b> , which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <b>implicit</b> within the fishery-specific management system.	<b>Short and long-term</b> <b>objectives</b> , which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <b>explicit</b> within the fishery-specific management system.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <b>explicit</b> within the fishery-specific management system.



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Rational	e

The blue swimmer crab and finfish harvest strategies include:

- high-level, long-term objectives of management which relate to biological sustainability of all captured aquatic resources, as well as broader ecological objectives for each ecosystem component, as well as high-level social and economic objectives for the fisheries/sectors targeting this resource.
- the short-term, operational objectives
- narrative on how these translate into the management approach for this resource

The long-term ecological objectives of the WCEMF, consistent with the overarching objective of the FRMA. The ecological sustainability objectives defined in the Harvest Strategies (DPIRD, 2020b & DPIRD 2020c) are as follows:

- a. To maintain spawning stock biomass of the target species (i.e. blue swimmer crabs) at a level where the main factor affecting recruitment is the environment;
- b. To maintain spawning stock biomass of each other retained species at a level where the main factor affecting recruitment is the environment;
- c. To ensure fishing impacts do not result in serious or irreversible harm to bycatch species populations;
- d. To ensure fishing impacts do not result in serious or irreversible harm to endangered, threatened and protected (ETP) species populations;
- e. To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function; and
- f. To ensure the effects of fishing do not result in serious or irreversible harm to ecological processes.

The economic and social objectives in the 2020 harvest strategies are:

- g. To provide commercial fisheries with reasonable opportunities to maximise their livelihood in supplying seafood to the community, within the constraints of ecological sustainability; and
- h. To provide fishing participants with reasonable opportunities to maximise cultural, recreational and lifestyle benefits of fishing, within the constraints of ecological sustainability

The social and economic objectives are applied within the context of ESD and are considered once the ecological objectives have been met (DPIRD 2020d).

The 2020 Harvest Strategies are the result of a review of the initial Harvest Strategies prepared for the fishery in 2015. The scope of the revised Harvest Strategy has been extended:

- For Blue Swimmer Crab the south-west WA blue swimmer crab resource is defined as waters of the West Coast Bioregion from Geographe Bay up to, and including, the Swan and Canning Rivers
- For Sea Mullet the estuarine and nearshore finfish resource of south-west WA covers all nearshore and estuarine waters within the West Coast Bioregion (Black Point, east of Augusta, to the Zuytdorp Cliffs, north of Kalbarri, all land and water south of 27° S and west of 115° 30' E)

Long-term management objectives are typically operationalised as short-term (e.g. annual or periodic) objectives through one or more performance indicators that can be measured and assessed against predefined reference levels to ascertain actual performance. Within the context of the long-term ecological



objectives outlined above, operational objectives aim to maintain each resource above the threshold level (and, where relevant, close to the target level), or rebuild the resource if it has fallen below the threshold or the limit levels.

The strategy will remain in place for a period of five years, after which time it will again be fully reviewed. If required, however, this document may be subject to review and amended within this five-year period.

There are well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system and the requirements of SG60, 80 and 100 are met.

#### References

DPIRD (2020b). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy* 2020-2025 Version 1.0. Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development. Western Australia.

DPIRD (2020c) *Estuarine and Nearshore Finfish Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0.* Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development. Western Australia.

DPIRD (2020d). Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0. Fisheries Management Paper No. 304. DPIRD November 2020, pp. 35. http://www.fish.wa.gov.au/Documents/management\_papers/fmp304.pdf

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

## UoAs: Blue-swimmer crab – recreational drop net (UoA 2); blueswimmer crab – recreational scoop (UoA 3)

PI	3.2.1	The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scorir	ng Issue	SG 60	SG 80	SG 100
	Objecti	ves		
а	Guide post	<b>Objectives</b> , which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <b>implicit</b> within the fishery-specific management system.	<b>Short and long-term</b> <b>objectives</b> , which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <b>explicit</b> within the fishery-specific management system.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <b>explicit</b> within the



				fishery-specific management system.
	Met?	Yes	Yes	Yes
Deltanela				

Rationale

The blue swimmer crab and finfish harvest strategies include:

- high-level, long-term objectives of management which relate to biological sustainability of all captured aquatic resources, as well as broader ecological objectives for each ecosystem component, as well as high-level social and economic objectives for the fisheries/sectors targeting this resource.
- the short-term, operational objectives
- narrative on how these translate into the management approach for this resource

The long-term ecological objectives of the WCEMF, consistent with the overarching objective of the FRMA. The ecological sustainability objectives defined in the Harvest Strategies (DPIRD, 2020b & DPIRD 2020c) are as follows:

- a. To maintain spawning stock biomass of the target species at a level where the main factor affecting recruitment is the environment;
- b. To maintain spawning stock biomass of each other retained species at a level where the main factor affecting recruitment is the environment;
- c. To ensure fishing impacts do not result in serious or irreversible harm to bycatch species populations;
- d. To ensure fishing impacts do not result in serious or irreversible harm to endangered, threatened and protected (ETP) species populations;
- e. To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function; and
- f. To ensure the effects of fishing do not result in serious or irreversible harm to ecological processes.

The economic and social objectives in the 2020 harvest strategies are:

- g. To provide commercial fisheries with reasonable opportunities to maximise their livelihood in supplying seafood to the community, within the constraints of ecological sustainability; and
- h. To provide fishing participants with reasonable opportunities to maximise cultural, recreational and lifestyle benefits of fishing, within the constraints of ecological sustainability

The social and economic objectives are applied within the context of ESD and are considered once the ecological objectives have been met (DPIRD 2020d).

The 2020 Harvest Strategies are the result of a review of the initial Harvest Strategy prepared for the fishery in 2015. The scope of the revised Harvest Strategy has been extended:

- For blue bwimmer crab the south-west WA blue swimmer crab resource is defined as waters of the West Coast Bioregion from Geographe Bay up to, and including, the Swan and Canning Rivers
- For sea mullet the estuarine and nearshore finfish resource of south-west WA covers all nearshore and estuarine waters within the West Coast Bioregion (Black Point, east of Augusta, to the Zuytdorp Cliffs, north of Kalbarri, all land and water south of 27° S and west of 115° 30' E)

Long-term management objectives are typically operationalised as short-term (e.g. annual or periodic) objectives through one or more performance indicators that can be measured and assessed against predefined reference levels to ascertain actual performance. Within the context of the long-term ecological objectives outlined above, operational objectives aim to maintain each resource above the threshold level (and, where relevant, close to the target level), or rebuild the resource if it has fallen below the threshold or the limit levels.

The strategies will remain in place for a period of five years, after which time they will again be fully reviewed. If required, however, this document may be subject to review and amended within this five-year period.

There are well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system and the requirements of SG60, 80 and 100 are met.

#### References

DPIRD (2020b). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy* 2020-2025 Version 1.0. Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development. Western Australia.

DPIRD (2020c) *Estuarine and Nearshore Finfish Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0.* Fisheries Management Paper No. 303. Department of Primary Industries and Regional Development. Western Australia.

DPIRD (2020d). Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0. Fisheries Management Paper No. 304. DPIRD November 2020, pp. 35. http://www.fish.wa.gov.au/Documents/management\_papers/fmp304.pdf

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	100
Condition number (if relevant)	NA

### PI 3.2.2 – Decision-making processes

## UoAs: Blue-swimmer crab – commercial crab pot (UoA 1); Sea mullet – haul net (UoA 4); sea mullet – gillnet (UoA 5)

PI	3.2.2	The fishery-specific management system includes effective decision- making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scorin	ng Issue	SG 60	SG 80	SG 100
а	Decisio	n-making processes		
	Guide post	There are <b>some</b> decision- making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are <b>established</b> decision-making processes that result in measures and strategies to achieve the fishery- specific objectives.	
	Met?	Yes	Yes	
Rationale				

The FRMA, together with the WCEMF Management Plan, provide the framework for decision-making on long-term management of the commercial fisheries for blue swimmer crab and sea mullet in the PHE. Decision-making roles and responsibilities are well defined. Decisions are generally taken by the Director General of DPIRD or the Minister, after consultation with commercial and recreational fishers. However, the FRMA provides for decisions to be taken without such consultation where there is an urgent need for action.

The 2020 harvest strategies define two interrelated decision-making processes.

# (1) Formal review of targeted stocks and other ecological assets against defined reference levels to determine performance against management objectives relating to ecological sustainability.

A formal, resource-level review process is undertaken by the Department to assess the status of relevant target stocks and performance in relation to each ecological objective. Suitable indicators have been selected to determine the status of the blue swimmer crab resource of south-west WA, and other ecological assets, against defined reference levels established to separate acceptable from unacceptable performance. Where relevant, these reference levels include:

- A target level (i.e. where you want the indicator to be);
- A threshold level (i.e. where you review your position); and
- A limit level (i.e. where you do not want the indicator to be).

Harvest Control Rules (HCRs) define the management actions management needed to meet sustainability objectives, specifically for each indicator. These HCRs are designed to maintain the resource above the threshold level and close to a target level, or rebuild it where it has fallen below the threshold (undesirable) or the limit (unacceptable) levels. A summary of the management objectives, performance indicators, reference levels and HCRs is provided in Table 1 of the HS.

# (2) An annual fishery-level review that determines whether the current catch/effort by each of the relevant fisheries/sectors is consistent with the levels expected when ecological objectives are met.

Annual (or periodic) catch or effort tolerance levels have been defined to provide a formal basis to evaluate the effectiveness of current management arrangements in delivering the levels of catch and/or effort specified by the HCRs and, where relevant, any sectoral allocation decisions (Fletcher et al. 2016).

Annual catch tolerance levels have been developed for the commercial fisheries that target the blue swimmer crab resource in peel Harvey specifically.

In the absence of MSY estimates for the Peel-Harvey Estuary (due to crab movement in and out of estuary), the tolerance ranges for the commercial fishery have been based on catch levels observed during the specified reference period of 2000/01-2016/17 and adjusted downwards to account for the effect of the recent VFAS.

If the catch of either fishery/sector breaches the specified tolerance level and this cannot be adequately explained (e.g. clear environmental impacts or marketing reasons), the performance is termed 'Unacceptable'. This would trigger a review to determine if management arrangements are appropriate and if a reassessment of resource status is necessary to inform adjustments to the HCRs and/or tolerance levels.

The economic objective for the fisheries that target the blue swimmer crab resource in south-west WA does not have an explicit performance measure within this harvest strategy. Rather, it is through the formal consultation process (facilitated by annual management meetings with the commercial fishers) that regulatory impediments to maintaining economic return, or opportunities for enhancing economic return, are discussed. If measurable indicators for monitoring performance against the economic objectives are identified, these will be included in future revisions of this harvest strategy.

The above are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. Therefore, SG60 and 80 are met.

	Respon	Responsiveness of decision-making processes				
b	Guide post	Decision-making processes respond to <b>serious issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to <b>serious and other</b> <b>important issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to <b>all</b> <b>issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.		
	Met?	Yes	Yes	Yes		
Rationale						

Harvest strategy control rules (DPRID, 2020 c&d) dictate the management response to performance of the fishery against established indicators. While this Harvest Strategy has only recently been revised, it builds on the previous Harvest Strategy which has proven effective.

More broadly, decision-making processes respond to other issues raised through:

- Ecological risk assessments;
- Results of research, management or compliance projects or investigations, and
- Relevant workshops and peer review of aspects of research and management.

Overarching changes to the fishery-specific management system are the subject of broader consultation and examination. This provides a mechanism to identify and consider the broader implications of management options.

The decision-making processes are subject to various transparency requirements which are met through:

- Publication of Fisheries Management Papers, Fisheries Occasional Papers and Fisheries Research Reports on the DPIRD website;
- Written advice to licence holders and other stakeholders regarding new statutory arrangements;
- A requirement to report annually to the WA Parliament on the performance of the Department against the objectives of the FRMA (e.g. DPIRD, 2020a);
- Public access to relevant legislation including the FRMA, FRMR and the WCEMF Management Plan, harvest strategies, the Department's research plan and annual status report of fisheries.

No evidence of the management system not responding to relevant issues in a timely and transparent manner were observed. As a result the assessment team considered that decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. The requirements of SG 60, 80 and 100 are met.

	Use of	precautionary approach		
с	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Yes	
Ratior	nale			

Decision making is driven by the blue swimmer crab and finfish harvest strategies (DPIRD 2020 c&d). These are consistent with the Harvest Strategy Policy (DoF 2015c) which is predicated on the application of the precautionary approach and the use of EBFM which responds to the assessed risk that fishing poses to target, other retained species, bycatch, ETP species, habitats and ecosystems.

The use of threshold reference levels in the harvest strategies for blue swimmer crabs and finfish (DPIRD 2020b and DPIRD 2020c), also demonstrates the use of the precautionary approach by triggering a review where fishery performance is below the target. This ensures that any significant impacts are detected, examined and responded to if necessary, in a proactive way, effectively minimising the risk that that the limit reference point will be approached.

Consistent with a precautionary approach the West Coast Bioregion, including the Peel-Harvey Estuary, stock of sea mullet is managed as a separate stock from those in the Gascoyne and South Coast Bioregions even though it is considered to represent a genetically homogeneous stock. The performance

indicators in the harvest strategies rely on the best available information on catch, effort, catch rates, interactions with protected species and periodic risk assessments of target, other retained species, bycatch, ETP species, habitats and ecosystems.

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Decision-making processes use the precautionary approach and are based on best available information, and the requirements of SG 80 are met.

	Accoun <sup>®</sup> making	tability and transparenc process	y of management syster	m and decision-	
d	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	Information on the fishery's performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders <b>provides</b> <b>comprehensive</b> <b>information on the</b> <b>fishery's performance</b> <b>and management</b> <b>actions</b> and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	
	Met?	Yes	Yes	Yes	
Rationale					

The following processes are used to report information about the management and performance of the fishery:

- DPIRD provides information on fishery performance and management action to stakeholders through Annual Management Meetings where annual reports against the Harvest Strategy Performance Indicator are presented together with relevant recommendations;
- The Harvest Strategy has been published and available to all interested persons
- The ERA has been published and is available to all interested persons
- Bi-annual reporting in the WA State of the fisheries reports (e.g. DPIRD, 2020b)
- Annual Reporting to Parliament (e.g. DPIRD, 2020a) and the bi-annual State of the Fisheries Report (DPIRD, 2020b) which are publicly available and provide detailed reports on the progress against the Harvest Strategy performance indicators and resultant actions

WAFIC, through its consultation role, also provides a mechanism for providing information to industry on fishery performance and management. Opportunities exist for stakeholders to query actions or lack of action in response to research, monitoring evaluation and review outcomes.

The assessment team considered the above to be sufficient evidence of formal provision of comprehensive information on the fishery's performance and management actions to all interested stakeholder, including describing how management systems responded to new findings and information and therefore SG60, 80 and 100 is met.

е	Approa	Approach to disputes				
	Guide	Although the	The management system	The management system		
	post	management authority or	or fishery is attempting to	or fishery acts proactively		



		fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	comply in a timely fashion with judicial decisions arising from any legal challenges.	to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Yes	Yes	Yes
Ratior	nale			

The management system for the WCEMF proactively avoids legal disputes through inclusion of key stakeholders, notably commercial and recreational fishers, in its management decision making.

The fishery system is not subject to continuing court challenges, however, where legal challenges have been made to the management system (see, for example, Shine Fisheries Pty Ltd vs Minister for Fisheries at this link), the (then) DoF responded promptly to the judicial decision by making the necessary changes to management arrangements.

Disputes are addressed on a case-by-case basis with the Department actively working with peak sector bodies WAFIC and Recfishwest. An example is the process described in Fisheries Management Paper No. 303 around catch share arrangement of yellowfin whiting, i.e. tolerance levels are agreed to by commercial and recreational sectors and should the agreed 'trigger level' be reached, the Department initiates a meeting between stakeholders to evaluate the appropriateness of the tolerance level for the present season, in the context of existing environmental and fishing factors.

In addition, the development of the Blue Swimmer Crab Working Group that is currently in progress and includes representatives from peak sector bodies Recfishwest and WAFIC, assists in identifying and addressing potential conflicts both within Peel-Harvey and at the resource level.

The management system acts proactively to avoid legal disputes and rapidly implements judicial decisions arising from legal challenges and the requirements of SG60, 80 and 100 are met.

#### References

DOF (2015). *Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia*. Fisheries Management Paper No. 271. Department of Fisheries, Western Australia.

DPIRD (2020a). *Annual Report to Parliament 2020.* Department of Primary Industries and Regional Development. Western Australia. https://www.dpird.wa.gov.au/sites/default/files/2020-10/DPIRD%20Annual%20Report%202020%20-%20PDF.pdf

DPIRD (2020b). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy* 2020-2025 Version 1.0. Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development. Western Australia.

DPIRD (2020c). Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy 2020-2025 Version 1.0. Fisheries Management Paper No. 304. DPIRD November 2020, pp. 35. http://www.fish.wa.gov.au/Documents/management\_papers/fmp304.pdf

DPIRD (2020d). Status Reports of the Fisheries and Aquatic Resources of Western Australia 2018/19: The State of the Fisheries. Government of Western Australia. http://www.fish.wa.gov.au/Documents/sofar/status\_reports\_of\_the\_fisheries\_and\_aquatic\_resources\_ 2018-19.pdf

Johnston, D., Smith, K., Brown, J., Travaille, K., Crowe, F. & Fisher, E. (2015). *MSC Report Series: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery.* Department of Fisheries, Western Australia.

Draft scoring range	≥80	
Information gap indicator	Information sufficient to score PI	

# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

## UoAs: Blue-swimmer crab – recreational drop net (UoA 2); blueswimmer crab – recreational scoop (UoA 3)

PI	3.2.2	The fishery-specific management system includes effective decision- making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery			
Scorir	ng Issue	SG 60	SG 80	SG 100	
	Decisio	n-making processes			
а	Guide post	There are <b>some</b> decision- making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are <b>established</b> decision-making processes that result in measures and strategies to achieve the fishery- specific objectives.		
	Met?	Yes	Yes		
Ratior	Rationale				

The FRMA, together with the WCEMF Management Plan, provide the framework for decision-making on long-term management of the recreational fisheries for blue swimmer crab in the PHE. Decision-making roles and responsibilities are well defined. Decisions are generally taken by the Director General of DPIRD or the Minister, after consultation with commercial and recreational fishers. However, the FRMA provides for decisions to be taken without such consultation where there is an urgent need for action.

The 2020 harvest strategies define two interrelated decision-making processes.

#### (1) A formal review of targeted stocks and other ecological assets against defined reference levels to determine performance against management objectives relating to ecological sustainability

A formal, resource-level review process is undertaken by the Department to assess the status of relevant target stocks and performance in relation to each ecological objective. Suitable indicators have been selected to determine the status of the blue swimmer crab resource of south-west WA, and other ecological assets, against defined reference levels established to separate acceptable from unacceptable performance (Section 3.4.1). Where relevant, these reference levels include:

- A target level (i.e. where you want the indicator to be);
- A threshold level (i.e. where you review your position); and
- A limit level (i.e. where you do not want the indicator to be).

Due to a lack of information about the total recreational effort and catch of blue swimmer crabs in southwest WA, the harvest strategy for these stocks is primarily based on standardised commercial catch rates relative to reference levels for each of the two key areas.

Harvest Control Rules (HCRs) define the management actions management needed to meet sustainability objectives, specifically for each indicator. These HCRs are designed to maintain the resource above the threshold level and close to a target level, or rebuild it where it has fallen below the threshold (undesirable) or the limit (unacceptable) levels. A summary of the management objectives, performance indicators, reference levels and HCRs is provided in Table 1 of the HS.

As recreational catch information for blue swimmer crabs in south-west WA is often incomplete or uncertain, implementing the HCR as a reduction of the current catch for this sector may not be appropriate. A catch reduction for this sector will instead typically be applied indirectly through an equivalent reduction in the current bag/boat limit and/or the length of the fishing season expected to achieve the required response. Where data are available to suggest the current bag/boat limit is often not achieved by fishers, the review may determine that a stronger management response is necessary to achieve the desired catch reduction.

# (2) Annual fishery-level review that determines whether the current catch/effort by each of the relevant fisheries/sectors is consistent with the levels expected when ecological objectives are met.

Annual (or periodic) catch or effort tolerance levels have been defined to provide a formal basis to evaluate the effectiveness of current management arrangements in delivering the levels of catch and/or effort specified by the HCRs and, where relevant, any sectoral allocation decisions (Fletcher et al. 2016).

Tolerance ranges have also been developed for the boat-based recreational sector in the Peel-Harvey estuary, broadly based on preliminary catch estimates for the estuary from the four boat-based fishing surveys completed to date. The tolerance ranges have been adjusted upwards (by 20%) to account for recent changes to management, include the ongoing VFAS and extended seasonal closure to increase protection of breeding stocks. It is acknowledged that the tolerance levels will be refined with time and, for the Peel-Harvey Estuary, additional tolerance levels for the shore-based scooping sector (likely based on effort as a proxy for catch) may be added to this harvest strategy.

If the catch of either fishery/sector breaches the specified tolerance level and this cannot be adequately explained (e.g. clear environmental impacts or marketing reasons), the performance is termed 'Unacceptable'. This would also trigger a review to determine if management arrangements are still appropriate and if a reassessment of resource status is necessary to inform adjustments to the HCRs and/or tolerance levels.

The economic objective for the fisheries that target the blue swimmer crab resource in south-west WA does not have an explicit performance measure within this harvest strategy. Rather, it is through the formal consultation process (facilitated by annual management meetings with the commercial fishers) that regulatory impediments to maintaining economic return, or opportunities for enhancing economic return, are discussed. If measurable indicators for monitoring performance against the economic objectives are identified, these will be included in future revisions of this harvest strategy.

Decision-making in pursuit of longer-term objectives responds to processes including periodic ecological risk assessments (every 3-5 years), results of monitoring programs and research projects, changes in fishing behaviour, including compliance, and resource allocation issues.

These drivers may dictate the need for higher level changes to the management regime for the fishery, often through changes to legislation e.g. changes to the overarching management measures for recreational fishing for blue swimmers crab. Decisions to proceed with such changes involve a higher level of consultation with recreational fishers and this would be conducted through Recfishwest.

The above are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. Therefore, SG60 and 80 are met.

	Respon	siveness of decision-ma	king processes		
b	Guide post	Decision-making processes respond to <b>serious issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to <b>serious and other</b> <b>important issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to <b>all</b> <b>issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	
	Met?	Yes	Yes	Yes	
Rationale					

Harvest strategy control rules (DPRID, 2020 c&d) dictate the management response to performance of the fishery against established indicators. While this Harvest Strategy has only recently been revised, it builds on the previous Harvest Strategy which has proven effective.

More broadly, decision-making processes respond to other issues raised through:

- Ecological risk assessments;
- Results of research, management or compliance projects or investigations, and
- Relevant workshops and peer review of aspects of research and management.

Overarching changes to the fishery-specific management system are the subject of broader consultation and examination. This provides a mechanism to identify and consider the broader implications of management options.

The decision-making processes are subject to various transparency requirements which are met through:



- Publication of Fisheries Management Papers, Fisheries Occasional Papers and Fisheries Research Reports on the DPIRD website;
- Written advice to licence holders and other stakeholders regarding new statutory arrangements;
- A requirement to report annually to the WA Parliament on the performance of the Department against the objectives of the FRMA (e.g. DPIRD, 2020a);
- Public access to relevant legislation including the FRMA, FRMR and the WCEMF Management Plan, harvest strategies, the Department's research plan and annual status report of fisheries.

No evidence of the management system not responding to relevant issues in a timely and transparent manner were observed. As a result the assessment team considered that decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. The requirements of SG 60, 80 and 100 are met.

Use of precautionary approach				
с	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Yes	
Ratior	nale			

Decision making is driven by the blue swimmer crab and finfish harvest strategies (DPIRD 2020 b&c). These are consistent with the Harvest Strategy Policy (DoF 2015c) which is predicated on the application of the precautionary approach and the use of EBFM which responds to the assessed risk that fishing poses to target, other retained species, bycatch, ETP species, habitats and ecosystems.

The use of threshold reference levels in the harvest strategies for blue swimmer crabs and finfish (DPIRD 2020 b&c), also demonstrates the use of the precautionary approach by triggering a review where fishery performance is below the target. This ensures that any significant impacts are detected, examined and responded to if necessary, in a proactive way, effectively minimising the risk that the limit reference point will be approached.

The performance indicators in the harvest strategies rely on the best available information on catch, effort, catch rates, interactions with protected species and periodic risk assessments of target, other retained species, bycatch, ETP species, habitats and ecosystems. Given the lack of details recreational fishing information, this data mostly relates to the commercial fishery, however this reflects appropriate decision making regarding best data to inform management.

Decision-making processes use the precautionary approach and are based on best available information, and the requirements of SG 80 are met.

d	Accountability and transparency of management system and decision-making process			
	Guide post	Some information on the fishery's performance and	Information on the fishery's performance	Formal reporting to all interested stakeholders

bio	ecta q <sub>e</sub> inspecta		
			21_390EN
		MSC Full As	sessment Reporting Template
	management action is generally available on request to stakeholders.	and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	provides comprehensive information on the fishery's performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
Met?	Yes	Yes	Yes
Rationale			

The following processes are used to report information about the management and performance of the fishery:

- DPIRD provides information on fishery performance and management action to stakeholders through Annual Management Meetings where annual reports against the Harvest Strategy Performance Indicator are presented together with relevant recommendations;
- Annual Reporting to Parliament (e.g. DPIRD, 2020a) and the bi-annual State of the Fisheries Report (DPIRD, 2020b) which are publicly available and provide detailed reports on the progress against the Harvest Strategy performance indicators and resultant actions
- Bi-annual reporting in the WA State of the fisheries reports (e.g. DPIRD, 2020b)
- The Harvest Strategy has been published and available to all interested persons
- The ERA has been published and is available to all interested persons

Recfishwest, through its consultation role, also provides a mechanism for providing information to recreational fishers on fishery performance and management. Opportunities exist for stakeholders to query actions or lack of action in response research, monitoring evaluation and review outcomes.

The assessment team considered the above to be sufficient evidence of formal provision of comprehensive information on the fishery's performance and management actions to all interested stakeholder, including describing how management systems responded to new findings and information and therefore SG60, 80 and 100 is met.

	Approa	ch to disputes		
e	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Yes	Yes	Yes


#### Rationale

The management system for the WCEMF proactively avoids legal disputes through inclusion of key stakeholders, notably commercial and recreational fishers, in its management decision making.

The fishery system is not subject to continuing court challenges, however, where legal challenges have been made to the management system (see, for example, Shine Fisheries Pty Ltd vs Minister for Fisheries at this link), DoF has responded promptly to the judicial decision by making the necessary changes to management arrangements.

Disputes are addressed on a case-by-case basis with the Department actively working with peak sector bodies WAFIC and Recfishwest. An example is the process described in Fisheries Management Paper No. 303 around catch share arrangement of yellowfin whiting, i.e. tolerance levels are agreed to by commercial and recreational sectors and should the agreed 'trigger level' be reached, the Department initiates a meeting between stakeholders to evaluate the appropriateness of the tolerance level for the present season, in the context of existing environmental and fishing factors.

In addition, the development of the Blue Swimmer Crab Working Group that is currently in progress and includes representatives from peak sector bodies Recfishwest and WAFIC, assists in identifying and addressing potential conflicts both within Peel-Harvey and at the resource level.

The management system acts proactively to avoid legal disputes and rapidly implements judicial decisions arising from legal challenges and the requirements of SG60, 80 and 100 are met.

#### References

DOF (2015). Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia. Fisheries Management Paper No. 271. Department of Fisheries, Western Australia DPIRD (2020a). Annual Report to Parliament 2020. Department of Primary Industries and Regional Development. Western Australia. https://www.dpird.wa.gov.au/sites/default/files/2020-10/DPIRD%20Annual%20Report%202020%20-%20PDF.pdf

DPIRD (2020b). *Blue Swimmer Crab Resource of South-West Western Australia Harvest Strategy* 2020-2025 Version 1.0. Fisheries Management Paper No. 304. Department of Primary Industries and Regional Development. Western Australia.

DPIRD (2020d). Status Reports of the Fisheries and Aquatic Resources of Western Australia 2018/19: The State of the Fisheries. Government of Western Australia. http://www.fish.wa.gov.au/Documents/sofar/status\_reports\_of\_the\_fisheries\_and\_aquatic\_resources\_ 2018-19.pdf

Johnston, D., Smith, K., Brown, J., Travaille, K., Crowe, F. & Fisher, E. (2015). *MSC Report Series: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) & Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery.* Department of Fisheries, Western Australia.

Draft scoring range	≥80
Information gap indicator	Sufficient information to score PI



# **Overall Performance Indicator scores added from Client and Peer Review Draft Report stage**

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

# PI 3.2.3 – Compliance and enforcement

# UoA: Blue-swimmer crab – commercial crab pot (UoA 1); Sea mullet – haul net (UoA 4); sea mullet – gillnet (UoA 5)

PI	3.2.3	Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scorir	ng Issue	SG 60	SG 80	SG 100
	MCS im	plementation		
a	Guide post	Monitoring, control and surveillance <b>mechanisms</b> exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance <b>system</b> has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A <b>comprehensive</b> monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Yes	Yes	Yes
Ratior	nale			

The Western Australian Fisheries Compliance Strategy (the Strategy; DPIRD 2018) was published in 2018 with the purpose of outlining the principles underlying the DPIRD's compliance role and how its compliance services are delivered to the WA community.

The Strategy aligns with, and complements, DPIRD's Compliance Framework and Risk Assessment Policy which informs the risk-based model, compliance planning and the governance structure applied to fisheries compliance services.

The Department's compliance model is based on the Australian Fisheries National Compliance Strategy 2016-2020 (the National Strategy). DPIRD's compliance program contains three key compliance strategies recommended by the National Strategy:

- maximising voluntary compliance;
- effective deterrence; and
- organisational capability and capacity.

Operational Compliance Plan Management arrangements are enforced under the combined Operational Compliance Plan (OCP) for minor commercial fisheries. The OCP is informed and underpinned by compliance risk assessments conducted for each fishery. Annual planning meetings are held for OCPs,

with regular specific planning of day-to-day targeted and non-targeted patrols linked to the OCP based on resources and competing priorities.

Management arrangements for the blue swimmer crab and sea mullet resource of south-west WA are enforced under OCPs. The OCPs are informed and underpinned by a compliance risk assessment conducted for each fishery, which are reviewed every two years. These OCPs have the following objectives:

- to provide clear and unambiguous direction and guidance to Fisheries and Marine Officers for the yearly delivery of compliance in the fishery;
- to protect the fisheries' environmental values, while providing fair and sustainable access to the fishery's commercial and social values; and
- to encourage voluntary compliance through education, awareness and consultation activities.

Compliance strategies and activities that are used in the commercial and recreational fisheries targeting the blue swimmer crab resource of south-west WA include:

- Land patrols
- on-water patrols;
- road-side checkpoints;
- catch, licence and gear inspections;
- wholesale and retail inspections; and
- covert surveillance of persons of interest under approved operations.

These strategies are supported by appropriately trained staff, suitable deterrents in the forms of fines and administrative penalties and targeted education campaigns to promote voluntary compliance.

Compliance effort in the PHE, with regards to overall presence of Fisheries Officers has remained very similar since 2014/15, however, increased in 2019/20 as a result of staffing in Mandurah being back at full capacity, and with some extra assistance called in from the Metropolitan region for the peak season (**Table 24**).

Table 24: Summary of compliance hours in broader PHE area (incorporating oceanic watersoutside the estuary)

Financial year	Total Presence (Officer Hours) in area
2012/13	3,562
2013/14	3,788
2014/15	4,506
2015/16	4,910
2016/17	4,646
2017/18	4,233
2018/19	3,890
2019/20	6,530

Year	Compliance Contacts	ALE Contacts	Total Contacts	Offences
2016	21	5	26	2
2017	15	6	21	1
2018	14	2	16	1
2019	5	3	8	1
2020	14	7	21	0
2021 (part)	9	0	9	0
Total	78	23	101	5

Table 25: West Coast Estuarine Commercial Fishery Contacts and Offences by Calendar Year

\* ALE is Advice/Liaison and Education- (pre-fishing education, handing out crab gauges etc)

Compliance contacts and offences in the commercial sector for the whole of the West Coast Estuarine Fishery (WCEF) is reported in **Table 25** for calendar years between 2016 and 2021 (part thereof). During the entire period 5 offences were recorded, and only one offence has been recorded since 2019. In the PHE specifically, only 5 offences have been recorded since 2016 and no offences have been recorded since 2018.

Compliance contacts and offences in the commercial sector for the PHE fishery only are in **Table 26** below.

Table 26. WCEF Contacts and	Offences by (	Calendar Year - PHE Only
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	Compliance Contacts	ALE Contacts	Total Contacts	Offences
2016	19	5	24	2
2017	15	6	21	1
2018	13	1	14	1
2019	2	2	4	0
2020	10	7	17	0
2021	11	0	11	0
Total	70	21	91	4

\* ALE is Advice/Liaison and Education- (pre-fishing education, handing out crab gauges etc)

The assessment team concluded that a comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules and that SG 60, 80 and 100 are met.

	Sanctio	ons		
b	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, <b>are</b> <b>consistently applied</b> and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and <b>demonstrably</b> provide effective deterrence.
	Met?	Yes	Yes	Yes
Ratior	nale			

The FRMA contains an explicit sanction framework, including the nature and extent of sanctions to be applied to non-compliance with commercial fishing regulations. A tiered system of sanctions includes infringement warnings, infringement notices, letters of warning, and prosecutions. Sanctions arising from prosecution can include monetary penalties, licence cancellations or suspensions and confiscation of gear or catch. The penalties are commensurate with the value of illegal fish and the type of illegal activity. The level of detected offences in the commercial fishery in the Peel-Harvey Estuary (see Table **25** and **26**) is extremely low.



The assessment team considered that, in the context of the comprehensive MCS system in place, this was likely to reflect the effectiveness of the system, including the deterrent effect of sanctions, rather than a failure of the detection system. Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence and the requirements of SG60, 80 and 100 are met.

	Complia	ance		
С	Guide post	Fishers are <b>generally</b> <b>thought</b> to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	<b>Some evidence exists</b> to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a <b>high degree</b> of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	Yes	Yes	Yes
Ratior	nale			

The offending rate in the PHE fishery is very low (**Tables 25** and **26**) and there is a comprehensive MCS system in place which provides confidence that the available data are credible. The reported level of compliance is also supported by the positive status of the target fish stocks.

Fishers participate actively in the collection of data through submission of mandatory logbook data and reports on interactions with ETP species. Commercial fishers also participate in the observer monitoring for blue swimmer crab and also cooperate voluntarily to implement some management measures.

The MLFA's Code of Practice includes undertakings by commercial licence holders to, among other things, aid in present and future research projects and to comply with the Departmental Management Plan at all times.

The level of detected offences in the commercial fishery in the Peel-Harvey Estuary (see **Table 25**) is extremely low with a maximum of 2 infringements issued in any of the four years to 2013/14. Therefore SG 60, 80 and 100 are met.

	Systematic non-compliance	
d	Guide post	There is no evidence of systematic non-compliance.
	Met?	Yes
Ratior	nale	

The level of detected offences in the commercial fishery in the Peel-Harvey Estuary is extremely low with a maximum of two infringements issued in any of the four years to 2013/14.

There is no evidence of systematic non-compliance and SG80 is met.

References			



DPIRD (2018). *Fisheries compliance strategy September 2018*. Department of Primary Industries and Regional Development. Western Australia.

https://www.fish.wa.gov.au/Documents/corporate\_publications/fisheries\_compliance\_strategy.pdf

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	100
Condition number (if relevant)	ΝΑ

# UoAs: Blue-swimmer crab – recreational drop net (UoA 2); blueswimmer crab – recreational scoop (UoA 3)

ΡI	3.2.3	Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with					
Scoring Issue		SG 60	SG 60 SG 80				
	MCS im	plementation					
a	Guide post	Monitoring, control and surveillance <b>mechanisms</b> exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance <b>system</b> has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A <b>comprehensive</b> monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.			
	Met?	Yes	Νο	Νο			
Ratior	nale						

The Western Australian Fisheries Compliance Strategy (the Strategy; DPIRD 2018) was published in 2018 with the purpose of outlining the principles underlying the DPIRD's compliance role and how its compliance services are delivered to the WA community.

The Strategy aligns with, and complements, DPIRD's Compliance Framework and Risk Assessment Policy which informs the risk-based model, compliance planning and the governance structure applied to fisheries compliance services.

The Department's compliance model is based on the Australian Fisheries National Compliance Strategy 2016-2020 (the National Strategy). DPIRD's compliance program contains three key compliance strategies recommended by the National Strategy:

- maximising voluntary compliance.
- effective deterrence; and
- organisational capability and capacity.



Operational Compliance Plan Management arrangements are enforced under the combined Operational Compliance Plan (OCP) for minor commercial fisheries. The OCP is informed and underpinned by compliance risk assessments conducted for each fishery. Annual planning meetings are held for OCPs, with regular specific planning of day-to-day targeted and non-targeted patrols linked to the OCP based on resources and competing priorities.

#### Fishery specific compliance strategies and tools

Management arrangements for the blue swimmer crab resource of south-west WA are enforced under Operational Compliance Plans (OCPs). The OCPs are informed and underpinned by a compliance risk assessment conducted for each fishery, which are reviewed every two years. These OCPs have the following objectives:

- to provide clear and unambiguous direction and guidance to Fisheries and Marine Officers for the yearly delivery of compliance in the fishery;
- to protect the fisheries' environmental values, while providing fair and sustainable access to the fishery's commercial and social values; and
- to encourage voluntary compliance through education, awareness and consultation activities.

Compliance strategies and activities that are used in the recreational fisheries targeting the blue swimmer crab resource of south-west WA include:

- Land patrols
- On-water patrols;
- Road-side educational points engaged persons arriving in the region;
- Road-side checkpoints for inspections of persons leaving fishing sites;
- Catch, licence and gear inspections;
- Covert surveillance of persons of interest under approved operations.

These strategies are supported by 10 appropriately trained staff who work in teams of 2. While it is understood that illegal activity is likely to be ongoing throughout all hours of the night, compliance staff do not work beyond 1/2am due to work health and safety issues.

There is a high participation rate of foreign and non-english speaking person in the recreational crabbing sectors. As such there is a strong emphasis on educational of these sectors on the rules and the importance of adhering to the rules; including the production of educational material in three languages and the use of interpreter where possible.

#### *Compliance effort, contacts and offences*

Compliance effort in the PHE, with regards to overall presence of Fisheries Officers has remained very similar since 2014/15, however, increased in 2019/20 as a result of staffing in Mandurah being back at full capacity, and with some extra assistance called in from the Metropolitan region for the peak season.

The number of compliance contacts made with fishers increased in 2018/19 compared to the previous three years and remained high in 2019/20 (**Table 28. Summary** of offence data relative to the compliance effort in the broader PHE area



Financial year	Total Presence (Officer Hours) in area	Rec Crabbing Compliance Contacts in area	Rec Crabbing Offences in area	Rec Netting Offences in area
2012/13	3,562	5,854	511	41
2013/14	3,788	9,286	1,058	20
2014/15	4,506	10,930	1,009	49
2015/16	4,910	7,422	773	36
2016/17	4,646	7,156	432	31
2017/18	4,233	7,429	361	13
2018/19	3,890	10,527	435	9
2019/20	6,530	9,256	492	29

Table 29: Summary of detected offences by recreational fishers in the PHE estuary between2016/17 and 2019/20

Offence Type	Prosecution Briefs			Inf	Infringement Notices			Infringement Warnings				
	16/17	17/18	18/19	19/20	16/17	17/18	18/19	19/20	16/17	17/18	18/19	19/20
Crabbing												
Closed Season	1				6	2	3	10		2	1	22
Closed Waters	1			1		1						
Excess Bag	22	7	12	18	6	22	12	12	27	22	23	20
Excess Gear					1							
Illegal Gear	4		1		2			4	21	2	13	
Licensing												
No Licence				1	2	1	9	4	1	7	7	4
Obstruction	5	8	5	6								
Species												
Undersize	28	12	18	34	173	161	160	177	127	113	169	179
Processing	4					1						
Other	1		2									
TOTAL	66	27	38	60	190	188	184	207	176	146	213	225
Netting												
Closed Season	3			1			1					
Closed Waters	6	1	3	2	7	4		5	1			
Excess Bag				1				5			1	1
Illegal Gear	3	1	1	2	1			1	3	2		2
No Licence		1	1	2	1	2	2	2	1			2
Undersize												
Other	2				2	1		1	1	1		2
TOTAL	14	3	5	8	11	7	3	14	6	3	1	7

In response, DPIRD advised that a Blue Swimmer Crab Working Group (including representatives from peak sector bodies Recfishwest and WAFIC, and the Southern Seafood Producers WA Association) has been established and the matter of recreational fishing compliance will be considered by this group. DPIRD compliance officers advised that a site visit has been provided to interested members of the

working group to familiarise all with the issues. Some potential new tools have been noted including curfews and drones but there has been no detailed consideration or consultation regarding these or other potential compliance solutions to date. There was no evidence of a formal timeline or a clear process forward to determine and implement effective new approaches. A lack of increase in contact numbers to follow the substantial increase in officer presence in 2019/20 is likely due mainly to the shorter crabbing season since the extension of the closure in 2019 to include November, and an increase in the number of prosecution briefs issued, which typically take more time to process.

A summary of offences by recreational fishers, from 2012/13 to 2019/20, is provided in

**In** response, DPIRD advised that a Blue Swimmer Crab Working Group (including representatives from peak sector bodies Recfishwest and WAFIC, and the Southern Seafood Producers WA Association) has been established and the matter of recreational fishing compliance will be considered by this group. DPIRD compliance officers advised that a site visit has been provided to interested members of the working group to familiarise all with the issues. Some potential new tools have been noted including curfews and drones but there has been no detailed consideration or consultation regarding these or other potential compliance solutions to date. There was no evidence of a formal timeline or a clear process forward to determine and implement effective new approaches. **6** and reveals the following:

- The number of recreational netting offences have remained at a low level.
- Recreational crabbing offences are high, by comparison to netting, in an their own right
- While recreational crabbing offences reduced from approximately 700-1000 offences per annum throughout 2013-2016, to 432 in 2016/17, the trend since then has seen a further increase in offences to a level of 492 in 2019/20.
- The data continues to show that retention of undersized crabs remains the main offence type in the recreational crab fishery (**Table 27**).

At the site audit, compliance managers advised that the highest non-compliance was observed by recreational scoop netters in shallow waters. Despite the already reported high incidents of non-compliance, compliance staff predict that a significant additional amount of illegal recreational scoop netting goes undedected, particularly late in the late evening/early mornings, when compliance staff are off duty.

Compliance staff also advised that the last two years have been somewhat different in terms of participants in the recreational fishery as a result of covid-19 related travel restrictions. A 15% drop in participation was reported and compliance managers noted that participation from foreign speaking students had reduced presumed due to effects of closed borders on university recruitment of foreign students. Despite this, **Table 28** and **29** (2020/21 compliance statistics) reveal an ongoing high degree of recreational fishing non-compliance including a monthly average of 9% of total compliance contacts identifying a recreational fishing offence; 81% of those offences related to undersize crabs.

Given the increasing trend in non-compliance in the recreational sector observed since the 2017 MSC certification (particularly with respect to minimum size limits), during the last certification cycle, the MSC assessment team recommended that DPIRD and Recfishwest review the existing compliance strategy and management measures to ensure that the system is capable of minimizing non-compliance.

 Table 28. Summary of offence data relative to the compliance effort in the broader PHE area



Financial year	Total Presence (Officer Hours) in area	Rec Crabbing Compliance Contacts in area	Rec Crabbing Offences in area	Rec Netting Offences in area
2012/13	3,562	5,854	511	41
2013/14	3,788	9,286	1,058	20
2014/15	4,506	10,930	1,009	49
2015/16	4,910	7,422	773	36
2016/17	4,646	7,156	432	31
2017/18	4,233	7,429	361	13
2018/19	3,890	10,527	435	9
2019/20	6,530	9,256	492	29

Table 29: Summary of detected offences by recreational fishers in the PHE estuary between2016/17 and 2019/20

Offence Type	Prosecution Briefs			Inf	Infringement Notices			Infringement Warnings				
	16/17	17/18	18/19	19/20	16/17	17/18	18/19	19/20	16/17	17/18	18/19	19/20
Crabbing												
Closed Season	1				6	2	3	10		2	1	22
Closed Waters	1			1		1						
Excess Bag	22	7	12	18	6	22	12	12	27	22	23	20
Excess Gear					1							
Illegal Gear	4		1		2			4	21	2	13	
Licensing												
No Licence				1	2	1	9	4	1	7	7	4
Obstruction	5	8	5	6								
Species												
Undersize	28	12	18	34	173	161	160	177	127	113	169	179
Processing	4					1						
Other	1		2									
TOTAL	66	27	38	60	190	188	184	207	176	146	213	225
Netting												
Closed Season	3			1			1					
Closed Waters	6	1	3	2	7	4		5	1			
Excess Bag				1				5			1	1
Illegal Gear	3	1	1	2	1			1	3	2		2
No Licence		1	1	2	1	2	2	2	1			2
Undersize												
Other	2				2	1		1	1	1		2
TOTAL	14	3	5	8	11	7	3	14	6	3	1	7

In response, DPIRD advised that a Blue Swimmer Crab Working Group (including representatives from peak sector bodies Recfishwest and WAFIC, and the Southern Seafood Producers WA Association) has been established and the matter of recreational fishing compliance will be considered by this group. DPIRD compliance officers advised that a site visit has been provided to interested members of the

working group to familiarise all with the issues. Some potential new tools have been noted including curfews and drones but there has been no detailed consideration or consultation regarding these or other potential compliance solutions to date. There was no evidence of a formal timeline or a clear process forward to determine and implement effective new approaches.

Table 30 - Summary of offence data relative to the compliance effort in the broader PHE areafor 2020/21

No of RCB Co				
	ALE*	Compliance		Total Rec
Date	Contacts	Contacts	Grand Total	Offences
Nov-20	11	27	38	14
Dec-20	320	2130	2450	115
Jan-21	395	3096	3491	165
Feb-21	194	972	1166	43
Mar-21	48	519	567	33
Apr-21	38	395	433	18
May-21	4	28	32	0
Grand Total	1010	7167	8177	388

\* ALE is Advice/Liaison and Education- (pre-fishing education, handing out crab gauges etc)

A monitoring, control and surveillance mechanisms has been developed and implemented in the fishery and there is reasonable expectation that fishers would follow the rules, therefore SG60 is met.

Table 31: Summary of detected offences by recreational fishers in the PHE estuary for2020/21

Sum of No. of Offences		Category			
Fishery Code	Offence Type	Brief	Infringement	Warning	Grand Total
R-CB	Closed Season Excess Bag Illegal Gear	1 9	8 15	2 31 2	11 55 2
R-CB Total	Obstruction Undersize	3 11 <b>24</b>	4 124 <b>151</b>	178 <b>213</b>	4 3 313 <b>388</b>
SCB SCB Total	Undersize	3 <b>3</b>	3 <b>3</b>		6 <b>6</b>

However, the system has not been able to *demonstrate* an ability to enforce relevant management measures, strategies and/or rules, evidenced by the significantly high non-compliance rates within recreational scoop netters hence SG80 is not met. SG100 is not met as the system cannot been considered comprehensive on the grounds that there are acknowledged gaps which are allowing the non-compliance to persist; and that level of non-compliance suggests that there is not consistent ability to enforce management measures, strategies and/or rules.

A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.

### **b** Sanctions

21 390EN MSC Full Assessment Reporting Template Sanctions to deal with Sanctions to deal with Sanctions to deal with non-compliance exist and non-compliance exist, are non-compliance exist, are Guide consistently applied there is some evidence consistently applied and post that they are applied. and thought to provide demonstrably provide effective deterrence. effective deterrence. Met? Yes No No Rationale

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The FRMA contains an explicit framework, including the nature and extent of sanctions to be applied to non-compliance with recreational fishing regulations. A tiered system of sanctions includes infringement warnings, infringement notices, letters of warning and prosecutions. Sanctions arising from prosecution can include monetary penalties, licence cancellations or suspensions and confiscation of gear or catch. The penalties are commensurate with the value of illegal fish and the type of illegal activity.

The level of detected offences in the recreational fishery in the Peel-Harvey Estuary is reported in **Table 28, 29, 30 and 31**). There has been an upward trend in the number of infringement notices and warnings for catch of undersize crabs since 2010/11 and a drop in 2020/21 while the proportion of offences from total contacts remains at 9%.

In 2014/15, a \$1000 infringement notice was introduced which, along with an education campaign, had a significant impact on the level of non-compliance.

The assessment team considered that there is evidence that the sanctions available are consistently applied. The increase in sanctions in 2014/15 did impact the level of non-compliance, however the non-compliance levels remain high hence there is not sufficient evidence to suggest that the current sanctions provide a deterrent. SG80 is therefore not met.

While there is concern that increasing the size of the sanction may motivate illegal fishers to be more deceptive in their activities, the non-compliance rate remains high. Given that clear progress has yet to be made regarding identifying and implementing alternative approaches to effectively address non-compliance, modified and potentially higher sanctions should remain under consideration.

	Complia	ance				
с	Guide post	Fishers are <b>generally</b> <b>thought</b> to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	<b>Some evidence exists</b> to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a <b>high degree</b> of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.		
	Met?	Yes	Νο	Νο		
Rationale						

A state-wide survey of recreational fishers (Ryan et al. 2013) found a willingness of recreational fishers to supply information and Johnston et al. (2015) note that there is community pressure to "do the right thing".

Community members regularly advise DPIRD when they observe unusual or illegal behavior, and such reports have led to successful prosecutions. There is therefore some evidence to demonstrate fishers provide information of importance to the effective management of the fishery.

SG80 requires that some evidence exists to demonstrate fishers comply with the management system under assessment. In this case the reverse is true ie. there is evidence to suggest that recreational fishers are not complying with the management system, on account of the high non-compliance in the recreational scoop net sector. Therefore, SG80 is not met.

	Systematic non-compliance						
d	Guide post	There is no evidence of systematic non-compliance.					
	Met?	No					
Ratior	nale						

Johnson (2015) examined the recreational fishing offence data and found that less than 1% of offences are from repeat offenders. However, there appears to be repeated non-compliance most specific to the issue of undersized crabs caught from recreational scoop nets and the assessment team considered this to be evidence of systematic non-compliance and therefore SG80 is not met.

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Draft scoring range	60-80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	65
Condition number (if relevant)	23

## PI 3.2.4 – Monitoring and management performance evaluation

# UoAs: Blue-swimmer crab – commercial crab pot (UoA 1); Sea mullet – haul net (UoA 4); sea mullet – gillnet (UoA 5)

PI 3.2.4 There is a system of monitoring and evaluating the performance of fishery-specific management system against its objectives There is effective and timely review of the fishery-specific manage system					
Scorin	ig Issue	SG 60	SG 80	SG 100	
	Evaluat	ion coverage			
а	Guide post	There are mechanisms in place to evaluate <b>some</b> parts of the fishery- specific management system.	There are mechanisms in place to evaluate <b>key</b> parts of the fishery- specific management system.	There are mechanisms in place to evaluate <b>all</b> parts of the fishery- specific management system.	
	Met?	Yes	Yes	Νο	
Ratior	Rationale				

The following is noted in relation to evaluating the fishery-specific management system:

- Most parts of the WCEMF fishery management system are subject to evaluation.
- Evaluation processes include strategic planning and risk assessments (ecological risk assessments for the WCEMF will be undertaken every 3–5 years and annual compliance risk assessments),
- Annual Management Meetings are held with all WCEMF Area 2 licence holders and stakeholders (Recfishwest) to discuss current research programs, management changes and future research needs. Additional meetings may also be held, on an as needs basis, throughout the year to address specific issues or initiatives.
- Where appropriate, research workshops are held with stakeholder groups. An example of this is the workshop held in 2020 to conduct the ERA for the fishery.
- The revised harvest strategies implemented in 2020 will be fully reviewed after 5 years. If required, the document may be subject to review and amended within this five-year period.
- The Harvest strategies incorporate annual reviews against reference points.
- Ecological risk assessments are undertaken periodically (every 3-5 years) which respond to the results of monitoring programs and research projects, changes in fishing behaviour, including compliance, and resource allocation issues. These drivers may dictate the need for higher level changes to the management regime for the fishery, often through changes to legislation e.g. changes to the overarching management measures for recreational fishing for blue swimmers crab. Decisions to proceed with such changes involve a higher level of consultation with recreational fishers and this would be conducted through Recfishwest.
- Fishery performance against long-term and short-term objectives is evaluated annually through the Status Reports of the Fisheries and Aquatic Resources of Western Australia and more broadly through DPIRD's Annual Report to the Western Australian Parliament.

The fishery has in place mechanisms to evaluate key, parts of the management system and therefore SG60 and 80 are met.

However, neither the FRMA nor the WCEMF Management plan provide for the regular review of the management plan. Therefore, not all parts of the management system are evaluated and therefore SG100 is not met.

### Internal and/or external review

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Guida	The fishery-specific		
post	management system	is	

The fishery-specific management system is subject to **regular**  The fishery-specific management system is subject to **regular** 

b



		subject to <b>occasional</b> internal review.	internal and occasional external review.	internal and external review.
	Met?	Yes	Yes	Νο
Ratior	nale			

The management system is subject to regular internal review as described under scoring issue (a).

Some aspects of the fishery are subject to occasional external review. for example:

- The research and management of the PHE blue swimmer crab fishery was externally reviewed in 2010 by Wayne Sumpton as part of the DBIF project (Johnston et al. 2015, Appendix D).
- DPIRD's Research Division's Supervising Scientists manage the peer review process of all fisheries (with external reviewers).

The stock assessment for the fishery is subject to internal review however not external review.

It is noted that the fishery has not submitted for assessment under the EPBC Act against Guidelines for the Ecologically Sustainable Management of Fisheries (the Guidelines) (Department of the Environment and Water Resource, 2007).

The fishery-specific management system is subject to regular internal and occasional external review and SG60 and 80 are met. External review of the management system is ad hoc and occasional at best and therefore SG100 is not met.

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Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

**Overall Performance Indicator scores added from Client and Peer Review Draft Report stage** 

Overall Performance Indicator score	80
Condition number (if relevant)	ΝΑ

# UoAs: Blue-swimmer crab – recreational drop net (UoA 2); blueswimmer crab – recreational scoop (UoA 3)

PI 3.2.4	There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system		
Scoring Issue	SG 60	SG 80	SG 100

	Evaluat	Evaluation coverage					
а	Guide post	There are mechanisms in place to evaluate <b>some</b> parts of the fishery- specific management system.	There are mechanisms in place to evaluate <b>key</b> parts of the fishery- specific management system.	There are mechanisms in place to evaluate <b>all</b> parts of the fishery- specific management system.			
	Met?	Yes	Yes	Νο			
Ratior	nale						

The following is noted in relation to evaluating the fishery-specific management system:

- Most parts of the WCEMF fishery management system are subject to evaluation.
- Evaluation processes include strategic planning and risk assessments (Ecological Risk Assessments for the WCEMF and the Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery will be undertaken every 3–5 years and annual compliance risk assessments),
- Annual Management Meetings are held with stakeholders including Recfishwest to discuss current research programs, management changes and future research needs.
- Additional meetings may also be held, on an as needs basis, throughout the year to address specific issues or initiatives.
- Where appropriate, research workshops are held with stakeholder groups. An example of this is the workshop held in 2020 to conduct the ERA for the fishery.
- The revised harvest strategies implemented in 2020 will be fully reviewed after 5 years, If required, the document may be subject to review and amended within this five-year period.
- The Harvest strategies incorporate annual reviews against reference points.
- Ecological risk assessments are undertaken periodicly (every 3-5 years) which respond to the results of monitoring programs and research projects, changes in fishing behaviour, including compliance, and resource allocation issues. These drivers may dictate the need for higher level changes to the management regime for the fishery, often through changes to legislation e.g. changes to the overarching management measures for recreational fishing for blue swimmers crab. Decisions to proceed with such changes involve a higher level of consultation with recreational fishers and this would be conducted through Recfishwest.
- Fishery performance against long-term and short term objectives is evaluated annually through the Status Reports of the Fisheries and Aquatic Resources of Western Australia and more broadly through DPIRD's Annual Report to the Western Australian Parliament.

The fishery has in place mechanisms to evaluate key, parts of the management system and therefore SG60 and 80 are met.

However, neither the FRMA nor the WCEMF Management plan provide for the regular review of the management plan. Therefore, not all parts of the management system are evaluated and SG100 is not met.

	Interna	Internal and/or external review						
b	Guide post	The fishery-specific management system is subject to <b>occasional</b> <b>internal</b> review.	The fishery-specific management system is subject to <b>regular</b> <b>internal</b> and <b>occasional</b> <b>external</b> review.	The fishery-specific management system is subject to <b>regular</b> <b>internal and external</b> review.				
	Met?	Yes	Yes	No				



#### Rationale

The management system is subject to regular internal review as described under scoring issue (a). The fishery is not subject to external assessment under the EPBC Act since it does not sell, and specifically does not export, product.

Some aspects of the fishery are subject to occasional external review. for example:

- The research and management of the PHE blue swimmer crab sectors was externally reviewed in 2010 by Wayne Sumpton as part of the DBIF project (Johnston et al. 2015).
- DPIRD's Research Division's Supervising Scientists manage the peer review process of all fisheries (with external reviewers).

The fishery-specific management system is subject to regular internal and occasional external review and SG60 and 80 are met. External review of the management system is ad hoc and occasional at best and therefore SG100 is not met.

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Draft scoring range	≥80				
Information gap indicator	Information sufficient to score PI				
Overall Performance Indicator scores added from Client and Peer Review Draft Report stage					
Overall Performance Indicator scores added fr	om Client and Peer Review Draft Report stage				
Overall Performance Indicator scores added fr Overall Performance Indicator score	om Client and Peer Review Draft Report stage 80				



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# **9** Appendices

# 9.1 Assessment information

### 9.1.1 Previous assessments

The fishery was first certified to the MSC requirements in 2016 using the default assessment tree MSC Fisheries Certification Requirements Version 1.3, January 2013. All reports including the 4 annual surveillance reports are available on the MSC website (here).

The fishery received nine conditions (Table 32 below). All the conditions are closed.

Table 32 – Summary of previous assessment conditions					
Condition	PI(s)	Year closed	Justification		
1 Blue swimmer crab	1.2.1	2019 (year 3)	The primary indicators have remained within the target ranges. They provide a strong evidence that the harvest strategy (primarily input controls) are maintaining effort at a level that is not affecting recruitment to the stock and hence the harvest strategy is achieving its objectives.		
2 Blue swimmer crab	1.2.2	2020 (year 4)	The updated HCR has well defined thresholds, indicates the broad range of required catch reduction and the likely management instruments that will be used to implement the catch reduction.		
3 Sea mullet	1.2.1	2020 (year 4)	The new Harvest Strategy (2020e) has been signed off by the Minister and published. This harvest strategy provides a substantial revision and changes from CPUE as the primary indicator to using an estimate of biomass (B) relative to the unfished level (B <sub>0</sub> ). With appropriate model-based estimates of B/B <sub>0</sub> this provides an improvement to the harvest strategy and the elements continue to work together.		
4 Sea mullet	1.2.2	2020 (year 4)	The harvest strategy for sea mullet has been reviewed and updated. The HCR detailed in the harvest strategy uses estimates of biomass (B) compared to the unfished level ( $B_0$ ) as the primary indicator. This indicator is compared against threshold and limit reference levels which are $B_{MSY}$ and $0.5B_{MSY}$ respectively.		
5 Sea mullet (gill net)	2.2.3	2017 (year 1)	There is now an ongoing bycatch monitoring program of bycatch across the fishery. The program is capable of detecting any risk to bycatch species The SG 80 is met.		
6 Sea mullet (haul net)	2.2.3	2017 (year 1)	There is now an ongoing bycatch monitoring program of bycatch across the fishery. The program is capable of detecting any risk to bycatch species The SG 80 is met.		
7 (All UoCs)	2.4.1	2020 (year 4)	The results of a recently finished project by Krumholz (2019) on changes in macrophyte biomass and distribution were considered in the 2020 ERA assessed the impacts of commercial and recreational fishing activities on the key benthic habitat types in the PHE		



			(sand, macroalgae and seagrass) as negligible or low risk (Fisher et al. 2020).
8 (commercial)	3.1.2	2017 (year 1); recommendation	The Stakeholder Engagement Guideline (SEG) was finalised in July 2016 (DoF 2016). The SEG ensures all stakeholders (including non- fisher stakeholders and interested parties) are provided with opportunities to be involved, engaged and consulted. The SEG identifies and defines all stakeholders and provides clear guidance to DoF fishery managers regarding stakeholder participation in consultation processes. The SEG allows flexibility for managers and stakeholders to participate in consultation processes. All stakeholders are provided the opportunity to comment on, and/or be involved in consultation processes involving various materials published on the DoF website including FMP's, management plans, status reports, annual reports, harvest strategies, and other papers. The SG 80 is met. Specific examples where this fishery has consulted with the wider stakeholder group and non-fishing stakeholders have not been provided.
9 (recreational)	3.1.2	2017 (year 1); recommendation	The DoF have developed and implemented formal guidelines, "Stakeholder Engagement Guideline" (SEG) which was finalised in July 2016 (DoF 2016). The SEG ensures all stakeholders (including non- fisher stakeholders and interested parties) are provided with opportunities to be involved, engaged and consulted. The SEG identifies and defines all stakeholders and provides clear guidance to DoF fishery managers regarding stakeholder participation in consultation processes. The SEG allows flexibility for managers and stakeholders to participate in consultation processes. The SG 80 is met. However specific examples where Recfishwest has consulted with all stakeholders of this fishery and non-fishing stakeholders have not been provided to the team.

### 9.1.2 Small-scale fisheries

Table 33 – Small-scale fisheries					
Unit of Assessment (UoA)	Percentage of vessels with length <15m	Percentage of fishing activity completed within 12 nautical miles of shore			
1 BSC – baited trap	100	100			
2 BSC – drop net	NA	NA			
3 BSC – scoop net	NA	NA			
4 SM – gill net	100	100			
5 SM – haul net	100	100			

## 9.2 Evaluation processes and techniques

### 9.2.1 Site visits

The Site Visit took place on the 10<sup>th</sup> and 11<sup>th</sup> May 2021 at the DPIRD conference room (Meeting Room 2), Marine Research Laboratories, Hillarys, Western Australia. The full assessment team was present at the site visit.

The following agenda was circulated to participants:

10 <sup>th</sup> of May2	021, 8:30 - 17:00 WST		
Activity	Items to Review/Actions	People attending	Approx. Time
Opening meeting with client	Introductions, Q&A re. documentation Audit plan	Audit team, client representatives	8.30 - 8.45
Principle 1	P1 updates for blue crab & sea mullet (incl. estimates of mortality of unwanted catch)	Research staff, client, audit team	8.45 - 11:00
Break	1	T	•
Principle 2	P2 updates for blue crab (rec and commercial sectors) & sea mullet (commercial sector) (e.g. management measures threatened migratory shorebirds; stock status and management information non-P1 species; info on recreational UoAs)	Research staff, client, audit team	11.15 - 13.00
Lunch			
Principle 3	P3 updates Commercial and Recreational Sectors (e.g. consultation and participatory mechanisms employed; revised strategic review and evaluation process and management plan review in Western Australian fisheries; compliance response to recreational fishing non-compliance)	Manager, client, audit team	14.00 - 15.30
Traceability	Updates and discussion re supply chain impaction traceability	client, audit team	15.30 - 16:00
Stakeholde r meetings		If requested	No meeting was requested
Team scoring meeting		Audit team only	(if no stakeholder) 16.00 – 17.00

11 <sup>th</sup> of May2021, 8:30 - 13:30 WST									
Activity	Items to	People attending	Approx. Time						
	Review/Actions								
Team review and	All PIs	Audit team only	8.30 - 11.30						
progress on scoring									
Lunch									
Preparation for		Audit team only	12.00 - 12.30						
closing meeting									
Closing meeting	Summary of findings	Audit team & client	12.30- 13.30						
	and process from here								

### 9.2.2 Stakeholder participation

Stakeholder opportunities were outlined in the Announcement of the fishery on the MSC website on 31 March 2021 and a separate email advising of the Announcement and inviting participation was sent to all stakeholders on the list. Stakeholders were offered private interviews, but none were requested. No submissions from stakeholders were received during the public comment period on the ACDR.

The following people attended the site visit.

Name	Role	Affiliation
Meegan Watts	Client Representative	MLFA
Leyland Campbell	Client Representative	Recfishwest
Danielle Johnston	Research	DPIRD
Cameron Desfosses	Research	DPIRD
Nick Caputi	Research	DPIRD
Ainslie Denham	Research	DPIRD
David Harris	Research	DPIRD
Karina Ryan	Research	DPIRD
Matthew Houston	Research	DPIRD
Scott Evans	Research	DPIRD
Nick Blay	Management	DPIRD
Ryan Smith	Compliance	DPIRD
Sabine Daume	Lead auditor	bio.inspecta Pty Ltd
Klaas Hartmann	P1 expert	Contractor/ bio.inspecta Pty Ltd
Johanna Pierre	P2 expert	Contractor/ bio.inspecta Pty Ltd
Jo-anne McCrea	P3 expert	bio.inspecta Pty Ltd

### 9.2.3 Evaluation techniques

The stakeholder list was updated with assistance from the client and representatives. An allocated timeslot for meetings with stakeholders was provided for the site visit. In preparation for the site visit, the team requested personnel, with experience across the principles, make themselves available for questions from the assessment team.

The client and DPIRD submitted a checklist with links as well as references to relevant documents. Information continued to be collected during the site visit. Scoring was discussed by the assessment team during the site visit and the team agreed on a score (a consensus approach). Scoring was formally completed during the final preparation of the client draft report.

# 9.3 Peer Review reports

### **Peer Reviewer A**

Question	Ye s/ No	Peer Reviewer Justification (as given at initial Peer Review stage).	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)
Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	Generally speaking yes, but there are some occasions that need further consideration, these include: - Tuna as bait needs to be scored under 2.1.1 as primary main as it is at 5%. Likely needs a condition for this as well as the species is currently unknown. - ghost/lost gear needs to be considered and scored for several PIs within the alternative gears/unwanted catch and ETP sections in particular. - 2.4.2 habitats scoring needs further consideration based on that there was no mention of commonly accepted move-on rules provided for SG60 level.	<ul> <li>Information on the extent of tuna bait use (in UoA 2) was limited to fisher reports, which were converted to a relative frequency of bait usage. In 4.5% (6/133) of surveys, fishers reported using tuna as bait. This value was rounded up to 5% in the report cited. There is no volume or species composition information available. At the 4.5% level, the "main" threshold is not met. In addition, among this bait information, considering sand whiting (reported as unknown) would reduce the proportionate usage of tuna bait further.</li> <li>We have included additional text in several parts of the report on lost gear.</li> <li>At 2.4.2, move-on rules were not considered applicable, noting</li> <li>https://mscportal.force.com/interpret/s/article/Move-on-rules-at-SG60-for-PI2-4-2a-1527586956234. Habitat data shows that Estuary sea grass beds have expanded over time, with the macrophyte community now dominated by seagrass (rather than macroalgae). We have added rationale in the report relevant to move-on rules and habitat management approaches in place.</li> </ul>
Are the condition(s) raised appropriately written to achieve the SG80 outcome within the specified timeframe?	Yes	Some conditions need to be expanded to address ghost/lost gear. Whilst an additional new Condition is required for sea mullet under 1.2.1. and potentially one regarding tuna being used as bait.	<ul> <li>Please see the comment above regarding tuna bait use.</li> <li>Additional rationale has been added on lost gear for P2.</li> <li>New condition for sea mullet was not added, see response in PI 1.2.1</li> </ul>
Is the client action plan clear and sufficient to close the conditions raised? [Reference FCR v2.0, 7.11.2- 7.11.3 and sub- clauses]		Note: Include this row for assessments completed against FCR v1.3 and v2.0, but not for FCP v2.1/v2.2 (in which the client action plan is only prepared at the same time as the peer review). Delete this text from the cell for FCR v1.3/v2.0 reviews or delete the whole row if FCP v2.1/v2.2.	



Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from enhancement activities?			
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary). Add extra rows if needed below, including the codes in Columns A-C.	NA	There is no discussion or consideration of ghost/lost gear with regard to impact on unwanted target catch under several scoring tables.	This has been addressed in the P2 background and rationales for PI 2.1.2 and PI 2.2.2. It has not been given further consideration in PI 1.2.1 as justified in the response in PI comments sheet.

UoA stock	UoA gear	PI	PI Infor mati on	PI Scori ng	PI Condi tion	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Res- ponse Code
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	1.1.1	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	1.1.2	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	1.2.1	No (scori ng implic ations unkno wn)	Yes		There is no discussion or consideration of ghost/lost gear with regard to impact on unwanted target catch of crabs under scoring issue (f). Requirement for 1.2.1 stated under SA2.4.8 and SA2.4.8.1.	Ghost fishing has been addressed in P2 (in the P2 background and rationales for PI 2.1.2 and PI 2.2.2) and found to be likely to be a negligible impact. Regarding consideration in PI 1.2.1.f, the CAB's interpretation of the standard and guidance indicates that this is out of scope for this scoring issue. In particular ghost fishing is considered unobserved mortality (GSA3.1.8) and not unwanted catch (GSA3.1.6); sections SA2.4.8 and SA2.4.8.1 referred to by the reviewer and SA3.5.3 referred to therein, relate to unwanted catch. Hence it has been decided not to include additional discussion of ghost fishing in rationales for PI 1.2.1.f. Furthermore, if it was necessary to take ghost fishing into consideration, as it is likely to be negligible, the scoring of 1.2.1.f for UoA's 1,2,3 would not change nor would the need to score 1.2.1.f for UoA's 4 and 5.	Not accepted (no change)

Blue Swimmer crab	Drop net, Crab Pot, Scoop net	1.2.1		Yes	No	The Condition should address ghost/lost gear (if any) and its potential impact.Requirement for 1.2.1 stated under SA2.4.8 and SA2.4.8.1.	Due to the rationale presented above the CAB does not feel that ghost fishing needs to be part of the condition and consideration of ghost fishing by the client would not be necessary for achievement of a score of 80 for PI 1.2.1	Not accepted (no change)
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	1.2.2	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	1.2.3	Yes	No (chan ge to ration ale expec ted, not to scorin g)	Yes	Under scoring issue (c) it appears that the UoAs have been mistaking swapped around. Currently the scoring table suggests that the commercial fishery (UoA 1) does not have good information about all other fishery removals, whilst the recreational UoAs 2 & 3 do? The reviewer believes that the score should be UoA 1 is yes under SG80 while UoA 2 & 3 should be No under SG80.	Issue c relates to "vessels outside or not covered by the unit of assessment" (GSA2.6.1). Hence the lack of information regarding shore based recreational catches affects the commercial (UoA 1) score, not the rereational (UoA 2 and 3) score. Text has been added to the rationale to avoid confusion.	Accepted (no score change, change to rationale)
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	1.2.4	Yes	Yes	NA			NA (No response needed)



Sea Mullet	Gillnet, Haul net	1.1.1	Yes	Yes	NA			NA (No response needed)
Sea Mullet	Gillnet, Haul net	1.1.2	Yes	Yes	NA			NA (No response needed)
Sea Mullet	Gillnet, Haul net	1.2.1	No (scori ng implic ations unkno wn)	Yes		There is no discussion or consideration of ghost/lost gear with regard to impact on unwanted target catch under scoring issue (f). Furthermore, scoring issue (f) must be scored.	See response for PI 1.2.1 for UoA 1,2,3	Not accepted (no change)
Sea Mullet	Gillnet, Haul net	1.2.1		Yes	No	An additional Condition is required here similar to that of the wording in Condition 1, 2 and 3 for Blue swimmer crab, including the suggested addition of addressing ghost/lost gear.	See response for PI 1.2.1 for UoA 1,2,3	Not accepted (no change)
Sea Mullet	Gillnet, Haul net	1.2.2	Yes	Yes	NA			NA (No response needed)
Sea Mullet	Gillnet, Haul net	1.2.3	Yes	Yes	NA			NA (No response needed)



Sea Mullet	Gillnet, Haul net	1.2.4	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net	2.1.1	No (scori ng implic ations unkno wn)	Yes	NA	the species and origin of tuna being used as bait in unknown but represents 5%. Therefore, is likely to be Primary main species and needs to be assessed under 2.1.1. It is likely that a condition concerning identifying the species of tuna being used as bait would be appropriate.	Information on the extent of tuna bait use was limited to fisher reports, which were converted to a relative frequency of bait usage. In 4.5% (6/133) of surveys, fishers reported using tuna as bait. This value was rounded up to 5% in the source report cited. There is no volume or species composition information available. At the 4.5% level, the "main" threshold is not met. (This is now higlighted in the background section of the report). In addition, among this bait information, considering sand whiting (reported as unknown) would reduce the proportionate usage of tuna bait further.	Accepted (no score change, change to rationale)
Blue Swimmer crab	crab pot	2.1.1	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	scoop net	2.1.1	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net	2.1.2	No (scori ng implic ations unkno wn)	Yes	NA	No discussion or consideration given in scoring issue (e) to ghost/lost gear. Reviewer notes that the background section briefly mentions ghost/lost gear in its information concerning	Additional text has been added at 2.1.2 (a) and (e).	Accepted (no score change, additional evidence presented)

						the risk assessment that was conducted, but it is not mentioned in the scoring tables. This is stated under Box GSA7 including Section GSA 3.1.8, SA3.1.8, GSA3.15.		
Blue Swimmer crab	drop net	2.1.2	No (scori ng implic ations unkno wn)	Yes	NA	the species and origin of tuna being used as bait is unknown but represents 5%. Therefore, is likely to be Primary main species. Also if coming from the Indian Ocean then there are a number of issues to be aware of regarding stock status for some species as well as lack of harvest strategies and control rules. Therefore, tuna as bait does not meet SG80.	Information on the extent of tuna bait use was limited to fisher reports, which were converted to a relative frequency of bait usage. In 4.5% (6/133) of surveys, fishers reported using tuna as bait. This value was rounded up to 5% in the source report cited. There is no volume or species composition information available. At the 4.5% level, the "main" threshold is not met. In addition, among this bait information, considering sand whiting (reported as unknown) would reduce the proportionate usage of tuna bait further. Rationale added in the background section of the report highlights this issue now.	Accepted (no score change, change to rationale)
Blue Swimmer crab	crab pot	2.1.2	No (scori ng implic ations unkno wn)	Yes	NA	No discussion or consideration given in scoring issue (e) to ghost/lost gear. Reviewer notes that the background section briefly mentions ghost/lost gear in its information concerning the risk assessment that was conducted, but it is not mentioned in the scoring tables. This is stated under Box	Additional text has been added at 2.1.2 (a) and (e).	Accepted (no score change, additional evidence presented)

						GSA7 including Section GSA 3.1.8, SA3.1.8, GSA3.15.		
Blue Swimmer crab	scoop net	2.1.2	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net	2.1.3	No (scori ng implic ations unkno wn)	Yes	NA	Scoring issue (a) needs to include bait species, especially tuna which is 5%. Furthermore, under scoring issue (c) there does not appear to be any partial strategy in place for bait species used, with particular reference to tuna species which are unknown. Therefore SG80 not met for Bait.	Scoring issue (a) relates to main primary species. There were no main primary species aside from sea mullet in this UoA. (Tuna bait comprised 6/133 bait use events reported by surveyed fishers in December 2014, reported by Johnston et al. 2015. There was no information available on the amount (e.g. weight) of bait used).	Not accepted (no change)
Blue Swimmer crab	crab pot	2.1.3	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	scoop net	2.1.3	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net	2.2.1	Yes	Yes	NA			NA (No response needed)



Blue Swimmer crab	crab pot	2.2.1	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	scoop net	2.2.1	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net	2.2.2	No (scori ng implic ations unkno wn)	Yes	NA	Scoring issue (e) needs to be scored and to consider ghost/lost gear. This is stated under Box GSA7 including Section GSA 3.1.8, SA3.1.8, GSA3.15.	Additional text has been added at 2.2.2 (e).	Accepted (no score change, additional evidence presented)
Blue Swimmer crab	crab pot	2.2.2	No (scori ng implic ations unkno wn)	Yes	Yes	Scoring issue (e) needs to be scored and to consider ghost/lost gear. This is stated under Box GSA7 including Section GSA 3.1.8, SA3.1.8, GSA3.15.	Additional text has been added at 2.2.2 (e).	Accepted (no score change, additional evidence presented)
Blue Swimmer crab	scoop net	2.2.2	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net	2.2.3	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	crab pot	2.2.3	Yes	Yes	NA			NA (No response needed)



Blue Swimmer crab	scoop net	2.2.3	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net	2.3.1	No (scori ng implic ations unkno wn)	Yes	NA	No discussion or consideration given in scoring issue (c) to ghost/lost gear. Reviewer notes that the background section briefly mentions ghost/lost gear in its information concerning the risk assessment that was conducted, but it is not mentioned in the scoring tables. This is stated under Box GSA7 including Section GSA 3.1.8, SA3.1.8, GSA3.15.	Additional text has been added to scoring issue (b) and (c) to address this.	Accepted (no score change, additional evidence presented)
Blue Swimmer crab	crab pot	2.3.1	No (scori ng implic ations unkno wn)	Yes	NA	No discussion or consideration given in scoring issue (c) to ghost/lost gear. Reviewer notes that the background section briefly mentions ghost/lost gear in its information concerning the risk assessment that was conducted, but it is not mentioned in the scoring tables. This is stated under Box	Additional text has been added to scoring issue (b) and (c) to address this.	Accepted (no score change, additional evidence presented)


						GSA7 including Section GSA 3.1.8, SA3.1.8, GSA3.15.	
Blue Swimmer crab	scoop net	2.3.1	Yes	Yes	Yes		NA (No response needed)
Blue Swimmer crab	Drop net	2.3.2	Yes	Yes	NA		NA (No response needed)
Blue Swimmer crab	crab pot	2.3.2	Yes	Yes	NA		NA (No response needed)
Blue Swimmer crab	scoop net	2.3.2	Yes	Yes	Yes		NA (No response needed)
Blue Swimmer crab	Drop net	2.3.3	Yes	Yes	Yes		NA (No response needed)
Blue Swimmer crab	crab pot	2.3.3	Yes	Yes	NA		NA (No response needed)
Blue Swimmer crab	scoop net	2.3.3	Yes	Yes	NA		NA (No response needed)

Blue Swimmer crab	Drop net	2.4.1	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	crab pot	2.4.1	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	scoop net	2.4.1	Yes	Yes	NA			NA (No response needed)
Blue Swimmer crab	Drop net	2.4.2	No (mate rial score reduc tion expec ted to <60)	Yes	NA	Under SA3.14.2, and as stated under SA3.14.2.3, If VMEs are identified in the fishery and encountered, which is the case with this fishery, then in order for the fishery to satisfy SG 60, measures must include at least the following: 1) Requirements to comply with management measures to protect VMEs (e.g., designation of closed areas); and 2) Implementation by the fishery of precautionary measures to avoid encounters with VMEs, based on commonly accepted move-on rules.	While sea grass communities were identified as VMEs, move-on rules were not considered applicable (noting https://mscportal.force.com/interpret/s/article/Mo ve-on-rules-at-SG60-for-PI2-4-2a- 1527586956234). Habitat data shows that Estuary sea grass beds have expanded over time, with the macrophyte community now dominated by seagrass (rather than macroalgae). We have added rationale in the report relevant to the appropriateness of move-on rules in this fishery. We also highlight other management measures that are expected to limit habitat (including VME) impacts.	Accepted (no score change, additional evidence presented)

						SG80, the move-on rules must be scientifically based, gear and habitat specific, or local area closures to avoid VMEs. The fishery assessment meets (1) but there are no clear or defined commonly accepted move-on rules presented in scoring tables, therefore it is not clear how SG60 is met.		
Blue Swimmer crab	crab pot	2.4.2	No (mate rial score reduc tion expec ted to <60)	Yes	NA	Under SA3.14.2, and as stated under SA3.14.2.3, If VMEs are identified in the fishery and encountered, which is the case with this fishery, then in order for the fishery to satisfy SG 60, measures must include at least the following: 1) Requirements to comply with management measures to protect VMEs (e.g., designation of closed areas); and 2) Implementation by the fishery of precautionary measures to avoid encounters with VMEs, based on commonly accepted move-on rules.	While sea grass communities were identified as VMEs, move-on rules were not considered applicable (noting https://mscportal.force.com/interpret/s/article/Mo ve-on-rules-at-SG60-for-PI2-4-2a- 1527586956234). Habitat data shows that Estuary sea grass beds have expanded over time, with the macrophyte community now dominated by seagrass (rather than macroalgae). We have added rationale in the report relevant to the appropriateness of move-on rules in this fishery. We also highlight other management measures that are expected to limit habitat (including VME) impacts.	Accepted (no score change, additional evidence presented)

						Under SA3.14.2.2, for the fishery to meet SG80, the move-on rules must be scientifically based, gear and habitat specific, or local area closures to avoid VMEs.		
						The fishery assessment meets (1) but there are no clear or defined commonly accepted move-on rules presented in scoring tables, therefore it is not clear how SG60 is met.		
Blue Swimmer crab	scoop net	2.4.2	No (mate rial score reduc tion expec ted to <60)	Yes	NA	Under SA3.14.2, and as stated under SA3.14.2.3, If VMEs are identified in the fishery and encountered, which is the case with this fishery, then in order for the fishery to satisfy SG 60, measures must include at least the following: 1) Requirements to comply with management measures to protect VMEs (e.g., designation of closed areas); and 2) Implementation by the fishery of precautionary measures to avoid encounters with	While sea grass communities were identified as VMEs, move-on rules were not considered applicable (noting https://mscportal.force.com/interpret/s/article/Mo ve-on-rules-at-SG60-for-PI2-4-2a- 1527586956234). Habitat data shows that Estuary sea grass beds have expanded over time, with the macrophyte community now dominated by seagrass (rather than macroalgae). We have added rationale in the report relevant to the appropriateness of move-on rules in this fishery. We also highlight other management measures that are expected to limit habitat (including VME) impacts. Habitat impacts of this UoA were investigated following a condition being raised during the first certification period (Morison et al. 2016, now cited in the text for the scoring rationale).	Accepted (no score change, additional evidence presented)

î						V/MEa based an	
						VMES, Daseu OII	
						commonly accepted	
						move-on rules.	
						Under SA3.14.2.2, for	
						the fishery to meet	
						SG80 the move-on	
						rules must be	
						acientifically based goar	
						scientifically based, gear	
						and nabitat specific, or	
						local area closures to	
						avoid VMEs.	
						The fichery according	
						mosts (1) but there are	
						meets (1) but there are	
						no clear or defined	
						commonly accepted	
						move-on rules	
						presented in scoring	
						tables, therefore it is not	
						clear how SG60 is met.	
Blue	Drop net	2.4.3	Yes	Yes	Yes		NA (No
Swimmer							response
crab							needed)
ciub							needed)
Dive		242	V	N	NLA		
Biue	crab pot	2.4.3	res	res	NA		INA (INO
Swimmer							response
crab							needed)
-							
Blue	scoop net	2.4.3	Yes	Yes	NA		NA (No
Swimmer							response
crab							needed)
Blue	Drop net	2.5.1	Yes	Yes	NA		NA (No
Swimmer							response
crab							needed)



Blue Swimmer crab	crab pot	2.5.1	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	scoop net	2.5.1	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	Drop net	2.5.2	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	crab pot	2.5.2	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	scoop net	2.5.2	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	Drop net	2.5.3	Yes	Yes	Yes	NA (No response needed)
Blue Swimmer crab	crab pot	2.5.3	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	scoop net	2.5.3	Yes	Yes	NA	NA (No response needed)
Sea Mullet	Haul net	2.1.1	Yes	Yes	NA	NA (No response needed)

Sea Mullet	Gillnet	2.1.1	Yes	Yes	NA			NA (No response needed)
Sea Mullet	Haul net	2.1.2	No (scori ng implic ations unkno wn)	Yes	NA	scoring issue (e) needs to be scored and to consider ghost/lost gear. This is stated under Box GSA7 including Section GSA 3.1.8, SA3.1.8, GSA3.15.	We have added additional rationale at (e).	Accepted (no score change, additional evidence presented)
Sea Mullet	Gillnet	2.1.2	No (scori ng implic ations unkno wn)	Yes	NA	scoring issue (e) needs to be scored and to consider ghost/lost gear. This is stated under Box GSA7 including Section GSA 3.1.8, SA3.1.8, GSA3.15.	We have added additional rationale at (e).	Accepted (no score change, additional evidence presented)
Sea Mullet	Haul net	2.1.3	Yes	Yes	NA			NA (No response needed)
Sea Mullet	Gillnet	2.1.3	Yes	Yes	NA			NA (No response needed)
Sea Mullet	Haul net	2.2.1	Yes	Yes	Yes			NA (No response needed)
Sea Mullet	Gillnet	2.2.1	Yes	Yes	Yes			NA (No response needed)



						GSA 3.1.8, SA3.1.8, GSA3.15.		
Sea Mullet	Gillnet	2.3.1	No (scori ng implic ations unkno wn)	Yes	NA	No discussion or consideration given in scoring issue (c) to ghost/lost gear. Reviewer notes that the background section briefly mentions ghost/lost gear in its information concerning the risk assessment that was conducted, but it is not mentioned in the scoring tables. This is stated under Box GSA7 including Section GSA 3.1.8, SA3.1.8, GSA3.15.	Additional rationale has been added at (b) and (c).	Accepted (no score change, additional evidence presented)
Sea Mullet	Haul net	2.3.2	Yes	Yes	NA			NA (No response needed)
Sea Mullet	Gillnet	2.3.2	Yes	Yes	NA			NA (No response needed)
Sea Mullet	Haul net	2.3.3	Yes	Yes	NA			NA (No response needed)



Sea Mullet	Gillnet	2.3.3	Yes	Yes	Yes		NA (No response needed)
Sea Mullet	Haul net	2.4.1	Yes	Yes	NA		NA (No response needed)
Sea Mullet	Gillnet	2.4.1	Yes	Yes	NA		NA (No response needed)

Mullet			(mate rial score reduc tion expec ted to <60)			stated under SA3.14.2.3, If VMEs are identified in the fishery and encountered, which is the case with this fishery, then in order for the fishery to satisfy SG 60, measures must include at least the following: 1) Requirements to comply with management measures to protect VMEs (e.g., designation of closed areas); and 2) Implementation by the fishery of precautionary measures to avoid encounters with VMEs, based on commonly accepted move-on rules. Under SA3.14.2.2, for the fishery to meet SG80, the move-on rules must be scientifically based, gear and habitat specific, or local area closures to avoid VMEs. The fishery assessment meets (1) but there are no clear or defined commonly accepted move-on rules presented in scoring tables, therefore it is not clear how SG60 is met.	VMEs, move-on rules were not considered applicable (noting https://mscportal.force.com/interpret/s/article/M ove-on-rules-at-SG60-for-PI2-4-2a- 1527586956234). Habitat data shows that Estuary sea grass beds have expanded over time, with the macrophyte community now dominated by seagrass (rather than macroalgae). We have added rationale in the report relevant to the appropriateness of move-on rules in this fishery. We also highlight other management measures that are expected to limit habitat (including VME) impacts.	(no score change, additional evidence presented )
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Mullet		2.7.2	(mate rial score reduc tion expec ted to <60)			stated under SA3.14.2.3, If VMEs are identified in the fishery and encountered, which is the case with this fishery, then in order for the fishery to satisfy SG 60, measures must include at least the following: 1) Requirements to comply with management measures to protect VMEs (e.g., designation of closed areas); and 2) Implementation by the fishery of precautionary measures to avoid encounters with VMEs, based on commonly accepted move-on rules. Under SA3.14.2.2, for the fishery to meet SG80, the move-on rules must be scientifically based, gear and habitat specific, or local area closures to avoid VMEs. The fishery assessment meets (1) but there are no clear or defined commonly accepted move-on rules presented in scoring tables, therefore it is not clear how SG60 is met.	VMEs, move-on rules were not considered applicable (noting https://mscportal.force.com/interpret/s/article/M ove-on-rules-at-SG60-for-PI2-4-2a- 1527586956234). Habitat data shows that Estuary sea grass beds have expanded over time, with the macrophyte community now dominated by seagrass (rather than macroalgae). We have added rationale in the report relevant to the appropriateness of move-on rules in this fishery. We also highlight other management measures that are expected to limit habitat (including VME) impacts.	(no score change, additional evidence presented )
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Sea Mullet	Haul net	2.4.3	Yes	Yes	NA	NA (No response needed)
Sea Mullet	Gillnet	2.4.3	Yes	Yes	NA	NA (No response needed)
Sea Mullet	Haul net	2.5.1	Yes	Yes	NA	NA (No response needed)
Sea Mullet	Gillnet	2.5.1	Yes	Yes	NA	NA (No response needed)
Sea Mullet	Haul net	2.5.2	Yes	Yes	NA	NA (No response needed)
Sea Mullet	Gillnet	2.5.2	Yes	Yes	NA	NA (No response needed)
Sea Mullet	Haul net	2.5.3	Yes	Yes	NA	NA (No response needed)
Sea Mullet	Gillnet	2.5.3	Yes	Yes	Yes	NA (No response needed)
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	3.1.1	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	3.1.2	Yes	Yes	NA	NA (No response needed)



Blue Swimmer crab	Drop net, Crab Pot, Scoop net	3.1.3	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	3.2.1	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	3.2.2	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	crab pot	3.2.3	Yes	Yes	NA	NA (No response needed)
Blue Swimmer crab	drop net, scoop net	3.2.3	Yes	Yes	Yes	NA (No response needed)
Blue Swimmer crab	Drop net, Crab Pot, Scoop net	3.2.4	Yes	Yes	NA	NA (No response needed)
Sea Mullet	haul net, gillnet	3.1.1	Yes	Yes	NA	NA (No response needed)
Sea Mullet	haul net, gillnet	3.1.2	Yes	Yes	NA	NA (No response needed)
Sea Mullet	haul net, gillnet	3.1.3	Yes	Yes	NA	NA (No response needed)
Sea Mullet	haul net, gillnet	3.2.1	Yes	Yes	NA	NA (No response needed)



Sea Mullet	haul net, gillnet	3.2.2	Yes	Yes	NA		NA (No response needed)
Sea Mullet	haul net, gillnet	3.2.3	Yes	Yes	NA		NA (No response needed)
Sea Mullet	haul net, gillnet	3.2.4	Yes	Yes	NA		NA (No response needed)

#### Peer reviewer B

Question	Yes / No	Peer Reviewer Justification (as given at initial Peer Review stage). Peer Reviewers should provide brief explanations for their 'Yes' or 'No' answers in this table, summarising the detailed comments made in the PI and RBF tables.	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)
Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	Largely I was satisfied that the scoring approach and the supporting rationale was evidence based and consistent with the MSC standard, though I found a couple of procedural choices hard to follow (see below). I found a few cases where a SI was clearly scored incorrectly - didn't match the rationale. Some other cases where I didn't agree with the scoring were differences of opinion in the face of limited data. There were several SGS where I agreed with the scores but I thought the rationales just were not strong enough, or could be made clearer for the reader.	Noted, see specific PI responses.
Are the condition(s) raised appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCP v2.2, 7.18.1 and sub-clauses]	Yes	The conditions seem well considered to me.	Thank you. No response needed
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary). Add extra rows if needed below, including the codes in Columns A-C.	NA	In P2 there are two procedural choices I think I probably agree with BUT I found it difficult to follow the authors reasoning. Missing table numbers didn't help. Firstly, I had to dig deep to understand the choice not to use the Risk Based Framework, even though some 30 species were data deficient. In fact the information to support this choice is set out in Table 22 on page 87. Almost all of these are minor secondary species. This means the data deficiency only affects one Scoring Goalpost in a small way (one scoring issue) therefore the use of the RBF is not warranted. This could easily be resolved by adding a sentence to this effect to the background on secondary species and referring to table 22 from the section on secondary species on page 75. The second choice was a change to a different set of habitat elements to	The table cross- references have now been refreshed. The textual clarifications have been added through the report as suggested.



		the previous assessment. I think this was because the new habitats are identified in a more recent risk assessment that has more up to date and detailed evidence, though I didn't obtain the report to check? Again, a clarifying sentence in the habitats section on page 85 with a reference to table 22 would help the reader here. See also cumulative impacts below	
General comment on cumulative impacts	NA	Re cumulative impacts. Principle 2 Page 89 states 'did not require evaluation of cumulative impacts [even though there are other swimmer crab fisheries]. I would like to see a brief statement for this choice <u>at this point of the</u> <u>document</u> . There does seem to be sufficient justification for this choice, e.g. temperate vs. other stocks elsewhere in the document, but it would help the reader if they didn't have to dig through the whole document to find it.	Text added as suggested.
General Comments on the Peer Review Draft Report	NA	The draft requires more work on editing and compiling the different sections for the final version of the report. My concerns include missing headings and mismatched page numbers in the table of contents, missing table/figure numbers and what seems to be cut and paste errors from deep-water fishery assessments. Further information is given for each principle section below.	The table of contents has been updated and sections renumbered and re- organised to ensure consistency. Other formatting / editing issues have been addressed as per comments on the individual principle sections below.
General Comment	NA	Presentation P1. The Principle indicator scores and rationales are presented in the order of swimmer crabs followed by sea mullet. This does not match the order of headings in the document or the table of contents, which has a different order again. This could be corrected by inserting a heading for Sea Mullet into the table of contents and repaginating.	Headings have been adjusted as suggested; the table of contents has been updated to match.
General Comment	NA	Presentation P2. Unlike the other sections, this section uses a combination of reference styles including method references at the end of the section and footnotes that lead to further details. Some citations read as 'see references below'. I was confused as to whether below was in the footnote or at the end of the section. In	Thank you for highlighting this. Text has been updated as per review comments, in the PI rationale sections.



		some cases this just made the document hard to read. In other places I thought rationales just were not strong enough without specific citations to support key arguments. I have made specific suggestions in the PI comments.	
General Comment	NA	P2 specific comment. Page 77. Table 113. Catch items in commercial traps: What are the units? Number of individuals? Kg?	The unit is number of catch items counted. A clarifying adition has been made.
General Comment	NA	Presentation P3. Presentation. Abbreviation WCDSCMF is first used on page 279. Not spelled out anywhere, not in glossary. Looks like this is a cut and paste error from a different assessment? West Coast Seep Sea Crab Managed Fishery?. See also pages 281 and 285. Similarly on page 279 under Strategic Planning and Risk Assessments there is reference to the Offshore Crustacean Resource, whereas swimmer crabs are inshore. Is this is a cut and paste error?	These errors have been corrected in all locations.

UoA stock	UoA gear	PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Blue swimmer crab	crab pots, drop nets, scoop nets	1.1.1	Yes	No (scoring implications unknown)	NA	SI.a. level 100 requires 95% confidence in the primary species stock status. Language is somewhat mismatched to concerns in the rationale: lack of reference points in undersize indices, CPUE not corrected for spatial shifts, insufficient spatial resolution of effort data. This could be reconciled by a stronger supporting statement, something like, 'despite some concerns, long term stability in the CPUE provides a high level of confidence - Alternatively, the score could be reducedSI.b. agree	A minor adjustment has been made as suggested by the reviewer. In the CAB's assessment the available information provides the high degree of certainty required for SG100 and the issues identified by the reviewer regarding opportunities for improving the assessment process are considered under other relevant PIs.	Accepted (no score change, change to rationale)
Blue swimmer crab	crab pots, drop nets, scoop nets	1.1.2	NA (PI not scored)	Yes	NA	Agree but - This PI for stock rebuilding is not scored because the stock is not depleted. I think sentence to this effect would help the reader, rather than simply state NA.	Suggested statement added	Accepted (no score change, change to rationale)

Blue swimmer crab	crab pots, drop nets, scoop nets	1.2.1	Yes	Yes	Yes	SI.a. Agree but - The following phrase could be made clearer: 'The above demonstrates that the harvest strategy has numerous elements that work together'. The term 'numerous' is a little overstated and it is not clear what 'above' refers to. This could be better stated as 'The key elements of the harvest strategy, including HCRs, limited entry, technical measures, handling practices and size limits work together to make the strategy responsive to the state of the stock' or similar.	Agree and changed as suggested	Accepted (no score change, change to rationale)
Blue swimmer crab	crab pots, drop nets, scoop nets	1.2.2	Yes	Yes	NA	SI.a. agree but there is a minor grammatical error on page 41. Change <u>'main</u> the stock at a target level'to <u>'maintain</u> the stock at a target level'. SI.b. agreeSI.c. agree	Typo fixed.	Accepted (no score change, change to rationale)
Blue swimmer crab	crab pots, drop nets, scoop nets	1.2.3	Yes	Yes	Yes			NA (No response needed)
Blue swimmer crab	crab pots, drop nets, scoop nets	1.2.4	Yes	Yes	NA			NA (No response needed)

Sea mullet	haul nets, gill nets	1.1.1	Yes	Yes	NA			NA (No response needed)
Sea mullet	haul nets, gill nets	1.1.2	NA (PI not scored)	Yes	NA	see 1.1.2 for blue swimmer crab above	Suggested statement added	Accepted (no score change, change to rationale)
Sea mullet	haul nets, gill nets	1.2.1	Yes	Yes	Yes			NA (No response needed)
Sea mullet	haul nets, gill nets	1.2.2	Yes	Yes	NA			NA (No response needed)
Sea mullet	haul nets, gill nets	1.2.3	Yes	Yes	NA			NA (No response needed)
Sea mullet	haul nets, gill nets	1.2.4	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	crab pots	2.1.1	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	drop nets	2.1.1	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	scoop nets	2.1.1	Yes	Yes	NA			NA (No response needed)
Sea mullet	haul nets	2.1.1	Yes	Yes	NA			NA (No response needed)
Sea mullet	gill nets	2.1.1	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	crab pots	2.1.2	Yes	No (change to rationale expected, not to scoring)	NA	I find the citation 'see references' is vague. Adding a specific citation here would provide a much stronger rationale.	Noted thank you, and citation added.	Accepted (no score change, change to rationale)



Blue swimmer crab	drop nets	2.1.2	Yes	No (change to rationale expected, not to scoring)	NA	see 2.1.2.for crab pots. Citation needed	Noted thank you, and citation added.	Accepted (no score change, change to rationale)
Blue swimmer crab	scoop nets	2.1.2	Yes	No (change to rationale expected, not to scoring)	NA	Better to cite the specific reference for the blue swimmer crab harvest strategy in the first sentence of the last Paragraph. Is this DPIRD 2020?.	Noted thank you, and citation added.	Accepted (no score change, change to rationale)
Sea mullet	haul nets	2.1.2	Yes	Yes	NA	see 2.1.2.for crab pots. Citation needed	Noted thank you, and citation added.	Accepted (no score change, change to rationale)
Sea mullet	gill nets	2.1.2	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	crab pots	2.1.3	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	drop nets	2.1.3	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	scoop nets	2.1.3	Yes	Yes	NA			NA (No response needed)
Sea mullet	haul nets	2.1.3	Yes	Yes	NA			NA (No response needed)
Sea mullet	gill nets	2.1.3	Yes	Yes	NA			NA (No response needed)

Blue swimmer crab	crab pots	2.2.1	Yes	No (change to rationale expected, not to scoring)	NA	SI. B. The stock status of the minor species is unknown but unlikely to hinder recovery. As it stands the rationale does not contain enough detail to demonstrate this uncertainty has been dealt with sufficient precaution for this UoA. The authors have dealt with this better for UoAs 4 haul nets and 5 gillnets by giving examples. I would like to see similar treatment here, though the examples chosen may differ do to species/gear overlap.	Noted, thank you, and additional text added to include specifics.	Accepted (no score change, additional evidence presented)
Blue swimmer crab	drop nets	2.2.1	Yes	No (change to rationale expected, not to scoring)	NA	see 2.2.1 for crab pots	Noted, thank you, and additional text added to include specifics.	Accepted (no score change, additional evidence presented)
Blue swimmer crab	scoop nets	2.2.1	Yes	No (change to rationale expected, not to scoring)	NA	see 2.2.1 for crab pots	Noted, thank you, and additional text added to include specifics.	Accepted (no score change, additional evidence presented)



Sea mullet	haul nets	2.2.1	Yes	Yes	Yes	Here I am satisfied with the rationale for SI. B. because specific examples are given.	Noted, thank you.	NA (No response needed)
Sea mullet	gill nets	2.2.1	Yes	Yes	Yes	Here I am satisfied with the rationale for SI. B. because suitable examples are given.	Noted, thank you.	NA (No response needed)
Blue swimmer crab	crab pots	2.2.2	Yes	Yes	Yes			NA (No response needed)
Blue swimmer crab	drop nets	2.2.2	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	scoop nets	2.2.2	Yes	Yes	NA			NA (No response needed)
Sea mullet	haul nets	2.2.2	Yes	Yes	Yes			NA (No response needed)
Sea mullet	gill nets	2.2.2	Yes	Yes	Yes			NA (No response needed)
Blue swimmer crab	crab pots	2.2.3	Yes	Yes	NA			NA (No response needed)

			1					
Blue swimmer crab	drop nets	2.2.3	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	scoop nets	2.2.3	Yes	Yes	NA			NA (No response needed)
Sea mullet	haul nets	2.2.3	Yes	Yes	Yes			NA (No response needed)
Sea mullet	gill nets	2.2.3	Yes	Yes	Yes			NA (No response needed)
Blue swimmer crab	crab pots	2.3.1	Yes	No (non- material score reduction expected)	NA	SI. A. agree. SI b. don't agree because although there have historically been independent observations of ETP species, there have not been any since 2018 so I don't have a have a high degree of confidence. SI. C. agree.	The team agrees with the substance of this point. At the site visit, monitoring for this UoA was reported to have been undertaken into 2019. The team has added that to the rationale for this PI and maintained the scoring. However, the point is noted and where information is older (back to 2017/18 for haul and gill nets) the suggested scoring change is adopted (see 2.3.1 lines 48 and 49 below).	Accepted (no score change, additional evidence presented)
Blue swimmer crab	drop nets	2.3.1	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	scoop nets	2.3.1	Yes	Yes	Yes			NA (No response needed)

Sea mullet	haul nets	2.3.1	Yes	No (non- material score reduction expected)	NA	SI. A. agree. SI. B. don't agree. Although there is a requirement to report TPE interactions, compliance has not been checked for three years. In my experience, reporting has not met expectations without monitoring, though this is a matter of opinion.	The team agrees with the substance of this point, and has made the change suggested.	Accepted (non- material score reduction)
Sea mullet	gill nets	2.3.1	Yes	No (non- material score reduction expected)	NA	as for sea mullet haul nets	The team agrees with the substance of this point, and has made the change suggested.	Accepted (non- material score reduction)
Blue swimmer crab	crab pots	2.3.2	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	drop nets	2.3.2	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	scoop nets	2.3.2	Yes	Yes	Yes			NA (No response needed)
Sea mullet	haul nets	2.3.2	Yes	Yes	NA			NA (No response needed)
Sea mullet	gill nets	2.3.2	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	crab pots	2.3.3	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	drop nets	2.3.3	Yes	Yes	Yes			NA (No response needed)

Blue	scoop nets	2.3.3	Yes	Yes	NA			NA (No response
crab								needed)
Sea mullet	haul nets	2.3.3	Yes	Yes	NA			NA (No response needed)
Sea mullet	gill nets	2.3.3	Yes	Yes	Yes			NA (No response needed)
Blue swimmer crab	crab pots	2.4.1	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	drop nets	2.4.1	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	scoop nets	2.4.1	Yes	Yes	NA			NA (No response needed)
Sea mullet	haul nets	2.4.1	Yes	Yes	NA			NA (No response needed)
Sea mullet	gill nets	2.4.1	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	crab pots	2.4.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	SI. A. Agree. SI. B. research indicates broader changes to the ecosystem are driven by salinity and nitrogen changes. Is this testing specific to the habitats in this report or just estuaries in general?. Can we add a specific example? or citation here? Alternatively reduce the score. Compare with 2.4.2 for scoop nets.	Additional rationale added and the specific citation highlighted.	Accepted (no score change, additional evidence presented)



Blue swimmer crab	drop nets	2.4.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	see 2.4.2 for crab pots	Additional rationale added and the specific citation highlighted.	Accepted (no score change, additional evidence presented)
Blue swimmer crab	scoop nets	2.4.2	Yes	Yes	NA	SI b. agree in this case because an example is given of specific testing for chlorophyta in the area where the scoop nets are used.	Noted, thank you.	NA (No response needed)
Sea mullet	haul nets	2.4.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	see 2.4.2 for crab pots	Additional rationale added and the specific citation highlighted.	Accepted (no score change, additional evidence presented)
Sea mullet	gill nets	2.4.2	No (scoring implications unknown)	No (scoring implications unknown)	NA	see 2.4.2 for crab pots	Additional rationale added and the specific citation highlighted.	Accepted (no score change, additional evidence presented)
Blue swimmer crab	crab pots	2.4.3	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	drop nets	2.4.3	Yes	Yes	Yes			NA (No response needed)

Blue swimmer crab	scoop nets	2.4.3	Yes	Yes	NA		NA (No response needed)
Sea mullet	haul nets	2.4.3	Yes	Yes	NA		NA (No response needed)
Sea mullet	gill nets	2.4.3	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	crab pots	2.5.1	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	drop nets	2.5.1	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	scoop nets	2.5.1	Yes	Yes	NA		NA (No response needed)
Sea mullet	haul nets	2.5.1	Yes	Yes	NA		NA (No response needed)
Sea mullet	gill nets	2.5.1	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	crab pots	2.5.2	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	drop nets	2.5.2	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	scoop nets	2.5.2	Yes	Yes	NA		NA (No response needed)
Sea mullet	haul nets	2.5.2	Yes	Yes	NA		NA (No response needed)
Sea mullet	gill nets	2.5.2	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	crab pots	2.5.3	Yes	Yes	NA		NA (No response needed)

Blue swimmer crab	drop nets	2.5.3	Yes	Yes	Yes			NA (No response needed)
Blue swimmer crab	scoop nets	2.5.3	Yes	Yes	NA			NA (No response needed)
Sea mullet	haul nets	2.5.3	Yes	Yes	NA			NA (No response needed)
Sea mullet	gill nets	2.5.3	Yes	Yes	Yes			NA (No response needed)
Blue swimmer crab	crab pots	3.1.1	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	drop nets	3.1.1	Yes	No (non- material score reduction expected)	NA	S.I. b. Rationale states clearly that mechanisms have not been used and tested in relation to rec fishing disputes, SG 100 is not met. This is a contradiction and needs to be changed.		Accepted (non- material score reduction)
Blue swimmer crab	scoop nets	3.1.1	Yes	No (non- material score reduction expected)	NA	see PI 3.1.1. for drop nets		Accepted (non- material score reduction)
Sea mullet	haul nets	3.1.1	Yes	Yes	NA			NA (No response needed)
Sea mullet	gill nets	3.1.1	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	crab pots	3.1.2	Yes	No (change to rationale expected, not to scoring)	NA	Minor grammatical error on bottom of page 295: change 'implemented to its fully extend' to 'implemented to its full extent'	Corrected	NA (No response needed)

Blue swimmer crab	drop nets	3.1.2	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	scoop nets	3.1.2	Yes	Yes	NA		NA (No response needed)
Sea mullet	haul nets	3.1.2	Yes	Yes	NA		NA (No response needed)
Sea mullet	gill nets	3.1.2	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	crab pots	3.1.3	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	drop nets	3.1.3	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	scoop nets	3.1.2	Yes	Yes	NA		NA (No response needed)
Sea mullet	haul nets	3.1.2	Yes	Yes	NA		NA (No response needed)
Sea mullet	gill nets	3.1.2	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	crab pots	3.1.3	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	drop nets	3.1.3	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	scoop nets	3.1.2	Yes	Yes	NA		NA (No response needed)
Sea mullet	haul nets	3.1.2	Yes	Yes	NA		NA (No response needed)
Sea mullet	gill nets	3.1.2	Yes	Yes	NA		NA (No response needed)



gill nets

crab pots

3.2.2 Yes

3.2.3 Yes

Yes

Yes

NA

NA

mullet

mullet

swimmer

Sea

Blue

crab

needed)

needed)

needed)

NA (No response

NA (No response

Blue swimmer crab	drop nets (rec)	3.2.3	Yes	No (material score reduction expected to <80)	Yes	SI.a. agree. SI. b. Don't agree that the sanctions provide an effective deterrent because the number of rec crabbing offences has increased in the last 5 years. see table 29 and dot points on page 330. Expect this si. score to be reduced to 60. SI. c. agree. SI.d. agree. With or without a change to scoring of si. b. the overall scoring for this guidepost remains in the 60 - 80 range NOT>= 80 as stated on page 334. In other words a condition is needed as noted. Condition 23 is appropriate as it is presented.	SI b. has been reduced to 60 and rationale amended accordingly. Scoring range has been amended.	Accepted (material score reduction to <80)
Blue swimmer crab	scoop nets (rec)	3.2.3	Yes	No (material score reduction expected to <80)	Yes	see 3.2.3 for rec drop nets	SI b. has been reduced to 60 and rationale amended accordingly. Scoring range has been amended.	Accepted (material score reduction to <80)
Sea mullet	haul nets	3.2.3	Yes	Yes	NA			NA (No response needed)
Sea mullet	gill nets	3.2.3	Yes	Yes	NA			NA (No response needed)
Blue swimmer crab	crab pots	3.2.4	Yes	Yes	NA			NA (No response needed)



Blue swimmer crab	drop nets	3.2.4	Yes	Yes	NA		NA (No response needed)
Blue swimmer crab	scoop nets	3.2.4	Yes	Yes	NA		NA (No response needed)
Sea mullet	haul nets	3.2.4	Yes	Yes	NA		NA (No response needed)
Sea mullet	gill nets	3.2.4	Yes	Yes	NA		NA (No response needed)



# 9.4 Stakeholder input

No stakeholder responses or requests for a meeting were received at any stage during the process so far (ACDR and Site visit).

## 9.5 Conditions

## 9.5.1 Summary of conditions closed under previous certificate

Nine conditions were raised during the original assessment of the fishery (see Table 30 above). All the conditions are closed

## 9.5.2 Conditions

Table 34 – Condition	1,2,3
Performance Indicator	1.2.1, blue swimmer crab - UoA 1,2,3
Score	75
Justification	One scoring issue (f) was not met at the 80 level. This requires "There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.". The rationale for scoring SG80 follows. The implemented measures are likely to have considerably reduced mortality of unwanted catch. However, whether this is in fact negligible remains unclear. Discard rates are not well quantified in either sector and post-release mortality rates including potential changes through time have not been studied.
	Due to a lack of regular reviews, SG80 is not met.
Condition	By the third surveillance audit ensure that a regular review is conducted of alternative measures to reduce mortality of unwanted catch of <b>blue swimmer crab</b> and any identified measures are implemented.
Condition deadline	Year 3
Exceptional circumstances	NA
	Year 1: Develop a plan for conducting a review including the range of alternative measures that will be considered. The plan should articulate how the measures will be evaluated in their effectiveness and practicality and who will be involved in the review process. Resulting score: <b>75</b>
Milestones	Year 2: Conduct the first review and develop a plan for implementing any identified measures. Resulting score: <b>75</b>
	Year 3: Provide evidence of implemented measures and demonstrate how and when the next review will be conducted.


	Resulting score: 85 (90 if review is conducted biennially)	
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>	
Complete the following rows for reassessments.		
Carried over condition $\Box$	NA	
Related condition ⊠	A condition was raised in the original assessment for this PI but on a different scoring issue which was satisfactorily closed in Year 3. The condition here relates to the new scoring issue f which was not previously assessed.	
Condition rewritten	NA	

Table 35 – Condition 4,5,6	
Performance Indicator	1.2.3, blue swimmer crab UoA 1,2,3
Score	75
Justification	One scoring issue (b for UoA 1 and c for UoA's 2 and 3) was not met at the 80 level. In both cases this relates to the availability of recreational catch data, specifically the shore based recreational catch which has not been estimated since 2007/08.
Condition	By the third surveillance audit obtain catch estimates for all components of <b>commercial and recreational blue swimmer fisheries</b> and demonstrate how this data will be collected on a regular basis sufficient to meet the requirements of the harvest strategy.
Condition deadline	Year 3
Exceptional circumstances	NA
Milestones	<ul> <li>Year 1: Provide a detailed plan of the methods that will be used to obtain catch estimates for all components of both sectors. Resulting score: 75</li> <li>Year 2: Provide evidence that the work planned in year 1 has been undertaken. Resulting score: 75</li> <li>Year 3: Provide detailed catch estimates and a plan for obtaining future catch estimates and demonstrate how this fulfils the requirements of the harvest strategy. Resulting score: 80</li> </ul>
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>

Complete the following rows for reassessments.	
Carried over condition $\Box$	NA
Related condition $\Box$	NA
Condition rewritten	NA

Table 36– Condition 7,8	
Performance Indicator	1.2.1, Sea Mullet UoA 4 and UoA 5
Score	70
Justification	One scoring issue (b) was not met at the 80 level. This requires "The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.". The rationale for this scoring follows. Elements of the harvest strategy have been in place for an extended period, including the previous harvest strategy (DoF 2015b). A prolonged period of stability in this fishery provides evidence that the elements that have been in place have worked. The new harvest strategy (DPIRD 2020e) changes the HCR to use more comprehensive biomass estimates on a much less frequent basis (5 yearly). This change has not been tested and as it has only just been implemented there is no evidence available that it will work. Furthermore, the loosely defined process for reducing catches has not been triggered and consequently requires evaluation to ensure that if triggered it will be effective and be able to maintain the fishery at target levels. Consequently, the requirements of SG80 are not met.
Condition	By the 3rd annual surveillance audit provide evidence that the harvest strategy for <b>sea mullet</b> is meeting its objectives.
Condition deadline	Year 3
Exceptional circumstances	ΝΑ
Milestones	<ul> <li>Year 1</li> <li>Provide a plan that evidence will be collected and examined to demonstrate that the harvest strategy is meeting its objectives. If additional information needs to be collected demonstrate that this data collection has commenced. Resulting score: 70</li> <li>Year 2</li> <li>Provide an assessment of the evidence identified in Year 1. Determine whether this is still likely to satisfactorily close the condition in Year 3 or if additional data collection is necessary. Resulting score: 70</li> </ul>

meets SG80.

NA

Related condition

Condition rewritten

 $\boxtimes$ 

П

	Year 3 Provide a comprehensive assessment of all evidence to demonstrate that the harvest strategy is meeting its objectives. Resulting score: <b>85</b>	
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>	
Complete the following rows for reassessments.		
Carried over condition $\Box$	NA	
	A condition was raised against the same PI and scoring issue in the initial	

assessment due to the implementation of a new harvest strategy (2015-2020) at the time of the initial assessment. This condition was closed out in

demonstrating that the harvest strategy was achieving its objectives. At the

time of this re-assessment a new harvest strategy (2020-2025) has been put in place that includes a number of substantial changes including a revision of the HCR to rely on new assessment methods, hence scoring issue b no longer

the Year 4 surveillance audit on the basis of new assessment model

Table 37 – Condition	9
Performance Indicator	2.2.1: Commercial sea mullet haul net fishery - UoA 4
Score	75
Justification	(a) <u>Perth herring</u> : This species is anadromous, spawning in rivers then returning to the sea. Commercially harvested fish are on their pre-spawning migration. The species' anadromous life history contributes to its vulnerability to fishing pressure. Environmental degradation has affected spawning and nursery areas. Total mortality of the Peel-Harvey Estuary stock has been estimated at three times the unexploited stock occurring in the Swan-Canning Estuary. The permanence of the Estuary to sea connection at Peel Harvey may allow more frequent recruitment in these estuaries, compared to estuaries that are intermittently closed off from the sea. However, stock status in relation to biologically-based limits is unknown.
	Perth herring is an indicator species among the suite of nearshore and estuarine finfish managed in southwest WA. The target catch for this species is < 2.7 t, and this target was met in 2019. In 2017 and 2018, higher catches occurred, including catch exceeding the threshold level in 2017. The risks associated with the cumulative impact of the Estuary fishery, and the impact of commercial net fishing, are assessed as High for this stock. Risks from other fishing methods are considered Negligible. Additional measures to reduce this risk are considered necessary by DPIRD.
	higher in the past 20 years after a period of very low catches in the 1980s through mid-1990s. SG60 appears to be met based on currently available information. However, SG80 and SG100 are not.



Condition	<ul> <li>By the 4<sup>th</sup> Annual Surveillance Audit, demonstrate that the Perth herring as a main secondary species is either: <ul> <li>highly likely to be above biologically based limits, or,</li> <li>if below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</li> </ul> </li> </ul>
Condition deadline	Year 4
Exceptional circumstances	N/A
	Year 1.
Milestones	A plan has been finalised, with Year 2-4 actions set out, to investigate the status of Perth herring in relation to biologically based limits and/or to develop a demonstrably effective partial strategy such that the UoA does not hinder recovery and rebuilding.
	Resulting score: 75
	<b>Year 2.</b> Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.
	Resulting score: <b>75</b>
	<b>Year 3.</b> Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.
	If actions set out in the plan include development of a demonstrably effective partial strategy, this has been finalised and its implementation has commenced.
	Resulting score: <b>75</b>
	<ul> <li>Year 4.</li> <li>Provide evidence to demonstrate that the Perth herring is either: <ul> <li>highly likely to be above biologically based limits, or,</li> <li>if below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</li> </ul> </li> </ul>
	Resulting score: 80
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>
Complete the following	rows for reassessments.
Carried over condition $\Box$	NA
Related condition	NA

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Condition rewritten	ΝΑ
Table 38 – Condition	10
Performance Indicator	2.2.1: Commercial sea mullet gill net fishery - UoA 5
Score	75
Justification	(a) <u>Estuary cobbler</u> : Peel-Harvey estuary cobbler form a discrete stock. Catch rate and amount have been used as stock performance indicators with target values of annual commercial catch rate >6 kg/day and annual commercial catch <9 t (Johnston et al. 2015). In 2018 and 2019, both indicators were within the target range. While CMSY analysis has been used in the past to assess stock status, reconsideration of catch rate data quality has led to risk assessment becoming the basis for assessing stock status. This species is evaluated as being stable (at a lower than historic level) and at Medium risk from commercial net fishing. SG60 is met. Based on currently available information, it is not possible to determine whether SG80 and SG100 are met.
	<u>Perth herring</u> : This species is anadromous, spawning in rivers then returning to the sea. Commercially harvested fish are on their pre-spawning migration. The species' anadromous life history contributes to its vulnerability to fishing pressure. Environmental degradation has affected spawning and nursery areas. Total mortality of the Peel-Harvey Estuary stock has been estimated at three times the unexploited stock occurring in the Swan-Canning Estuary. The permanence of the Estuary to sea connection at Peel Harvey may allow more frequent recruitment in these estuaries, compared to estuaries that are intermittently closed off from the sea. However, stock status in relation to biologically-based limits is unknown.
	Perth herring is an indicator species among the suite of nearshore and estuarine finfish managed in southwest WA. The target catch for this species is < 2.7 t, and this target was met in 2019. In 2017 and 2018, higher catches occurred, including catch exceeding the threshold level in 2017. The risks associated with the cumulative impact of the Estuary fishery, and the impact of commercial net fishing, are assessed as High for this stock. Risks from other fishing methods are considered Negligible. Additional measures to reduce this risk are considered necessary by DPIRD.
	higher in the past 20 years after a period of very low catches in the 1980s through mid-1990s. SG60 appears to be met based on currently available information. However, SG80 and SG100 are not.
Condition	<ul> <li>By the 4<sup>th</sup> Annual Surveillance Audit, demonstrate that estuary cobbler and Perth herring, as main secondary species, are either: <ul> <li>highly likely to be above biologically based limits, or,</li> <li>if below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</li> </ul></li></ul>
Condition deadline	Year 4



Exceptional circumstances	ΝΑ
	Year 1.
	A plan has been finalised, with Year 2-4 actions set out, to investigate the status of estuary cobbler and Perth herring in relation to biologically based limits and/or to develop a demonstrably effective partial strategy such that the UoA does not hinder recovery and rebuilding.
	Resulting score: <b>75</b>
	<b>Year 2.</b> Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.
	Resulting score: <b>75</b>
Milestones	<b>Year 3.</b> Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.
	If actions set out in the plan include development of a demonstrably effective partial strategy, this has been finalised and its implementation has commenced.
	Resulting score: <b>75</b>
	<ul> <li>Year 4.</li> <li>Provide evidence to demonstrate that estuary cobbler and Perth herring are either: <ul> <li>highly likely to be above biologically based limits, or,</li> <li>if below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</li> </ul> </li> <li>Resulting score: 80</li> </ul>
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>
Complete the following	rows for reassessments.
Carried over condition	NA
Related condition	NA
Condition rewritten	ΝΑ

Table 39 – Condition 11	
Performance Indicator	2.2.2: Commercial blue swimmer crab pot fishery - UoA 1



Score	75
Justification	(b) For yelloweye mullet, the duration of the review period is specified in the 2020 – 2025 finfish harvest strategy. (This species is classified as a retained species under the finfish harvest strategy). However, the timeframe for implementing management responses is "as soon as practicable" for breaches of the threshold reference level. For breaches of the limit reference level, the control rule requires "an immediate management response to reduce the risk to an acceptable level as soon as practicable". In addition, the relationship between identified published target and MSY-based harvest levels is not clear. Given time lags evident in fishery management when thresholds were breached previously (for sea mullet), an objective basis for confidence that the measures/partial strategy will work is not evident, based on some information directly about the fishery and/or species involved. SG60 is met for this species, i.e. the measures are considered likely to work based on plausible argument. SG80 is not met.
Condition	By the 4 <sup>th</sup> Annual Surveillance Audit, demonstrate some objective basis for confidence that the measures/partial strategy will work for managing the yelloweye mullet (as a main secondary species), based on some information directly about the UoA and/or species involved.
Condition deadline	Year 4
Exceptional circumstances	NA
Milestones	<ul> <li>Year 1.</li> <li>A plan has been finalised, with Year 2-4 actions set out, to provide some objective basis for confidence that the measures/partial strategy will work for managing the yelloweye mullet, addressing the lacking clarity about reference harvest levels (if those continue to be used) and timeframes for management action.</li> <li>Resulting score: 75</li> <li>Year 2.</li> <li>Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.</li> <li>Resulting score: 75</li> <li>Year 3.</li> <li>Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Xien 4.</li> <li>Collection of evidence has begun to establish an objective basis for confidence that the measures/partial strategy will work for managing the yelloweye mullet. If actions from the plan developed in earlier milestones involve changes to the management measures/partial strategy, these have been finalised and implementation has commenced (and is demonstrable).</li> <li>Resulting score: 75</li> <li>Year 4.</li> </ul>



	Provide evidence to provide an objective basis for confidence that the measures/partial strategy will work for managing the yelloweye mullet (as a main secondary species), based on some information directly about the UoA and/or species involved. Resulting score: <b>80</b>
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>

Table 40 – Condition 12, 13		
Performance Indicator	2.2.2: Commercial sea mullet haul net and gill net fishery - UoA 4, 5	
Score	65	
Justification	<ul> <li>(b) The 2020 - 2025 finfish harvest strategy specifies the duration of the review period, when a review is to be undertaken in response to the breach of threshold or limit reference level. However, the timeframe for implementing management responses is "as soon as practicable" for breaches of the threshold reference level. For breaches of the limit reference level, the control rule requires "an immediate management response to reduce the risk to an acceptable level as soon as practicable". SG60 is met, i.e. the measures are considered likely to work based on plausible argument. However, given time lags evident in fishery management when thresholds were breached previously (for sea mullet), an objective basis for confidence that the measures/partial strategy will work is not evident, based on some information directly about the fishery and/or species involved. Further, for Perth herring, the findings of the 2020 risk assessment triggered the requirement for a management review. This was required to be completed within 3 months, but has not been initiated. For yelloweye mullet, the relationship between the stated target catch and MSY-based catch is not evident. Overall, there is not an objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved. SG80 is not met.</li> <li>(c) There appear to be ongoing issues with time lags in implementing management actions in accordance with the harvest strategy (see scoring issue (b)). While there is some evidence that management responses are actioned eventually, timely implementation as required by the harvest strategy is not apparent. SG80 is not met.</li> </ul>	
Condition	<ul> <li>By the 4<sup>th</sup> Annual Surveillance Audit, provide:</li> <li>some objective basis for confidence that the measures/partial strategy will work for managing main secondary species, based on some information directly about the UoA and/or species involved, and,</li> <li>some evidence that the measures/partial strategy is being implemented successfully, noting the ongoing issues with timelags in implementing management actions.</li> </ul>	
Condition deadline	Year 4	
Exceptional circumstances	NA	



	Year 1.	
	<ul> <li>A plan has been finalised, with Year 2-4 actions set out, to provide:</li> <li>some objective basis for confidence that the measures/partial strategy will work for managing main secondary species, addressing the lacking clarity about reference harvest levels (if those continue to be used) and timeframes for management action, and,</li> <li>some evidence that the measures/partial strategy is being implemented successfully, noting the ongoing issues with timelags in implementing management actions triggered by the harvest strategy.</li> </ul>	
	Resulting score: 65	
	<b>Year 2.</b> Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	
	Resulting score: 65	
Milestones	<b>Year 3.</b> Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	
	<ul> <li>Collection of evidence has begun to:</li> <li>establish an objective basis for confidence that the measures/partial strategy will work for managing main secondary species. If actions from the plan developed in earlier milestones involve changes to the management measures/partial strategy, these have been finalised and implementation has commenced (and is demonstrable), and,</li> <li>demonstrate the measures/partial strategy for main secondary species is being implemented successfully.</li> </ul>	
	Resulting score: 65	
	Year 4. Evidence is available to provide an objective basis for confidence that the measures/partial strategy will work for managing main secondary species based on some information directly about the UoA and/or species involved, and, to show the measures/partial strategy is being implemented successfully. Resulting score: <b>80</b>	
Verification with other	Include details of any verification required to meet requirements in FCP v2.2	
entities	7.19.8.	
Complete the following rows for reassessments.		
Carried over condition	NA	
Related condition	ΝΑ	
Condition rewritten	ΝΑ	

Table 41 – Condition 14		
Performance Indicator	2.2.3: Commercial sea mullet haul net fishery - UoA 4	
Score	75	
Justification	(a) Some quantitative information is available on Perth herring, though additional information is needed to adequately assess the impact of the UoA on this species with respect to status. SG60 is met, while SG80 is not.	
Condition	By the 4 <sup>th</sup> Annual Surveillance Audit, quantitative information is available to adequately assess the impact of the UoA on Perth herring, with respect to status.	
Condition deadline	Year 4	
Exceptional circumstances	NA	
Milestones	<ul> <li>Year 1.</li> <li>A plan has been finalised, with Year 2-4 actions set out, to provide quantitative information to adequately assess the impact of the UoA on Perth herring with respect to status.</li> <li>Resulting score: 75</li> <li>Year 2.</li> <li>Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.</li> <li>Resulting score: 75</li> <li>Year 3.</li> <li>Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Xear 4.</li> <li>Resulting score: 75</li> <li>Year 4.</li> <li>Quantitative information is provided that is adequate to assess the impact of the UoA on Perth herring with respect to status.</li> <li>Resulting score: 80</li> </ul>	
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>	
Complete the following rows for reassessments.		
Carried over condition $\Box$	NA	
Related condition	NA	

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Condition rewritten	NA
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Table 42 – Condition	15
Performance Indicator	2.2.3: Commercial sea mullet gill net fishery - UoA 5
Score	75
Justification	(a) Some quantitative information is available on Perth herring and estuary cobbler, though additional information is needed to adequately assess the impact of the UoA on these species with respect to status. SG60 is met, while SG80 is not.
Condition	By the 4 <sup>th</sup> Annual Surveillance Audit, quantitative information is available to adequately assess the impact of the UoA on Perth herring and estuary cobbler, with respect to status.
Condition deadline	Year 4
Exceptional circumstances	NA
Milestones	<ul> <li>Year 1.</li> <li>A plan has been finalised, with Year 2-4 actions set out, to provide quantitative information to adequately assess the impact of the UoA on Perth herring and estuary cobbler with respect to status.</li> <li>Resulting score: 75</li> <li>Year 2.</li> <li>Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.</li> <li>Resulting score: 75</li> <li>Year 3.</li> <li>Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Xear 4.</li> <li>Resulting score: 75</li> <li>Year 3.</li> <li>Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.</li> <li>Resulting score: 75</li> <li>Year 4.</li> <li>Quantitative information is provided that is adequate to assess the impact of the UoA on Perth herring and estuary cobbler with respect to status.</li> <li>Resulting score: 80</li> </ul>
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>
Complete the following rows for reassessments.	

Approval Date: 19.10.2020 05:53:29





Carried over condition $\Box$	NA
Related condition	NA
Condition rewritten	NA

Table 43 – Condition	16
Performance Indicator	2.3.1: Recreational scoop net blue swimmer crab fishery - UoA 3
Score	70
Justification	(c) Indirect effects of the UoA on ETP include any effects of the removal of fished species and reduced habitat suitability for ETP. Sustainable management of target, primary and secondary species would reduce the likelihood of such effects. Habitat impacts of scoop netting are considered below (under 2.4.1).
	Disturbance of birds (especially threatened migratory shorebirds) has been identified as problematic in the Estuary. No crabbing is permitted 1 September – 30 November, which reduces disturbance during the arrival of migratory shorebirds at the estuary. However, outside that period, scoop net fishers may be active during day or night and can disturb shorebirds feeding and roosting in the shallows and adjacent areas. Migratory shorebirds remain present until the autumn, when they return to their northern hemisphere breeding grounds, and January-February is the peak season for this UoA. Scoop net fishers were documented as a key source of disturbance for migratory shorebirds. The 2020 risk assessment classified this UoA as a High risk for migratory threatened shorebirds. The need for additional management action was recognised (in accordance with the blue swimmer crab harvest strategy). For this group, indirect effects have been considered are not thought to be highly likely to not create unacceptable impacts. SG80 is not met.
Condition	By the 4 <sup>th</sup> Annual Surveillance Audit, demonstrate that indirect effects of the UoA are thought to be highly likely to not create unacceptable impacts on ETP (migratory shorebirds).
Condition deadline	Year 4
Exceptional circumstances □	NA
Milestones	Year 1.
	A plan has been finalised, with Year 2-4 actions set out, to address unacceptable indirect impacts of the UoA on ETP, specifically disturbance of migratory shorebirds.
	Resulting score: <b>70</b>
	Year 2.

	Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4. Resulting score: <b>70</b> <b>Year 3.</b> Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4. Resulting score: <b>70</b> <b>Year 4.</b> Evidence is provided that the UoA is considered highly likely to not create unacceptable impacts for migratory shorebirds.	
	Resulting score: 80	
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>	
Complete the following rows for reassessments.		
Carried over condition	NA	
Related condition □	In the previous assessment, Condition 7 was put in place as follows: By the 4th surveillance audit, provide evidence that the scoop net sector is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. This should include consideration of overlap with habitat for bird species with emphasis on listed threatened species. The condition was closed at the fourth surveillance audit (Daume and Hartmann 2021), based on habitat characterisation and investigation of the intensity of area use by scoop net fishers. However, the potential for significant indirect effects (disturbance) on shorebirds was recognised as a High risk in the 2020 ecological risk assessment, and consequently became a priority for management action. With habitat-related issues addressed under PI 2.4.1 during the previous certification, the indirect effects on ETP are now raised under PI 2.3.1.	
Condition rewritten	NA	

Table 44 – Condition 17	
Performance Indicator	2.3.2: Recreational scoop net blue swimmer crab fishery - UoA 3
Score	70
Justification	(c) The operational measure of fishing method is considered likely to work for managing direct UoA impacts on ETP, based on plausible argument.
	The harvest strategy for blue swimmer crabs 2020 – 2025 states that control measures are now required to reduce disturbance of migratory threatened shorebirds due to scoop netting, to reduce an identified High risk to an acceptable level (Medium or lower risk). This demonstrates key early steps of



	the risk evaluation and management process being followed, while measures remain to be identified.
	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species). SG60 is met. As yet, there is not an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved. The identification of a high risk for threatened migratory shorebirds appears to be the first time an ETP risk has been considered undesirable through applying the harvest strategy. SG80 is not met.
	(d) Though catch information for this UoA is limited and now dated, there is some evidence for the selectivity of the fishing method.
	The Harvest Strategy states that when a high risk level is recognised, the reasons for this must be reviewed within three months and a management response implemented as soon as practicable. In 2020, the risk that the UoA presents to one group of ETP (threatened migratory shorebirds) was identified as high, and the need for additional management actions was identified. The three month period within which a review was required has now passed, and the review has not been completed. The strategy appears to not be implemented successfully. SG80 is not met.
Condition	<ul> <li>By the 4<sup>th</sup> Annual Surveillance Audit, demonstrate that there is:</li> <li>an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved, and,</li> <li>some evidence that the measures/strategy is being implemented successfully.</li> </ul>
Condition deadline	Year 4
Exceptional circumstances	NA
	Year 1.
	<ul> <li>A plan has been finalised, with Year 2-4 actions set out, to provide:</li> <li>some objective basis for confidence that the measures/strategy will work for managing ETP, addressing the High level of risk identified for threatened migratory shorebirds through the ERA, and,</li> <li>some evidence that the measures/strategy is being implemented successfully, noting the delay in implementing the management responses set out in the harvest strategy.</li> </ul>
mestones	Resulting score: 70
	<b>Year 2.</b> Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.
	Resulting score: 70
	Year 3.

	<ul> <li>Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.</li> <li>Collection of evidence has begun to: <ul> <li>establish an objective basis for confidence that the measures/strategy will work for managing ETP, and,</li> <li>demonstrate the measures/strategy for ETP is being implemented successfully.</li> </ul> </li> <li>If actions from the plan developed in earlier milestones involve changes to the management measures/strategy, these have been finalised and implementation has commenced and is demonstrable.</li> <li>Resulting score: <b>70</b></li> </ul> Year 4. Evidence is available to provide an objective basis for confidence that the measures/strategy will work for managing ETP based on some information directly about the UoA and/or species involved, and, to show the measures/strategy is being implemented successfully. Resulting score: <b>80</b>	
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>	
Complete the following rows for reassessments.		
Carried over condition $\Box$	NA	
Related condition	NA	
Condition rewritten	NA	

Table 45 – Condition 18	
Performance Indicator	2.3.3: Recreational drop net blue swimmer fishery - UoA 2
Score	70
Justification	(b) Information is adequate to support measures to manage the impacts on ETP species, for example, the demonstrated selectivity of the analogous crab pot fishing method used by commercial fishers (and extremely low levels of ETP captures detected over time), and the nature of potential indirect effects (e.g. disturbance). However, there is no information available to measure trends characterising the UoA as relevant to ETP interactions (e.g. in terms of fishing effort, intensity of use of fishing areas, UoA-specific information on captures/lack of captures, etc.). SG60 is met. SG80 is not.
Condition	By the 4 <sup>th</sup> Annual Surveillance Audit, demonstrate that information is adequate to measure trends and support a strategy to manage impacts on ETP species.



Condition deadline	Year 4	
Exceptional circumstances	ΝΑ	
	Year 1.	
	A plan has been finalised, with Year 2-4 actions set out, to provide for the measurement of trends and to support a strategy to manage impacts on ETP species.	
	Resulting score: 70	
	<b>Year 2.</b> Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	
	Resulting score: 70	
Milestones	<b>Year 3.</b> Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	
	Collection/collation of information has begun to demonstrate that this is adequate for measuring trends and to support a strategy to manage ETP impacts.	
	Resulting score: 70	
	Year 4. Evidence is provided that demonstrates information is adequate to measure trends and support a strategy to manage impacts on ETP species.	
	Resulting score: 80	
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>	
Complete the following rows for reassessments.		
Carried over condition $\Box$	NA	
Related condition	NA	
Condition rewritten	NA	

Table 46 – Condition 19		
Performance Indicator	or 2.3.3: Commercial sea mullet gill net fishery UoA 5	
Score	70	



Justification	(b) Information is adequate to support measures to manage the impacts on ETP species, for example, the operational measures that characterise the UoA, and low level of interactions (with cormorants) known over time. Continued collection of information relevant to measuring trends is required, and it is noted that DPIRD monitoring (focused on "bycatch" i.e. primary and secondary species, but also detecting any ETP interactions) was planned five-yearly. SG60 is met. SG80 is not currently met, however, the intent to collect relevant information from the winter of 2021 is recognised.	
Condition	By the 4 <sup>th</sup> Annual Surveillance Audit, demonstrate that information is adequate to measure trends and support a strategy to manage impacts on ETP species.	
Condition deadline	Year 4	
Exceptional circumstances	NA	
Milestones	<ul> <li>Year 1.</li> <li>A plan has been finalised, with Year 2-4 actions set out, to provide for the measurement of trends and to support a strategy to manage impacts on ETP species.</li> <li>Resulting score: 70</li> <li>Year 2.</li> <li>Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.</li> <li>Resulting score: 70</li> <li>Year 3.</li> <li>Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.</li> <li>Collection/collation of information has begun to demonstrate that this is adequate for measuring trends and to support a strategy to manage ETP impacts.</li> <li>Resulting score: 70</li> <li>Year 4.</li> <li>Evidence is provided that demonstrates information is adequate to measure trends and support a strategy to manage impacts on ETP species.</li> <li>Resulting score: 80</li> </ul>	
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>	
Complete the following	rows for reassessments.	
Carried over condition $\Box$	ΝΑ	





Related condition	NA
Condition rewritten	NA

Table 47 – Condition	20	
Performance Indicator	2.4.3: Recreational drop net blue swimmer fishery - UoA 2	
Score	75	
	(b) Habitat distribution information, the qualitative assessment of gear impacts, locations of closed areas, and knowledge of fishing activities in the Estuary is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear. SG60 is met.	
Justification	There is some information available from four Statewide Recreational Fishing Surveys on the location of use of the fishing gear, September - March. An example of this is shown in Figure 11. Drop net fishing locations reported by iSurvey diarists, 2017/18. From DPIRD, unpubl.Figure 11 with further work underway. On- site surveys are planned to take place in the years the statewide surveys are not conducted. Camera monitoring also provides ongoing information on fisher presence in three high-use sites (with this method focusing on shore- based fishers).	
	While some information is available and this is accumulating, it does yet not appear to be at a scale and level of detail to comprise reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. On-site work planned between statewide surveys will continue to build the information base. SG80 is not met for this UoA currently.	
Condition	By the 4 <sup>th</sup> Annual Surveillance Audit, demonstrate that there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	
Condition deadline	Year 4	
Exceptional circumstances	ΝΑ	
	Year 1.	
Milestones	A plan has been finalised, with Year 2-4 actions set out, to provide for the collection/collation of reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	
	Resulting score: 75	
	<b>Year 2.</b> Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	



	Resulting score: <b>75</b>	
	<b>Year 3.</b> Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	
Collection/collation of information has begun to describe the spatia interaction and the timing and location of use of the fishing gear.		
Resulting score: <b>75</b>		
	Year 4. There is evidence provided that demonstrates the existence of reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. Resulting score: <b>80</b>	
Verification with other entities	r Include details of any verification required to meet requirements in FCP v2.2 7.19.8.	
Complete the following rows for reassessments.		
Carried over condition $\Box$	NA	
Related condition $\Box$	ΝΑ	
Condition rewritten	NA	

Table 48 – Condition 21		
Performance Indicator	2.5.3: Recreational drop net blue swimmer fishery - UoA 2	
Score	75	
Justification	(e) There is some information available from four Statewide Recreational Fishing Surveys on the location of use of the fishing gear, September - March. An example of this is shown in Figure 11 with further work underway. On-site surveys are planned to take place in future years when the statewide surveys are not conducted. Some bait information is collected on an ongoing basis through the voluntary Western Australia Recreational Angler Program (Table 7). Camera monitoring also provides ongoing information on fisher presence in three high-use sites (with this method focusing on shore-based fishers).These data sources would contribute to the detection of an increase in risk presented by the UoA, but are not currently considered adequate to detect any increase in risk level. SG80 and SG100 are not met.	
Condition	By the 4 <sup>th</sup> Annual Surveillance Audit, demonstrate that adequate data continue to be collected to detect any increase in risk level presented by the UoA.	





Condition deadline	Year 4	
Exceptional circumstances NA		
	Year 1.	
	Provide a finalise plan, with Year 2-4 actions set out, to provide for the ongoing collection of adequate data to detect any increase in risk level presented by the UoA.	
	Resulting score: <b>75</b>	
	<b>Year 2.</b> Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	
Milestones	Resulting score: <b>75</b>	
	<b>Year 3.</b> Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	
	Resulting score: <b>75</b>	
	<b>Year 4.</b> There is evidence provided that demonstrates that adequate data continue to be collected to detect any increase in risk level presented by the UoA.	
	Resulting score: 80	
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>	
Complete the following rows for reassessments.		
Carried over condition $\Box$	NA	
Related condition $\Box$	NA	
Condition rewritten	NA	

Table 49 – Condition 22		
Performance Indicator	2.5.3: Commercial sea mullet gill net fishery - UoA 5	
Score	75	
Justification (e) Commercial catch landings are reported by fishers, while discarded is not routinely quantified. A monitoring programme for non-target of conducted in 2017/18. This comprised fishery-dependent reporting the monthly log sheets and bimonthly trips by DPIRD staff on commerciation verify reported data and included the collection of discard information.		



	intent to repeat this monitoring from mid-2021 is stated, which, together with additional data collection on fishing location would be adequate to detect any increase in risk level. Compliance activities are ongoing, prioritised by risk. SG80 and SG100 are not currently met.	
Condition	By the 4 <sup>th</sup> Annual Surveillance Audit, demonstrate that adequate data continue to be collected to detect any increase in risk level presented by the UoA.	
Condition deadline	Year 4	
Exceptional circumstances	NA	
Milestones	<ul> <li>Year 1.</li> <li>A plan has been finalised, with Year 2-4 actions set out, to provide for the continued collection of adequate data to detect any increase in risk level presented by the UoA.</li> <li>Resulting score: 75</li> <li>Year 2.</li> <li>Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.</li> <li>Resulting score: 75</li> <li>Year 3.</li> <li>Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.</li> <li>Resulting score: 75</li> <li>Year 3.</li> <li>Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.</li> <li>Resulting score: 75</li> <li>Year 4.</li> <li>There is evidence provided that demonstrates that adequate data continue to be collected to detect any increase in risk level presented by the UoA.</li> <li>Resulting score: 80</li> </ul>	
Verification with other entities	- <i>Include details of any verification required to meet requirements in FCP v2.2</i> 7.19.8.	
Complete the following	rows for reassessments.	
Carried over condition □	NA	
Related condition	ΝΑ	
Condition rewritten	ΝΑ	

## Table 50 – Condition 23





Performance Indicator	3.2.3 – recreational blue swimmer crab fishery - UoA 2 and UoA 3		
Score	65		
Justification	p. 314		
Condition	By the 4 <sup>th</sup> Annual Surveillance Audit, determine and implement MCS mechanisms to demonstrably mitigate non-compliance, including systematic non-compliance, in the recreational blue swimmer fishery (UoA 2 and UoA 3).		
Condition deadline	Year 4		
Exceptional circumstances	ΝΑ		
	Year 1.		
	• Review and document the root causes of non-compliance within all categories of recreational fishers for blue swimmer crab in the fishery.		
	• Identify and consult with all interested and affected parties, regarding measures capable of ensuring compliance with the management system.		
	Resulting score: No change remains at <b>75</b>		
	<b>Year 2.</b> Determine suitable measures and test measures to determine if they would be effective.		
Milestones	Resulting score: No change remains at <b>75</b>		
	<b>Year 3.</b> Implement new measures.		
	Resulting score: No change remains at <b>75</b>		
	Year 4. Provide evidence to demonstrate that fishers comply with the management system.		
	Resulting score: 80		
Verification with other entities	<i>Include details of any verification required to meet requirements in FCP v2.2 7.19.8.</i>		
Complete the following	rows for reassessments.		
Carried over condition $\Box$	NA		
Related condition	NA		
Condition rewritten	NA		



## 9.6 Client Action Plan

Table 51 - PI 1.2.1 - Condition 1,2,3			
1	Condition numbers 1, 2, 3		
	UoA 1 (Commercial pots); UoA 2 (Recreational drop-nets); UoA 3 (Recreational scoop-nets)		
2	Performance Indicator(s)		
	1.2.1(f)		
3	Score		
	75 (for all UoAs)		
4	Condition(s)		
	<u>Condition</u> : By the third surveillance audit ensure that a regular review is conducted of alternative measures to reduce mortality of unwanted catch of Blue Swimmer Crab and any identified measures are implemented.		
	Reasoning: Despite mortality of unwanted catch being considered negligible, there was insufficient evidence for all UoAs that unwanted catch itself was sufficiently low to be considered negligible. Hence it is necessary to assess this scoring issue.		
	The discussed measures have been developed through a range of reviews over time and thereby meet the requirements of SG60.		
	However regular reviews are not held for any of t	he UoAs, consequently, SG80 is not met.	
5	Milestone(s)		
	Year 1: 2021/22 crabbing season	Season starts December 2021	
	Year 1 audit	November 2022	
	Year 2: 2022/23 crabbing season	Season starts December 2022	



	Year 2 audit		November 2023		
	Year 3:	2023/24 crabbing season	Season starts December 2023		
	Year 3	audit	November 2024		
6	Summary of action plan				
	<u>Commercial pots (UoA 1)</u> : An agenda item will be included in the Annual Management Meetings (AMMs), where commercial fishers and DPIRD representatives (Research and Management) can review measures to reduce unwanted catch. This will be recorded in the minutes.				
	Recreational drop-nets (UoA 2) and Recreational scoop-nets (UoA 3): Introduce a line item to the periodic DPIRD Compliance Risk Assessme process to assess measures to reduce the mortality of unwanted catch. Frequent communications (e.g. start of season social media, information brochures, newsletters) to recreational fishers from DPIRD and Recfishwest, with information on best handling techniques, timel around measuring crabs and discarding unwanted catch, and the implications of high-grading.				pliance Risk Assessment social media, dling techniques, timelines
	While t	hese actions are only outlined here for the	duration of the Condition, it is expecte	d that they will continue as ar	iterative annual process.
Milestone			Action(s)	Responsibilities	Outputs
Year 1: 2 crabbing	021/22 season	2 Develop a plan for conducting a review n including the range of alternative measures that will be considered.	Frequent and timely communications to provide information to recreational fishers.	Recfishwest Communications DPIRD Communications	<ul> <li>Social media posts</li> <li>Newsletters</li> <li>Brochures</li> </ul>
		The plan should articulate: - how the measures will be evaluated in their effectiveness and practicality and - who will be involved in the review process. Initiate proposed action plan for all Units of Assessment in the 2021/22 crabbing season.	Include measures to reduce the mortality of unwanted recreational catch in the Compliance Risk Assessment (Winter/Spring 2022).	DPIRD Compliance (Mandurah)	- Minutes from Compliance Risk Assessment
			Discuss measures to reduce unwanted commercial catch at WCEMF AMM.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Minutes of the AMM
Year 1 au Nov 2022	dit:	Present results and assess them against the Conditions and Milestone.	Compile and present measures identified from the AMM and the Compliance Risk Assessment.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management	- Presentation at audit
	C F ir		Outline how any identified measures have been evaluated and implemented.	(Nearshore) DPIRD Compliance (Mandurah)	



Year 2: 2022/23 crabbing season	Conduct the first review and develop a plan for implementing any identified measures.	As for the 2021/22 crab season. Continue to implement any identified actions and include any changes recommended from the first audit.	As for the 2021/22 crab season. To be confirmed at the first audit	- As for the 2021/22 crab season. To be confirmed at the first audit
Year 2 audit: Nov 2023	Present results and assess them against the Conditions and Milestone.	Compile and present measures identified from the AMM and the Compliance Risk Assessment.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore) DPIRD Compliance (Mandurah)	- Presentation at audit
		Outline how any identified measures have been evaluated and implemented.		
Year 3: 2023/24 crabbing season	Provide evidence of implemented measures and demonstrate how and when the next review will be conducted.	As for the 2022/23 crab season. Continue to implement any identified actions and include any changes recommended from the second audit.	As for the 2022/23 crab season. To be confirmed at the second audit	- As for the 2022/23 crab season. To be confirmed at the second audit
Year 3 audit: Nov 2024	Present results and assess them against the Conditions and Milestone.	Compile and present measures identified from the AMM and the Compliance Risk Assessment.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management	- Presentation at audit
		Outline how any identified measures have been evaluated and implemented.	(Nearshore) DPIRD Compliance (Mandurah)	
		Commitment to iterative annual review with all sectors.		



Table 52	- PI 1.2.1 – Conditions 7 and 8			
1	Condition numbers 7, 8			
	UoA 4 (Commercial haul-nets); UoA 5 (Commerci	al gill-nets)		
2	Performance Indicator(s)			
	1.2.1(b)			
3	Score			
	70 (for both UoAs)			
4	Condition(s)			
	<u>Condition</u> : By the 3rd annual surveillance audit provide evidence that the harvest strategy for sea mullet is meeting its objectives. <u>Reasoning</u> : Elements of the harvest strategy have been in place for an extended period, including the previous harvest strategy. A prolonged period of stability in this fishery provides evidence that the elements that have been in place have worked. The new harvest strategy changes the HCR to use more comprehensive biomass estimates on a much less frequent basis (5-yearly). This change has not been tested and as it has only just been implemented there is no evidence available that it will work. Furthermore, the loosely defined process for reducing catches has not been triggered and consequently requires evaluation to ensure that if triggered it will be effective and be able to maintain the fishery at target levels. Consequently, the requirements of SG80 are not met.			
5	Milestone(s)			
	Year 1: 2021/22 netting season			
	Year 1 audit	November 2022		
	Year 2: 2022/23 netting season			
	Year 2 audit	November 2023		
	Year 3: 2023/24 netting season			



	Year 3 audit		November 2024			
6	Summary of action plan					
	<u>Commercial haul-nets (UoA 4) &amp; Commercial gill-nets (UoA 5)</u> : Stability of the fishery will provide evidence that the harvest strategy is working as intended. If thresholds or limits are breached, actions taken will provide evidence that the action is effective. Assessments will be required more frequently than 5-yearly for SAFS reporting (currently biennial). Consideration will be given to rewording the next version of the harvest strategy to better define the process for reducing catches.					
Milestone			Action(s)	Responsibilities	Outputs	
Year 1: 2021/22 netting season		Provide a plan that evidence will be collected and examined to demonstrate that the harvest strategy is meeting its objectives. If additional information needs to be collected demonstrate that this data collection has commenced.	Monitoring and management. Implement harvest strategy as required for breaches of limits or thresholds.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report	
			Collect biomass data, and review and update stock assessment to monitor whether fish biomass is above MSY. This review will inform whether extra data need to be collected for future assessments.	DPIRD Aquatic Research (Nearshore)	<ul> <li>Updated stock assessment (with summaries of associated biomass data)</li> <li>SAFS chapter</li> </ul>	
Year 1 auc Nov 2022	dit:	Present results and assess them against the Conditions and Milestone.	Compile and present the fishery statistics for the 2021/22 season.	DPIRD Aquatic Research (Nearshore)	- Presentation at audit	
Year 2: 20 netting se	)22/23 ason	Provide an assessment of the evidence identified in Year 1. Determine whether this is still likely to satisfactorily close the condition in Year 3 or if additional data collection is necessary.	Monitoring and management. Implement harvest strategy as required for breaches of limits or thresholds. Assess data obtained for the harvest strategy review. Update plan and collect additional data as required.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Annual Report</li> <li>Update consolidated plan, as required</li> <li>Documents relating to the regular weight of evidence assessment for the harvest strategy including the updated</li> </ul>	
Year 2 auc Nov 2023	dit:	Present results and assess them against the Conditions and Milestone.	Compile and present the fishery statistics for the 2022/23 season.	DPIRD Aquatic Research (Nearshore)	- Presentation at audit	



Year 3: 2023/24 netting season	Provide a comprehensive assessment of all evidence to demonstrate that the harvest strategy is meeting its objectives.	Monitoring and management. Implement harvest strategy as required for breaches of limits or thresholds.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report
		Collect biomass data, and review and update stock assessment to assess whether fish biomass is above MSY. This review will provide sufficient evidence whether or not the HS is achieving its objectives.	DPIRD Aquatic Research (Nearshore)	<ul> <li>Updated stock assessment (with summaries of associated biomass data)</li> <li>SAFS chapter</li> </ul>
		Review Harvest Strategy objectives (in conjunction with Condition 11)	DPIRD Aquatic Management (Nearshore)	- Documents relating to the regular weight of evidence assessment for the harvest strategy including the updated stock assessment
Year 3 audit: Nov 2024	Present results and assess them against the Conditions and Milestone.	Compile and present the fishery statistics for the 2023/24 season.	DPIRD Aquatic Research (Nearshore)	- Presentation at audit

Table 53	able 53 - PI 1.2.3 – Conditions 4,5,6				
1	Condition numbers 4, 5, 6				
	UoA 1 (Commercial pots); UoA 2 (Recreational drop-nets); UoA 3 (Recreational scoop-nets)				
2	Performance Indicator(s)				
	1.2.3(b) – UoA 2; UoA 3 1.2.3(c) – UoA 1				
3	Score				
	75 (for all UoAs)				

Approval Date: 19.10.2020 05:53:29



4	Condition(s)				
	<u>Condition</u> : By the third surveillance audit obtain catch estimates for all components of commercial and recreational blue swimmer fisheries and demonstrate how this data will be collected on a regular basis sufficient to meet the requirements of the harvest strategy.				
	<u>Reasoning</u> : Recreational catches are only estimated on a triennial basis and do not have a high degree of certainty associated with them. The smaller shore based recreational catches are not regularly assessed. Particularly given the reported high frequency of change in the recreational sector, we consider this coverage inconsistent with the requirements of the harvest control rule. Consequently, SG80 and SG100 are not met [1.2.3(b)].				
	Shore based recreational catches have not been e more important for assessing the stock due to the	estimated since 2007/08. In comparison magnitude of catches in the PHE. Cons	with recreational removals ir sequently, SG80 is not met [1	o other regions, this is .2.3(c)].	
5	Milestone(s)				
	Year 1: 2021/22 crabbing season	Starts December 2021			
	Year 1 audit	November 2022			
	Year 2: 2022/23 crabbing season	Starts December 2022			
	Statewide recreational fishing survey	Starts September 2023			
	Year 2 audit	November 2023			
	Year 3: 2023/24 crabbing season	Starts December 2023			
	Year 3 audit	November 2024			
6	Summary of action plan				
	<u>Commercial pots (UoA 1), Recreational drop-nets (UoA 2) and Recreational scoop-nets (UoA 3)</u> : A desktop review will be conducted in the first year to determine the best way to quantify recreational catches to address the Conditions and provide comparable data with previous surveys in the Estuary. Based on this review and feedback from the first audit, data will be collected to quantify both shore-based and boat-based recreational catches of blue-swimmer crab.				
Milestone		Action(s)	Responsibilities	Outputs	
Year 1: 20 crabbing s	D21/22 Provide a detailed plan of the methods that will be used to obtain catch	Conduct desktop review. Research feasible survey methods or data	DPIRD Aquatic Research (Surveys)	- Data collection options	



	estimates for all components of both sectors.	sources to address the Conditions. Assess the advantages and disadvantages of each and rank them according to practicability.		
Year 1 audit: Nov 2022	Present findings from desktop review and assess them against the Conditions and Milestone.	Critically assess the options and present the most feasible.	DPIRD Aquatic Research (Surveys)	- Presentation at audit
Year 2: 2022/23 crabbing season	Provide evidence that the work planned in year 1 has been undertaken.	Quantify catch based on findings of the first audit. Depending on the results of the desktop survey, collect or reconstruct a timeseries of data to address the Conditions.	DPIRD Aquatic Research (Surveys)	- Catch statistics - Annual Report
Statewide recreational fishing survey: Runs Sept 2023 to Aug 2024	Conduct iSurvey.	Survey of boat-based recreational fishers.	DPIRD Aquatic Research (Surveys)	- Annual Report
Year 2 audit: Nov 2023	Present preliminary summaries and assess them against the Conditions and Milestone.	Preliminary summaries of the progress of data collection/ reconstruction methods.	DPIRD Aquatic Research (Surveys)	- Presentation at audit
Year 3: 2023/24 crabbing season	Provide detailed catch estimates and a plan for obtaining future catch estimates and demonstrate how this fulfils the requirements of the harvest strategy.	Analyse and report on the data for the 2022/23 season.	DPIRD Aquatic Research (Surveys)	<ul><li>Catch statistics</li><li>Annual Report</li></ul>
Year 3 audit: Nov 2024	Present results and assess them against the Conditions and Milestone.	Final summaries and preliminary report of the data collected or reconstructed for the 2022/23 season. Provide details on how future estimates will be determined.	DPIRD Aquatic Research (Surveys)	- Presentation at audit



Table 54	- PI 2.2.1 - Conditions 9 and 10
1	Condition numbers 9, 10
	UoA 4 (Commercial haul-nets); UoA 5 (Commercial gill-nets)
2	Performance Indicator(s)
	2.2.1(a)
3	Score
	75 (for both UoAs)
4	Condition(s)
	<ul> <li><u>Condition</u>: By the 4th Annual Surveillance Audit, demonstrate that main secondary species in the sea mullet fishery are either:</li> <li>- highly likely to be above biologically based limits, or,</li> <li>- if below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</li> </ul>
	<ul> <li><u>Reasoning</u>:</li> <li>Perth herring is an indicator species among the suite of nearshore and estuarine finfish managed in southwest WA. The target catch for this species is &lt;2.7 t, and this target was met in 2019. In 2017 and 2018, higher catches occurred, including catch exceeding the threshold level in 2017. The risks associated with the cumulative impact of the Estuary fishery, and the impact of commercial net fishing, are assessed as High for this stock. Risks from other fishing methods are considered Negligible.</li> </ul>
	Additional measures to reduce this risk are considered necessary by DPIRD.
	Catch and effort have fluctuated over time, with catches generally higher in the past 20 years after a period of very low catches in the 1980s through mid-1990s. SG60 appears to be met based on currently available information. However, SG80 and SG100 are not.
	<ul> <li>Peel-Harvey estuary cobbler form a discrete stock. Catch rate and amount have been used as stock performance indicators with target values of annual commercial catch rate &gt;6 kg/day and annual commercial catch &lt;9 t (Johnston et al. 2015). In 2018 and 2019, both indicators were within the target range. While CMSY analysis has been used in the past to assess stock status, reconsideration of catch rate data quality has</li> </ul>



	led to risk assessment becoming the basis for assessing stock status. This species is evaluated as being stable (at a lower than historic level) and at Medium risk from commercial net fishing. SG60 is met. Based on currently available information, it is not possible to determine whether SG80 and SG100 are met.					
5	Milesto	ne(s)				
	Year 1:	2021/22 netting season				
	Year 1	audit N	lovember 2022			
	Year 2:	2022/23 netting season				
	Year 2	audit N	lovember 2023			
	Year 3:	2023/24 netting season				
	Year 3	audit N	lovember 2024			
	Year 4:	2024/25 netting season				
	Year 4	audit N	lovember 2025			
6	Summa	ry of action plan				
	Comme Perth h deem it actions	ercial haul-nets (UoA 4) & Commercial gil erring. Details on the methods used to as a main secondary species. An annual re required to be taken during the season.	<u>-nets (UoA 5)</u> : Management action is ex sess the Estuary cobbler stock status wi port will detail catch and effort statistics,	pected to be the primary resp Il be detailed if the species is if deemed suitable, as well as	onse to reduce catches of caught in numbers that s any management	
Milestone			Action(s)	Responsibilities	Outputs	
Year 1: 2021/22 A plan has been finalised, with Year 2-4 actions set out, to investigate the status of estuary cobbler and Perth herring in relation to biologically based limits and/or to develop a demonstrably		A plan has been finalised, with Year 2-4 actions set out, to investigate the status of estuary cobbler and Perth herring in relation to biologically based limits and/or to develop a demonstrably	Meet with commercial fishers to discuss potential options to reduce or minimise catches of Perth herring and estuary cobbler.	DPIRD Aquatic Management (Nearshore)	<ul> <li>Progress towards an agreement with all fishers</li> <li>Annual Report</li> </ul>	
		effective partial strategy such that the UoA does not hinder recovery and rebuilding.	Review stock assessment methods. Determine methods to assess stock status for Estuary cobbler if it remains a main secondary species.	DPIRD Aquatic Research (Nearshore)	- SAFS chapter	

		Develop a plan to outline data required, intended methods, timeframes and people responsible for assessing the status of main secondary species for the commercial net fisheries.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Consolidated plan for all Conditions of the Certification
Year 1 audit: Nov 2022	Present findings and assess them against the Conditions and Milestone.	Report on methods to determine stock status of Estuary cobbler and progress towards an agreement to reduce the catch of Perth herring.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of proposed plan at the audit</li> </ul>
Year 2: 2022/23 netting season	Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4	Meet with commercial fishers to finalise options to reduce or minimise catches of Perth herring.	DPIRD Aquatic Management (Nearshore)	<ul><li>A final agreement with all fishers</li><li>Annual Report</li></ul>
		Assess whether the plan developed in Year 1 is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 2 audit: Nov 2023	Present findings and assess them against the Conditions and Milestone.	Report on final agreement to reduce the catch of Perth herring and estuary cobbler.	DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of catch data and updated plan at the audit</li> </ul>
Year 3: 2023/24 netting season	Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4. If actions set out in the plan include	Monitor catches of Perth herring and estuary cobbler, and implement management actions as required.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report
	development of a demonstrably effective partial strategy, this has been finalised and its implementation has commenced.	Review the methods used to assess the Estuary cobbler stocks.	DPIRD Aquatic Research (Nearshore)	<ul> <li>Updated methods for Estuary Cobbler (West Coast) stock assessment</li> <li>SAFS chapter</li> </ul>

		Assess whether the updated plan is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Update consolidated plan, as required
Year 3 audit: Nov 2024	Present findings and assess them against the Conditions and Milestone.	Report the results of methods to reduce the catch of Perth herring and estuary cobbler. If either species remains a main secondary species, outline the method(s) that will be used to assess the stock(s)	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of catch data and updated plan at the audit</li> </ul>
Year 4: 2024/25 netting season	<ul> <li>Provide evidence to demonstrate that estuary cobbler and Perth herring is either:</li> <li>highly likely to be above biologically based limits, or,</li> <li>if below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</li> </ul>	Monitor catches of Perth herring and estuary cobbler, and implement management actions as required.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report
		Assess stock status for Perth herring and/or estuary cobbler if they remain a main secondary species, to determine whether they are above biologically-based limits.	DPIRD Aquatic Research (Nearshore)	<ul> <li>Data-limited stock assessment, if required</li> <li>RAR</li> </ul>
Year 4 audit: Nov 2025	Present findings and assess them against the Conditions and Milestone.	Updated results from the methods implemented to reduce the catch of Perth herring and estuary cobbler. If either species remains a main secondary species, report on the catches of the relevant species and its estimated stock status.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of catch data, stock assessment(s) and RAR at the audit</li> </ul>



Table 55 - PI 2.2.2 -Condition 11						
1	Condition number 11					
	UoA 1 (Commercial pots)					
2	Performance Indicator(s)					
	2.2.2(b)					
3	Score					
	75					
4	Condition(s)					
	<u>Condition</u> : By the 4th Annual Surveillance Audit, demonstrate some objective basis for confidence that the measures/partial strategy will work for managing the yelloweye mullet (as a main secondary species used as bait), based on some information directly about the bait fishery and/or the commercial blue swimmer fishery and/or the species involved.					
	Reasoning: For yelloweye mullet, the duration of the review period is specified in the 2020–2025 finfish harvest strategy. (This species is classified as a retained species under the finfish harvest strategy). However, the timeframe for implementing management responses is "as soon as practicable" for breaches of the threshold reference level. For breaches of the limit reference level, the control rule requires "an immediate management response to reduce the risk to an acceptable level as soon as practicable". In addition, the relationship between identified published target and MSY-based harvest levels is not clear. Given time lags evident in fishery management when thresholds were breached previously (for sea mullet), an objective basis for confidence that the measures/partial strategy will work is not evident, based on some information directly about the fishery and/or species involved.					
	SG60 is met for this species, i.e. the measures are considered likely to work based on plausible argument. SG80 is not met.					
5	Milestone(s)					
	Year 1: 2021/22 crabbing season	Starts December 2021				
	Year 1 audit	November 2022				

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	Year 2:	2022/23 crabbing season	Starts December 2022					
	Year 2	audit	November 2023					
	Year 3:	2023/24 crabbing season	Starts December 2023					
	Year 3	audit	November 2024					
	Year 4:	2024/25 crabbing season	Starts December 2024					
	Year 4	audit	November 2025					
6	Summary of action plan							
	<u>Commercial pots (UoA 1)</u> : Stability of the yelloweye mullet fishery will provide evidence that the harvest strategy is working as intended. If thresholds or limits are breached, actions taken will provide evidence that the action is effective. The relationship between the target catch level and the MSY-based harvest level will be reconciled. An annual report will detail catch and effort statistics as well as any management actions required to be taken during the season.							
Milestone			Action(s)	Responsibilities	Outputs			
Year 1: 2021/22 crabbing season		A plan has been finalised, with Year 2-4 actions set out, to provide some objective basis for confidence that the measures/partial strategy will work for managing the yelloweye mullet, addressing the lacking clarity about reference harvest levels (if those continue to be used) and timeframes for management action.	Implement harvest strategy as required. If a breach occurs, management action will be taken within 6 months, with more immediate action for more severe breaches.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report			
			Review stock assessment		- SAFS chapter			
			Develop a plan to outline data required, intended methods, timeframes and people responsible for clarifying the reference harvest levels, providing an objective basis for confidence that the harvest strategy measures will work and any required management action will occur in a timely manner.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Consolidated plan for all Conditions of the Certification			
Year 1 au Nov 2022	dit:	Present findings and assess them against the Condition and Milestone.	Compile and present the fishery statistics and any required management	DPIRD Aquatic Research (Nearshore)	<ul> <li>Presentation of proposed plan at the audit</li> </ul>			
		actions for the 2021/22 season. Explain the relationship between the target catch and catch MSY.						
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Year 2: 2022/23 crabbing season	Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	Implement harvest strategy as required. If a breach occurs, management action will be taken within 6 months, with more immediate action for more severe breaches. Assess the efficacy of any management actions that may have been taken in the 2021/22 season.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report				
		Assess whether the plan developed in Year 1 is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>				
Year 2 audit: Nov 2023	Present findings and assess them against the Condition and Milestone.	Compile and present the fishery statistics and any required management actions for the 2022/23 season.	DPIRD Aquatic Research (Nearshore)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>				
Year 3: 2023/24 crabbing season	Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4. Collection of evidence has begun to establish an objective basis for confidence that the measures/partial strategy will work for managing the yelloweye mullet. If actions from the plan developed in	Implement harvest strategy as required. If a breach occurs, management action will be taken within 6 months, with more immediate action for more severe breaches. Assess the efficacy of any management actions that may have been taken in previous seasons.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report				
	earlier milestones involve changes to the management measures/partial strategy,	Update stock assessment.		- SAFS chapter				
	these have been finalised and implementation has commenced (and is demonstrable).	Assess whether the updated plan is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>				

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			DPIRD Aquatic Management (Nearshore)	
		Review Harvest Strategy. Finalise changes that need to be made to management measures or strategy for the new version of the HS. Demonstrate that implementation has commenced.	DPIRD Aquatic Management (Nearshore)	- Commencement of draft Harvest Strategy
Year 3 audit: Nov 2024	Present findings and assess them against the Condition and Milestone.	Compile and present the fishery statistics and any required management actions for the 2023/24 season.	DPIRD Aquatic Research (Nearshore)	<ul> <li>Presentation at the audit of updated plan, harvest strategy review and any relevant changes to the management measures or strategy that have been implemented</li> </ul>
Year 4: 2024/25 crabbing season	Provide evidence to provide an objective basis for confidence that the measures/partial strategy will work for managing the yelloweye mullet (as a main secondary species), based on some information directly about the UoA and/or species involved.	Implement harvest strategy as required. If a breach occurs, management action will be taken within 6 months, with more immediate action for more severe breaches. Assess the efficacy of any management actions that may have been taken in previous seasons. Assess all lines of evidence to determine whether the measures for managing yelloweye mullet have worked	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report - Revised Harvest Strategy - RAR
Year 4 audit: Nov 2025	Present findings and assess them against the Condition and Milestone.	Compile and present the fishery statistics and any required management actions for the 2024/25 season.	DPIRD Aquatic Research (Nearshore)	- Presentation at the audit of RAR, new Harvest Strategy and evidence that the measures for maintaining yelloweye mullet have worked and will continue to work

Table 56	- PI 2.2.2 – Conditions 12 and 13
1	Condition numbers 12, 13
	UoA 4 (Commercial haul-nets); UoA 5 (Commercial gill-nets)
2	Performance Indicator(s)
	2.2.2(b) 2.2.2(c)
3	Score
	65 (for both UoAs)
4	Condition(s)
	<ul> <li><u>Condition</u>: By the 4th Annual Surveillance Audit, provide:</li> <li>some objective basis for confidence that the measures/partial strategy will work for managing main secondary species, based on some information directly about the commercial sea mullet fishery and/or species involved, and,</li> <li>some evidence that the measures/partial strategy is being implemented successfully, noting the ongoing issues with time-lags in implementing management actions.</li> </ul>
	<u>Reasoning</u> : The 2020–2025 finfish harvest strategy specifies the duration of the review period when a review is to be undertaken in response to the breach of threshold or limit reference level. However, the timeframe for implementing management responses is "as soon as practicable" for breaches of the threshold reference level. For breaches of the limit reference level, the control rule requires "an immediate management response to reduce the risk to an acceptable level as soon as practicable". SG60 is met, i.e. the measures are considered likely to work based on plausible argument.
	However, given time lags evident in fishery management when thresholds were breached previously (for sea mullet), an objective basis for confidence that the measures/partial strategy will work is not evident, based on some information directly about the fishery and/or species involved. Further, for Perth herring, the findings of the 2020 risk assessment triggered the requirement for a management review. This was required to be completed within 3 months but has not been initiated. For yelloweye mullet, the relationship between the stated target catch and



	MSY-based catch is not evident. Overall, there is not an objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved. SG80 is not met. [2.2.2(b)]					
	There a issue (t strateg	ppear to be ongoing issues with time lags o)). While there is some evidence that mar y is not apparent. SG80 is not met. [2.2.2	in implementing management actions i nagement responses are actioned event (c)]	n accordance with the harves ually, timely implementation a	t strategy (see scoring as required by the harvest	
5	Milesto	ne(s)				
	Year 1:	2021/22 netting season				
	Year 1	audit	November 2022			
	Year 2:	2022/23 netting season	ig season			
	Year 2	audit	November 2023			
	Year 3:	2023/24 netting season				
	Year 3	audit	November 2024			
	Year 4:	2024/25 netting season				
	Year 4	audit	November 2025			
6	Summa	iry of action plan				
	<u>Commercial haul-nets (UoA 4) &amp; Commercial gill-nets (UoA 5)</u> : Management action is expected to be the primary response to reduce catches of Perth herring. Stability of the yelloweye mullet fishery will provide evidence that the harvest strategy is working as intended. If thresholds or limits are breached, timely actions taken will provide evidence that the action is effective. The relationship between the target catch level and the MSY-based harvest level will be reconciled. An annual report will detail catch and effort statistics as well as any management actions required to be taken during the season. Consideration will be given to rewording the next version of the harvest strategy to make the timeliness of required actions more explicit.					
Milestone			Action(s)	Responsibilities	Outputs	
Year 1: 20 netting se	021/22 eason	A plan has been finalised, with Year 2-4 actions set out, to provide:	Meet with commercial fishers. Discuss potential options to reduce or minimise catches of Perth herring.	DPIRD Aquatic Management (Nearshore)	<ul> <li>Progress towards an agreement with all fishers</li> </ul>	

<ul> <li>some objective basis for confidence that the measures/partial strategy will work for managing main secondary species, addressing the lacking clarity about reference harvest levels (if those continue to be used) and timeframes for management action, and,</li> <li>some evidence that the measures/partial strategy is being implemented successfully, noting the ongoing issues with time lags in implementing management actions triggered by the harvest strategy.</li> </ul>	- some objective basis for confidence that the measures/partial strategy will work for managing main secondary species, addressing the lacking clarity about reference harvest levels (if those continue to be used) and timeframes for	Implement harvest strategy as required for mullet. If a breach occurs, management action will be taken within 6 months, with more immediate action for more severe breaches.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report
	Develop a plan to outline data required, intended methods, timeframes and people responsible for clarifying the reference harvest levels, providing an objective basis for confidence that the harvest strategy measures will work and any required management action will occur in a timely manner.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Consolidated plan for all Conditions of the Certification	
Year 1 audit: Nov 2022	Present findings and assess them against the Conditions and Milestone.	Compile and present the fishery statistics and any required management actions for the 2021/22 season. Explain the relationship between the target catch and catch MSY. Outline progress towards an agreement to reduce the catch of Perth herring.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Presentation of proposed plan at the audit
Year 2: 2022/23 netting season	Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure	Meet with commercial fishers. Finalise options to reduce or minimise catches of Perth herring.	DPIRD Aquatic Management (Nearshore)	- A final agreement with all fishers
	the Condition can still be met at Year 4.	Implement harvest strategy as required for mullet. If a breach occurs, management action will be taken within 6 months, with more immediate action for more severe breaches.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report

		Assess whether the plan developed in Year 1 is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 2 audit: Nov 2023	Present findings and assess them against the Conditions and Milestone.	Compile and present the fishery statistics and any required management actions for the 2022/23 season. Report on final agreement to reduce the catch of Perth herring.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 3: 2023/24 netting season	Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4. Collection of evidence has begun to: - establish an objective basis for confidence that the measures/partial strategy will work for managing main secondary species. If actions from the plan developed in earlier milestones involve changes to the management measures/partial strategy, these have been finalised and implementation has commenced (and is demonstrable), and,	Implement harvest strategy as required for mullet. If a breach occurs, management action will be taken within 6 months, with more immediate action for more severe breaches. Monitor catches of Perth herring and implement management actions as required.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report
		Assess whether the updated plan is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
	- demonstrate the measures/partial strategy for main secondary species is being implemented successfully.	Review Harvest Strategy for main secondary species. Finalise changes that need to be made to management measures or strategy for the new version of the HS. Demonstrate that implementation has commenced.	DPIRD Aquatic Management (Nearshore)	- Commencement of draft Harvest Strategy
Year 3 audit: Nov 2024	Present findings and assess them against the Conditions and Milestone.	Compile and present the fishery statistics and any required	DPIRD Aquatic Research (Nearshore)	<ul> <li>Presentation at the audit of updated plan, harvest strategy review</li> </ul>

		management actions for the 2023/24 season.		and any relevant changes to the management measures or strategy that have been implemented
Year 4: 2024/25 netting season	Evidence is available to provide an objective basis for confidence that the measures/partial strategy will work for managing main secondary species based on some information directly about the UoA and/or species involved, and, to show the measures/partial strategy is being implemented successfully.	Monitor catches and implement management actions as required. If a breach occurs, management action will be taken within 6 months, with more immediate action for more severe breaches. Assess the efficacy of any management actions that may have been taken in previous seasons. Assess all lines of evidence to determine whether the measures for managing main secondary species have worked	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report - Revised Harvest Strategy - RAR
Year 4 audit: Nov 2025	Present findings and assess them against the Conditions and Milestone.	Compile and present the fishery statistics and any required management actions for the 2024/25 season.	DPIRD Aquatic Research (Nearshore)	- Presentation at the audit of RAR, new Harvest Strategy and evidence that the measures for maintaining yelloweye mullet have worked and will continue to work

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Table 57	- PI 2.2.3 – Condition 14 and 15			
1	Condition numbers 14, 15			
	UoA 4 (Commercial haul-nets); UoA 5 (Commerci	al gill-nets)		
2	Performance Indicator(s)			
	2.2.3(a)			
3	Score			
	75 (for both UoAs)			
4	Condition(s)			
	<u>Condition</u> : By the 4th Annual Surveillance Audit, o mullet fishery on main secondary species, with re	quantitative information is available to adequately assess the impact of the commercial sea spect to status.		
	<u>Reasoning</u> : For Perth herring and estuary cobbler risk assessment process), though additional inform met, while SG80 is currently not met.	(UoA 5 only), some quantitative information is available to estimate impacts (e.g. through the mation is needed to adequately assess the impact of the UoA with respect to status. SG60 is		
5	Milestone(s)			
	Year 1: 2021/22 netting season	November 2021		
	Year 1 audit	November 2022		
	Year 2: 2022/23 netting season			
	Year 2 audit	November 2023		
	Year 3: 2023/24 netting season			



	Year 3	audit	November 2024		
	Year 4:	2024/25 netting season			
	Year 4	audit	November 2025		
6	Summa	ry of action plan			
	<u>Commercial haul-nets (UoA 4) &amp; Commercial gill-nets (UoA 5)</u> : Management action is expected to be taken to reduce catches of both Perth herring and estuary cobbler. The intention will be to reduce the risk to Perth herring in an updated ERA and have negligible catches of estuary cobbler. If catches remain at levels that continue to classify the species as a main secondary species, data-limited methods will be used to assess the status for each stock. An annual report will detail catch and effort statistics, where relevant, as well as any management actions required to be taken during the season.				
Milestone			Action(s)	Responsibilities	Outputs
Year 1: 2021/22 netting season		A plan has been finalised, with Year 2-4 actions set out, to provide quantitative information to adequately assess the impact of the UoA on Perth herring and astuany sobbler with respect to status	Meet with commercial fishers to discuss potential options to reduce or minimise catches of each species.	DPIRD Aquatic Management (Nearshore)	<ul> <li>Progress towards an agreement with all fishers</li> <li>Annual Report</li> </ul>
			Review the methods used to assess the stock status of Estuary cobbler.	DPIRD Aquatic Research (Nearshore)	- SAFS Chapter
			Develop a plan to outline data required, intended methods, timeframes and people responsible for assessing the status of Perth herring and estuary cobbler, if they remain a main secondary species.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Consolidated plan for all Conditions of the Certification
First audit 2022	: Nov	Present findings and assess them against the Conditions and Milestone.	Report on stock assessment methods and results (Estuary cobbler) and progress towards an agreement to reduce the catch of each species.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of proposed plan at the audit</li> </ul>
Year 2: 20 netting se	)22/23 ason	Actions set out in the plan developed in Year 1 are on track. If not, remedial	Meet with commercial fishers to finalise options to reduce or minimise catches of each species.	DPIRD Aquatic Management (Nearshore)	- A final agreement with all fishers

actions have been identified to ensure the Condition can still be met at Year 4.	actions have been identified to ensure the Condition can still be met at Year 4.	If no agreement can be reached, decide on options for a data-limited assessment of each species.	DPIRD Aquatic Research (Nearshore)	
	Assess whether the plan developed in Year 1 is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>	
Year 2 audit: Nov 2023	Present findings and assess them against the Conditions and Milestone.	Report on final agreement to reduce the catch of each species or the data- limited stock assessment method(s) that has/have been chosen.	DPIRD Aquatic Management (Nearshore) DPIRD Aquatic Research (Nearshore)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 3: 2023/24 netting season	Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	Monitor catches of each species and implement management actions as required.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report
		Review the methods used to assess the Estuary cobbler stock, if needed.	DPIRD Aquatic Research (Nearshore)	<ul> <li>SAFS Chapter</li> <li>Data-limited stock assessment, if required</li> </ul>
		Assess whether the updated plan is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 3 audit: Nov 2024	Present findings and assess them against the Conditions and Milestone.	Report on stock assessment methods (Estuary cobbler) and results of methods to reduce the catch of Perth herring.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 4: 2024/25 netting season	Quantitative information is provided that is adequate to assess the impact of the UoA on Perth herring and estuary cobbler with respect to status.	Monitor catches of each species and implement management actions as required.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	- Annual Report - RAR



		Assess the efficacy of any management actions that may have been taken in previous seasons. Assess all lines of evidence to determine whether the measures for managing main secondary species have worked		
Year 4 audit: Nov 2025	Present findings and assess them against the Conditions and Milestone.	Compile and present the fishery statistics, most recent stock assessments and any required management actions for the 2024/25 season.	DPIRD Aquatic Research (Nearshore) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation at the audit of quantitative information to assess the status of Perth herring and estuary cobbler</li> </ul>



Table 58	Table 58 - PI 2.3.1 – Condition 16			
1	Condition number 16			
	UoA 3 (Recreational scoop-nets)			
2	Performance Indicator(s)			
	2.3.1(c)			
3	Score			
	70			
4	Condition(s)			
	<u>Condition</u> : By the 4th Annual Surveillance Audit, on highly likely to not create unacceptable impacts on <u>Reasoning</u> : Disturbance of birds (especially thread permitted 1 September–30 November, which reduce that period, scoop net fishers may be active during areas. Migratory shorebirds remain present until to February is the peak season for this UoA. Scoop re 2020 risk assessment classified this UoA as a High recognised (in accordance with the blue swimmer to be highly likely to not create unaccentable imp	demonstrate that indirect effects of the recreational blue swimmer fishery are thought to be n ETP (migratory shorebirds). eened migratory shorebirds) has been identified as problematic in the Estuary. No crabbing is uces disturbance during the arrival of migratory shorebirds at the estuary. However, outside g day or night and can disturb shorebirds feeding and roosting in the shallows and adjacent the autumn when they return to their northern hemisphere breeding grounds, and January- net fishers were documented as a key source of disturbance for migratory shorebirds. The n risk for migratory threatened shorebirds. The need for additional management action was crab harvest strategy). For this group, indirect effects have been considered are not thought		
5	Miloctopo(s)			
J	Voar 1: 2021/22 crabbing coacon	Starts December 2021		
	Year 1 audit	November 2022		
	Year 2: 2022/23 crabbing season	Starts December 2022		



	Year 2 audit		November 2023			
	Year 3:	2023/24 crabbing season	Starts December 2023	Starts December 2023		
	Year 3	audit	November 2024			
	Year 4:	2024/25 crabbing season	Starts December 2024			
	Year 4	audit	November 2025			
6	Summa	ary of action plan				
	<u>Recreational scoop-nets (UoA 3)</u> : A meeting will be held with Mandurah stakeholders and bird groups to determine what potential measures would successfully reduce the level of risk to the migratory birds in the estuary. An agreement will need to be reached with the Clients to implement the measures identified. An ERA will be conducted before the fourth audit to determine whether any measures implemented were successful in reducing the risk to migratory shorebirds.					
Milestone			Action(s)	Responsibilities	Outputs	
Year 1: 2021/22 crabbing season		021/22 A plan has been finalised, with Year 2-4 season actions set out, to address unacceptable indirect impacts of the UoA on ETP, specifically disturbance of migratory shorebirds.	Meet with relevant stakeholders to discuss potential options to minimise impacts on ETP species (migratory wading birds) to reduce the risk from the UoA. Discuss options for quantifying any implemented measures.	DPIRD Aquatic Management (Nearshore)	<ul> <li>Range of options to mitigate impacts and monitor birds/fishers</li> </ul>	
			Meet with clients and discuss options to reduce the UoA's impacts on ETPs.	DPIRD Aquatic Management (Nearshore)	<ul> <li>Decide on options to mitigate impacts</li> </ul>	
			Develop a plan to outline data required, intended methods, timeframes and people responsible for addressing the impacts on migratory shorebird species (ETPs).	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Consolidated plan for all Conditions of the Certification</li> </ul>	
Year 1 au Nov 2022	dit:	Present findings and assess them against the Condition and Milestone.	Report on progress towards an agreement to reduce the impacts of the UoA on ETPs.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of proposed plan at the audit</li> </ul>	

Year 2: 2022/23 crabbing season	Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	Where applicable, finalise recommendations for mitigation measures and implement any monitoring and mitigation measures that have been agreed upon to quantify changes in the impacts on ETPs.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Effort data</li> <li>Published changes to management of the fishery, if applicable</li> </ul>
		Assess whether the plan developed in Year 1 is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 2 audit: Nov 2023	Present findings and assess them against the Condition and Milestone.	Report on progress towards an agreement to reduce the impacts of the UoA on migratory wading birds. Present the results of any monitoring carried out.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 3: 2023/24 crabbing season	Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	Where applicable, implement agreed mitigation and continue previously implemented measures to quantify changes in the impacts on ETPs & effectiveness of any mitigation measures implemented.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Effort data</li> <li>Published changes to management of the fishery</li> </ul>
		Assess whether the updated plan is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 3 audit: Nov 2024	Present findings and assess them against the Condition and Milestone.	Report on results of mitigation measures and any monitoring carried out.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 4: 2024/25 crabbing season	Evidence is provided that the UoA is considered highly likely to not create	Continue to monitor mitigation measures, as required.	DPIRD Aquatic Research (Nearshore)	- Effort data



	unacceptable impacts for migratory shorebirds.	Conduct ERA to assess the risk the fisheries pose to the broader ecosystem.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	- ERA report
Year 4 audit: Nov 2025	Present findings and assess them against the Condition and Milestone.	Report on results of ERA, mitigation measures and any monitoring carried out.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of evidence outlining the change in impacts on migratory shorebirds at the audit</li> </ul>

Table 59	- PI 2.3.2 - Condition 17
1	Condition number 17
	UoA 3 (Recreational scoop-nets)
2	Performance Indicator(s)
	2.3.2 (c,d)
3	Score
	70
4	Condition(s)
	<ul> <li><u>Condition</u>: By the 4th Annual Surveillance Audit, demonstrate for the recreational blue swimmer fishery that there is:</li> <li>- an objective basis for confidence that the measures/ strategy will work, based on information directly about the fishery and/or the species involved, and,</li> <li>- some evidence that the measures/ strategy is being implemented successfully.</li> </ul>



	migratory threatened shorebirds due to scoop netting, to reduce an identified High risk to an acceptable level (Medium or lower risk). This demonstrates key early steps of the risk evaluation and management process being followed, while measures remain to be identified.				
	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species). SG60 is met. As yet, there is not an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved. The identification of high risk for threatened migratory shorebirds appears to be the first time an ETP risk has been considered undesirable through applying the harvest strategy. SG80 is not met. [2.3.2(c)]				
	The Harvest Strategy states that when a high risk management response implemented as soon as p shorebirds) was identified as high, and the need f review was required has now passed, and the rev is not met. [2.3.2(d)]	e level is recognised, the reasons for this must be reviewed within three months and a practicable. In 2020, the risk that the UoA presents to one group of ETP (threatened migratory for additional management actions was identified. The three month period within which a iew has not been completed. The strategy appears to not be implemented successfully. SG80			
5	Milestone(s)				
	Year 1: 2021/22 crabbing season	Starts December 2021			
	Year 1 audit	November 2022			
	Year 2: 2022/23 crabbing season	Starts December 2022			
	Year 2 audit	November 2023			
	Year 3: 2023/24 crabbing season	Starts December 2023			
	Year 3 audit	November 2024			
	Year 4: 2024/25 crabbing season	Starts December 2024			
	Year 4 audit	November 2025			
6	Summary of action plan				
	Recreational scoop-nets (UoA 3): The actions implemented for Condition 16 (Table 6) are also expected to address this Condition. A meeting will be held with Mandurah stakeholders and bird groups to determine what potential measures would successfully reduce the level of risk to the migratory birds in the estuary. An agreement will need to be reached with the Clients to implement the measures identified. An ERA will be conducted before the fourth audit to determine whether any measures implemented were successful in reducing the risk to migratory shorebirds.				



Milestone		Action(s)	Responsibilities	Outputs
Year 1: 2021/22 crabbing season	A plan has been finalised, with Year 2-4 actions set out, to address unacceptable indirect impacts of the UoA on ETP, specifically disturbance of migratory shorebirds.	Meet with relevant stakeholders to discuss potential options to minimise impacts on ETP species (migratory wading birds) to reduce the risk from the UoA. Discuss options for quantifying any implemented measures.	DPIRD Aquatic Management (Nearshore)	- Range of options to mitigate impacts and monitor birds/fishers
		Meet with clients and discuss options to reduce the UoA's impacts on ETPs.	DPIRD Aquatic Management (Nearshore)	- Decide on options to mitigate impacts
		Develop a plan to outline data required, intended methods, timeframes and people responsible for addressing the impacts on migratory shorebird species (ETPs).	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	- Consolidated plan for all Conditions of the Certification
Year 1 audit: Nov 2022	Present findings and assess them against the Condition and Milestone.	Report on progress towards an agreement to reduce the impacts of the UoA on ETPs.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of proposed plan at the audit</li> </ul>
Year 2: 2022/23 crabbing season	Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	Where applicable, finalise recommendations for mitigation measures and implement any monitoring and mitigation measures that have been agreed upon to quantify changes in the impacts on ETPs.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Effort data</li> <li>Published changes to management of the fishery, if applicable</li> </ul>
		Assess whether the plan developed in Year 1 is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	- Update consolidated plan, as required



Year 2 audit: Nov 2023	Present findings and assess them against the Condition and Milestone.	Report on progress towards an agreement to reduce the impacts of the UoA on migratory wading birds. Present the results of any monitoring carried out.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 3: 2023/24 crabbing season	Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	Where applicable, implement agreed mitigation and continue previously implemented measures to quantify changes in the impacts on ETPs & effectiveness of any mitigation measures implemented.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Effort data</li> <li>Published changes to management of the fishery</li> </ul>
		Assess whether the updated plan is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 3 audit: Nov 2024	Present findings and assess them against the Condition and Milestone.	Report on results of mitigation measures and any monitoring carried out.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	- Presentation of updated plan, actions taken and expected schedule at the audit
Year 4: 2024/25 crabbing season	Evidence is provided that the UoA is considered highly likely to not create unacceptable impacts for migratory	Continue to monitor mitigation measures, as required.	DPIRD Aquatic Research (Nearshore)	- Effort data
	shorebirds.	Conduct ERA to assess the risk the fisheries pose to the broader ecosystem.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	- ERA report
Year 4 audit: Nov 2025	Present findings and assess them against the Condition and Milestone.	Report on results of ERA, mitigation measures and any monitoring carried out.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	- Presentation of evidence outlining the change in impacts on migratory shorebirds at the audit



Table 60	- PI 2.3.3 - Condition 18			
1	Condition numbers 18			
	UoA 2 (Recreational drop-nets)			
2	Performance Indicator(s)			
	2.3.3(b)			
3	Score			
	70			
4	Condition(s)			
	<ul> <li><u>Condition</u>: By the 4th Annual Surveillance Audit, demonstrate that information is adequate to measure trends and support a strategy to manage impacts on ETP species.</li> <li><u>Reasoning</u>: Information is adequate to support measures to manage the impacts on ETP species, for example, the demonstrated selectivity of the analogous crab pot fishing method used by commercial fishers (and extremely low levels of ETP captures detected over time), and the nature of potential indirect effects (e.g. disturbance). However, there is no information available to measure trends characterising the UoA as relevant to ETP interactions (e.g. in terms of fishing effort, intensity of use of fishing areas, UoA-specific information on captures/lack of captures, etc.). SG60 is met. SG80 is not.</li> </ul>			
5	Milestone(s)			
	Year 1: 2021/22 crabbing season	Starts December 2021		
	Year 1 audit	November 2022		
	Year 2: 2022/23 crabbing season	Starts December 2022		
	Year 2 audit	November 2023		
	Year 3: 2023/24 crabbing season	Starts December 2023		



	Year 3	audit	November 2024		
	Year 4:	2024/25 crabbing season	Starts December 2024		
	Year 4	audit	November 2025		
6	Summa	ary of action plan			
	<u>Recreational drop-nets (UoA 2)</u> : This Condition may require a new survey method as recreational vessels are not as easy to georeference as shore-based fishers. Spatial information for both boat-based and shore-based fishing events were recorded for fishers who participated in previous and current Statewide recreational fishing surveys (2015/16, 2017/18, 2020/21). While these data are only representative of RBF licence-holders, the proportion of fishers who use drop-nets exclusively from shore-based platforms will be obtained from phone-diary surveys in 2000/01 and 2017/18, which sampled the general population using the white pages as a sampling frame. These data will be collated and assessed against the Condition. A review will be carried out to determine appropriate methods to meet the Condition if these data are not sufficient. The most appropriate method will be trialled in the 2023/24 crabbing season, concurrent with the Statewide recreational fishing survey.				
Milestone			Action(s)	Responsibilities	Outputs
Year 1: 20 crabbing s	021/22 season	<ul> <li>A plan has been finalised, with Year</li> <li>2-4 actions set out, to provide for the measurement of trends and to</li> </ul>	Collate current or historic spatial information for drop-net crabbing activity.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Collated spatial data for drop-net crabbers (boat- based &amp; fixed-platform)</li> </ul>
		on ETP species.	Develop a plan to outline data required, intended methods, timeframes and people responsible for measuring the trends in fishing activity and managing the impacts on migratory shorebird species (ETPs).	DPIRD Aquatic Research (Surveys/Ecosystems) DPIRD Aquatic Management (Nearshore)	- Consolidated plan for all Conditions of the Certification
Year 1 au Nov 2022	dit:	Present findings and assess them against the Condition and Milestone.	Report on collated data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	- Presentation of proposed plan at the audit
Year 2: 20 crabbing s	022/23 season	Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified	Depending on the suitability of the collated data, continue to collect or review new methods to address the Conditions.	DPIRD Aquatic Research (Surveys/Ecosystems)	- Data collection methods and spatial data for drop- net crabbers (boat-based & fixed-platform)



	to ensure the Condition can still be met at Year 4.	Assess whether the plan developed in Year 1 is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Surveys/Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 2 audit: Nov 2023	Present findings and assess them against the Condition and Milestone.	Report on suitability of methods for collecting spatial data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 3: 2023/24 crabbing season	Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the	Implement spatial data collection methods concurrent with the Statewide recreational fishing survey (iSurvey).	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Spatial data for drop-net crabbers (boat-based &amp; fixed-platform)</li> </ul>
	Collection/collation of information has begun to demonstrate that this is adequate for measuring trends and to support a strategy to manage ETP impacts.	Assess whether the updated plan is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 3 audit: Nov 2024	Present preliminary results and assess them against the Condition and Milestone.	Report on suitability of methods for collecting spatial data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 4: 2024/25 crabbing season	Evidence is provided that demonstrates information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Finalise spatial data collection methods to provide a trend in the intensity and relative distribution of drop-net crabbing effort.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Spatial data for drop-net crabbers (boat-based &amp; fixed-platform)</li> </ul>
Year 4 audit: Nov 2025	Present final results and assess them against the Condition and Milestone.	Report on suitability of methods for collecting spatial data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	- Presentation at the audit of evidence to demonstrate the capture of trends in fishing activity to support the management of impacts to ETP species.



Table 61	- PI 2.3.3(b) – Condition 19			
1	Condition numbers 19			
	UoA 5 (Commercial gill-nets)			
2	Performance Indicator(s)			
	2.3.3(b)			
3	Score			
	70			
4	Condition(s)			
	<u>Condition</u> : By the 4th Annual Surveillance Audit, demonstrate that information is adequate to measure trends and support a strategy to manage impacts on ETP species. <u>Reasoning</u> : Information is adequate to support measures to manage the impacts on ETP species, for example, the operational measures that characterise the UoA, and low level of interactions (with cormorants) known over time. Continued collection of information relevant to measuring trends is required, and it is noted that DPIRD monitoring (focused on "bycatch" i.e. primary and secondary species, but also detecting any ETP interactions) was planned five-yearly. SG60 is met. SG80 is not currently met, however, the intent to collect relevant information from the winter of 2021 is recognised.			
5	Milestone(s)			
	Year 1: 2021/22 netting season			
	Year 1 audit	November 2022		
	Year 2: 2022/23 netting season			
	Year 2 audit	November 2023		
	Year 3: 2023/24 netting season			



	Year 3 audit		November 2024		
	Year 4:	2024/25 netting season			
	Year 4	audit	November 2025		
6	Summary of action plan				
	<u>Comme</u> to 3-mo	ercial gill-nets (UoA 5): Bycatch monitoring onth period, DPIRD will commit to conduct	g is planned for the 2020/21 season. As ing this more regularly than 5-yearly.	gill-net fishing primarily occu	rs over a constrained 2-
Milestone			Action(s)	Responsibilities	Outputs
Year 1: 2021/22 netting season		A plan has been finalised, with Year 2-4 actions set out, to provide for the measurement of trends and to support a strategy to manage impacts on ETP species.	Commitment to conduct bycatch monitoring with commercial gill-net fishers for 1 to 2 days per month from June to October annually.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Bycatch monitoring effort and data</li> </ul>
			Develop a plan to outline data required, intended methods, timeframes and people responsible for measuring the trends in fishing activity and managing the impacts on ETP species.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Consolidated plan for all Conditions of the Certification</li> </ul>
Year 1 audit: Nov 2022		Present results and assess them against the Condition and Milestone.	Report on bycatch monitoring effort and data for commercial gill-net fishers.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Presentation on proposed plan at the audit</li> </ul>
Year 2: 20 netting se	022/23 eason	Actions set out in the plan developed in Year 1 are on track. If not, remedial	Bycatch monitoring with gill-net fishers.	DPIRD Aquatic Research (Ecosystems)	- Bycatch monitoring effort and data
	actions have been identified to ensure the Condition can still be met at Year 4.		Assess whether the plan developed in Year 1 is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>



Year 2 audit: Nov 2023	Present results and assess them against the Condition and Milestone.	Report on bycatch monitoring effort and data for commercial gill-net fishers.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 3: 2023/24 netting season	Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4. Collection/collation of information has begun to demonstrate that this is adequate for measuring trends and to support a strategy to manage ETP impacts.	Bycatch monitoring with gill-net fishers. This will provide data over several years to measure trends and support strategies to manage impacts on ETP species.	DPIRD Aquatic Research (Ecosystems)	- Bycatch monitoring effort and data
		Assess whether the updated plan is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	- Update consolidated plan, as required
Year 3 audit: Nov 2024	Present results and assess them against the Condition and Milestone.	Report on bycatch monitoring effort and data for commercial gill-net fishers.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 4: 2024/25 netting season	Evidence is provided that demonstrates information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Bycatch monitoring with gill-net fishers with a commitment to ongoing monitoring.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Bycatch monitoring effort and data</li> </ul>
Year 4 audit: Nov 2025	Present results and assess them against the Condition and Milestone.	Report on bycatch monitoring effort and data for commercial gill-net fishers.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Presentation at the audit of evidence to demonstrate the capture of trends in fishing activity to support the management of impacts to ETP species</li> </ul>



Table 62	- PI 2.4.3(b) – Condition 20	
1	Condition number 20	
	UoA 2 (Recreational drop-nets)	
2	Performance Indicator(s)	
	2.4.3(b)	
3	Score	
	75	
4	Condition(s)	
	<u>Condition</u> : By the 4th Annual Surveillance Audit, or recreational blue swimmer fishery and on the time	demonstrate that there is reliable information on the spatial extent of interaction of the ing and location of use of the fishing gear.
	<u>Reasoning</u> : There is some information available fr September - March, with further work underway. conducted. Camera monitoring also provides ongo shore-based fishers).	om four Statewide Recreational Fishing Surveys on the location of use of the fishing gear, On-site surveys are planned to take place in the years the statewide surveys are not ping information on fisher presence in three high-use sites (with this method focusing on
	While some information is available and this is acc information on the spatial extent of interaction an statewide surveys will continue to build the inform	cumulating, it does yet not appear to be at a scale and level of detail to comprise reliable d on the timing and location of use of the fishing gear. On-site work planned between nation base. SG80 is not met for this UoA currently.
5	Milestone(s)	
	Year 1: 2021/22 crabbing season	Starts December 2021
	Year 1 audit	November 2022
	Year 2: 2022/23 crabbing season	Starts December 2022



	Year 2	audit	November 2023		
	Year 3:	2023/24 crabbing season	Starts December 2023		
	Year 3	audit	November 2024		
	Year 4:	2024/25 crabbing season	Starts December 2024		
	Year 4	audit	November 2025		
6	Summa	ary of action plan			
	<u>Recreational drop-nets (UoA 2)</u> : It is expected that the work done to meet Condition 18 will also address this Condition. Spatial information for both boat-based and shore-based fishing events were recorded for fishers who participated in previous and current Statewide recreational fishing surveys (2015/16, 2017/18, 2020/21). While these data are only representative of RBF licence-holders, the proportion of fishers who use drop-nets exclusively from shore-based platforms will be obtained from phone-diary surveys in 2000/01 and 2017/18, which sampled the general population using the white pages as a sampling frame. These data will be collated and assessed against the Condition. A review will be carried out to determine appropriate methods to meet the Condition if these data are not sufficient. The most appropriate method will be trialled in the 2023/24 crabbing season, concurrent with the Statewide recreational fishing survey.				
Milestone			Action(s)	Responsibilities	Outputs
Year 1: 20 crabbing s	021/22 season	1/22 A plan has been finalised, with Year 2-4 actions set out, to provide for the collection/collation of reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	Collate current or historic spatial information for drop-net crabbing activity	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Collated spatial data for drop-net crabbers (boat- based &amp; fixed-platform)</li> </ul>
			Develop a plan to outline data required, intended methods, timeframes and people responsible for determining the spatial and temporal dynamics of fishing gear use.	DPIRD Aquatic Research (Surveys/Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Consolidated plan for all Conditions of the Certification</li> </ul>
Year 1 au Nov 2022	dit:	Present findings and assess them against the Condition and Milestone.	Report on collated data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Presentation of proposed plan at the audit</li> </ul>
Year 2: 20 crabbing s	022/23 season	Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	Depending on the suitability of the collated data, continue to collect or review new methods to address the Conditions.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Data collection methods and spatial data for drop- net crabbers (boat-based &amp; fixed-platform)</li> </ul>



Image: Normal set in the plan developed in singlate remedial actions.DPIRD Aquatic Research pPIRD Aquatic Research (Surveys/Ecosystems))-Vpate consolidated plan, as requiredYear 2 audit:Present findings and assess them against the Condition and Milestone.Report on suitability of methods for collecting spatial data for drop-net fishers.DPIRD Aquatic Research (Surveys/Ecosystems))-Presentation of updated plan, actions taken and expected schedule at the auditYear 3: 2023/2Actions set out in the plan are on track. If not, develop and instigate remedial actions have been predial actions have been fishers.DPIRD Aquatic Research (Surveys/Ecosystems))-Spatial data for drop-net crabbers (boch-based & fixed-platform)Year 3: 2023/2Present preliminary results and assess steme at Year 4.mplement spatial data collection (survey).Sesses whether the updated plan is by and entities on track. If not, develop and instigate remedial actions and the timing and location of utrack. If not, develop and instigate (Ecosystems)) of use of the fishing gear.Sesses whether the updated plan is by and entities of track. If not, develop and instigate (Ecosystems)) of use of the fishing gear.Sesses whether the updated plan is by and relative develop and instigate is equired used with the spatial actions.Sesses whether the updated plan is by and track (Ecosystems)) of use of the fishing gear.Sesses whether the updated plan is by and track (Ecosystems)) of use of the fishing gear.Sesses whether the updated plan is by and entities of track. If not, develop and instigate remedial actions.Sesses whether the updated plan is by and entities of track (Ecosystems)) of use of the fishing gear.Sesses whether the updated plan is					
Year 2 audit: Nov 2023Present findings and assess them against the Condition and Milestone.Report on suitability of methods for collecting spatial data for drop-net fishers.DPIRD Aquatic Research (Surveys/Ecosystems)Presentation of updated plan, actions taken and updated plan, actions taken and updated spatial data for drop-net rabbing seasonPresentation of updated plan, actions taken and updated plan, actions taken and updated plan, actions taken and technologic presentations have been didentified to ensure the Condition can statewide recreational fishing surveys/ (Surveys/.DPIRD Aquatic Research (Surveys/Ecosystems)Presentation of updated plan, actions taken and update for drop-net rabbing season of use of the fishing gear.Report on suitability of methods for collections.DPIRD Aquatic Research (Surveys/Ecosystems)Presentation of updated plan, as requiredYear 3 audit: Nov 2024Present preliminary results and assess Milesone.Report on suitability of methods for collecting spatial data for drop-net collecting spatial data for drop-net reserted schedule at the auditDPIRD Aquatic Research (Surveys/Ecosystems)Presentation of updated plan, actions taken and plan, actions and be plan, actions and be plan, actions and be percentation and milestone.Presentation of updated plan, actions and season the condition and methods concurrent with the spatial data collection methods for collecting spatial data collection methods for present final results and assess them Nov 2025Present final results and assess them fishers.<			Assess whether the plan developed in Year 1 is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Surveys/Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 3: 2023/2 Crabbing season and the field to ensure the Condition can still be met at Year 4.Implement spatial data collection methods concurrent with the Statewide recreational fishing survey (Survey).DPIRD Aquatic Research (Surveys/Ecosystems)Spatial data for drop-net crabbers (boat-based & fixed-platform)Year 3 audit: Nov 2024Present preliminary results and assess them against the Condition and milestone.Report on suitability of methods for collection for suitability and relative distribution of use of the fishing gear.Present preliminary results and assess fishers.Pinale spatial data collection (Surveys/Ecosystems)- Presentation of updated plan, actions taken and expected schedule at the auditYear 4: 2024/25 Crabbing seasonThere is evidence provided that carabing gear.Finalise spatial data collection 	Year 2 audit: Nov 2023	Present findings and assess them against the Condition and Milestone.	Report on suitability of methods for collecting spatial data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Collection/collation of information has begun to describe the spatial extent of interaction and the timing and location of use of the fishing gear.Assess whether the updated plan is on track. If not, develop and instigate remedial actions.DPIRD Aquatic Research (Ecosystems)- Update consolidated plan, as requiredYear 3 audit: Nov 2024Present preliminary results and assess them against the Condition and Milestone.Report on suitability of methods for collecting spatial data for drop-net fishers.DPIRD Aquatic Research (Surveys/Ecosystems)- Veatestand of updated plan, actions taken and expected schedule at the 	Year 3: 2023/24 crabbing season	Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	Implement spatial data collection methods concurrent with the Statewide recreational fishing survey (iSurvey).	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Spatial data for drop-net crabbers (boat-based &amp; fixed-platform)</li> </ul>
Year 3 audit: Nov 2024Present preliminary results and assess them against the Condition and Milestone.Report on suitability of methods for collecting spatial data for drop-net fishers.DPIRD Aquatic Research (Surveys/Ecosystems)- Presentation of updated plan, actions taken and expected schedule at the auditYear 4: 2024/25 crabbing seasonThere is evidence provided that demonstrates the existence of reliable information on the spatial extent of location of use of the fishing gear.Finalise spatial data collection methods to provide a trend in the intensity and relative distribution of drop-net crabbing effort.DPIRD Aquatic Research (Surveys/Ecosystems)- Spatial data for drop-net crabbers (boat-based & fixed-platform)Year 4 audit: Nov 2025Present final results and assess them against the Condition and Milestone.Report on suitability of methods for collecting spatial data for drop-net crabbing effort.DPIRD Aquatic Research (Surveys/Ecosystems)- Presentation at the audit of evidence to demonstrate the spatial and temporal dynamics of gear use for recreational drop-nets are being captured		Collection/collation of information has begun to describe the spatial extent of interaction and the timing and location of use of the fishing gear.	Assess whether the updated plan is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 4: 2024/25 crabbing seasonThere is evidence provided that demonstrates the existence of reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.Finalise spatial data collection methods to provide a trend in the intensity and relative distribution of drop-net crabbing effort.DPIRD Aquatic Research (Surveys/Ecosystems)Spatial data for drop-net crabbers (boat-based & fixed-platform)Year 4 audit: Nov 2025Present final results and assess them against the Condition and Milestone.Report on suitability of methods for collecting spatial data for drop-net fishers.DPIRD Aquatic Research (Surveys/Ecosystems)- Presentation at the audit of evidence to demonstrate the spatial and temporal dynamics of gear use for recreational drop-nets are being captured	Year 3 audit: Nov 2024	Present preliminary results and assess them against the Condition and Milestone.	Report on suitability of methods for collecting spatial data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
Year 4 audit: Nov 2025Present final results and assess them against the Condition and Milestone.Report on suitability of methods for collecting spatial data for drop-net fishers.DPIRD Aquatic Research (Surveys/Ecosystems)- Presentation at the audit of evidence to demonstrate the spatial and temporal dynamics of gear use for recreational drop-nets are being captured	Year 4: 2024/25 crabbing season	There is evidence provided that demonstrates the existence of reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	Finalise spatial data collection methods to provide a trend in the intensity and relative distribution of drop-net crabbing effort.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Spatial data for drop-net crabbers (boat-based &amp; fixed-platform)</li> </ul>
	Year 4 audit: Nov 2025	Present final results and assess them against the Condition and Milestone.	Report on suitability of methods for collecting spatial data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Presentation at the audit of evidence to demonstrate the spatial and temporal dynamics of gear use for recreational drop-nets are being captured</li> </ul>

Table 63	- PI 2.5.3(e) - Conditions 21 and 22
1	Condition numbers 21, 22
	UoA 2 (Recreational drop-nets); UoA 5 (Commercial gill-nets)
2	Performance Indicator(s)
	2.5.3(e)
3	Score
	75 (for both UoAs)
4	Condition(s)
	Condition: By the 4th Annual Surveillance Audit, demonstrate that adequate data continue to be collected to detect any increase in risk level presented.
	<u>Reasoning</u> : There is some information available from four Statewide Recreational Fishing Surveys on the location of use of the fishing gear, September – March, with further work underway. On-site surveys are planned to take place in future years when the statewide surveys are not conducted. Some bait information is collected on an ongoing basis through the voluntary Western Australia Recreational Angler Program. Camera monitoring also provides ongoing information on fisher presence in three high-use sites (with this method focusing on shore-based fishers).
	These data sources would contribute to the detection of an increase in risk presented by the UoA, but are not currently considered adequate to detect any increase in risk level. SG80 and SG100 are not met. (UoA 2)
	Commercial catch landings are reported by fishers, while discarded catch is not routinely quantified. A monitoring programme for non-target catch was conducted in 2017/18. This comprised fishery-dependent reporting through monthly log sheets and bi-monthly trips by DPIRD staff on commercial vessels to verify reported data and included the collection of discard information. The intent to repeat this monitoring from mid-



	2021 is stated, which, together with additional data collection on fishing location would be adequate to detect any increase in risk level. Compliance activities are ongoing, prioritised by risk. SG80 and SG100 are not currently met. (UoA 5)				
5	Milesto	ne(s)			
	Year 1:	2021/22 netting/crabbing seasons			
	Year 1	audit	November 2022		
	Year 2:	2022/23 netting/crabbing seasons			
	Year 2	audit	November 2023		
	Year 3:	2023/24 netting/crabbing seasons			
	Year 3	audit	November 2024		
	Year 4:	2024/25 netting/crabbing seasons			
	Year 4	audit	November 2025		
6	Summa	ary of action plan			
	<u>UoA 2 (</u> commit	Recreational drop-nets); Commercial gill- ment to their regular implementation, will	nets (UoA 5): It is expected that the wo also address these Conditions.	ork done to meet Conditions 1	8 and 19, with a
Milestone			Action(s)	Responsibilities	Outputs
Year 1: 20 netting/cr seasons	021/22 abbing	1/22 Provide a finalise plan, with Year 2-4 actions set out, to provide for the ongoing collection of adequate data to detect any increase in risk level	Collate current or historic spatial information for drop-net crabbing activity.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Collated spatial data for drop-net crabbers (boat-based &amp; fixed- platform)</li> </ul>
	presented by the UoA.		Commitment to conduct bycatch monitoring with commercial gill-net fishers for 1 to 2 days per month from June to October annually.	DPIRD Aquatic Research (Ecosystems)	- Bycatch monitoring effort and data

		Develop a plan to outline data required, intended methods, timeframes and people responsible for detecting an increase in the risk posed by the UoAs.	DPIRD Aquatic Research (Surveys/Ecosystems) DPIRD Aquatic Management (Nearshore)	- Consolidated plan for all Conditions of the Certification
Year 1 audit: Nov 2022	Present results and assess them against the Conditions and Milestone.	Report on collated data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	- Presentation of proposed plan at the
		Report on bycatch monitoring effort and data for commercial gill-net fishers.	DPIRD Aquatic Research (Ecosystems)	audit
Year 2: 2022/23 netting/crabbing seasons	Actions set out in the plan developed in Year 1 are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	Depending on the suitability of the collated data, continue to collect or review new methods to address the Conditions.	DPIRD Aquatic Research (Surveys/Ecosystems)	- Data collection methods and spatial data for drop-net crabbers (boat-based & fixed-platform)
		Bycatch monitoring with gill-net fishers.	DPIRD Aquatic Research (Ecosystems)	<ul> <li>Bycatch monitoring effort and data</li> </ul>
		Assess whether the plan developed in Year 1 is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Surveys/Ecosystems) DPIRD Aquatic Management (Nearshore)	- Update consolidated plan, as required
Year 2 audit: Nov 2023	Present results and assess them against the Conditions and Milestone.	Report on suitability of methods for collecting spatial data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Presentation at of updated plan, actions taken and expected</li> </ul>
		Report on bycatch monitoring effort and data for commercial gill-net fishers.	DPIRD Aquatic Research (Ecosystems)	audit
Year 3: 2023/24 netting/crabbing seasons	Actions set out in the plan are on track. If not, remedial actions have been identified to ensure the Condition can still be met at Year 4.	Implement spatial data collection methods concurrent with the Statewide recreational fishing survey (iSurvey).	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Spatial data for drop- net crabbers (boat- based &amp; fixed-platform)</li> </ul>

		Bycatch monitoring with gill-net	DPIRD Aquatic Research	- Bycatch monitoring
		fishers.	(Ecosystems)	effort and data
		Assess whether the updated plan is on track. If not, develop and instigate remedial actions.	DPIRD Aquatic Research (Ecosystems) DPIRD Aquatic Management (Nearshore)	<ul> <li>Update consolidated plan, as required</li> </ul>
Year 3 audit: Nov 2024	Present results and assess them against the Conditions and Milestone.	Report on suitability of methods for collecting spatial data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Presentation of updated plan, actions taken and expected schedule at the audit</li> </ul>
		Report on bycatch monitoring effort and data for commercial gill-net fishers.	DPIRD Aquatic Research (Ecosystems)	
Year 4: 2024/25 netting/crabbing seasons	There is evidence provided that demonstrates that adequate data continue to be collected to detect any increase in risk level presented by the UoA.	Finalise spatial data collection methods to provide a trend in the intensity and relative distribution of drop-net crabbing effort.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Spatial data for drop- net crabbers (boat- based &amp; fixed-platform)</li> </ul>
		Bycatch monitoring with gill-net fishers with a commitment to ongoing monitoring.	DPIRD Aquatic Research (Ecosystems)	- Bycatch monitoring effort and data
Year 4 audit: Nov 2025	Present final results and assess them against the Conditions and Milestone.	Report on suitability of methods for collecting spatial data for drop-net fishers.	DPIRD Aquatic Research (Surveys/Ecosystems)	<ul> <li>Presentation at the audit of evidence to demonstrate increased risk levels can be detected</li> </ul>
		Report on bycatch monitoring effort and data for commercial gill-net fishers.	DPIRD Aquatic Research (Ecosystems)	



Table 64	- PI 3.2.3(c) – Condition 23
1	Condition number 23
	UoA 2 (Recreational drop-nets); UoA 3 (Recreational scoop-nets)
2	Performance Indicator(s)
	3.2.3 (a,b,c,d)
3	Score
	60 (for both UoAs)
4	Condition(s)
	<u>Condition</u> : By the 4th Annual Surveillance Audit determine and implement MCS mechanisms to demonstrably mitigate non-compliance for the recreational blue swimmer fishery, including systematic non-compliance.
	<u>Reasoning</u> : Scoring issue (a) is not met at the SG80 because the system has not been able to <i>demonstrate</i> an ability to enforce relevant management measures, strategies and/or rules, evidenced by the significantly high non-compliance rates within recreational scoop netters.
	Regarding scoring issue (b), there is evidence that the sanctions are consistently applied, and that a 2014/15 increase in the sanction amount somewhat reduced the level of non-compliance. However, the non-compliance levels remain high hence there is not sufficient evidence to suggest that the current sanctions provide a deterrent. SG80 are therefore not met.
	SG80 under scoring issue (c) requires that some evidence exists to demonstrate fishers comply with the management system under assessment. In this case the reverse is true ie. there is evidence to suggest that recreational fishers are not complying with the management system, on account of the high non-compliance in the recreational scoop net sector. Therefore, SG80 is not met.
	Regarding scoring issue (d), Johnson (2015) examined the recreational fishing offence data and found that less than 1% of offences are from repeat offenders. However, there appears to be repeated non-compliance most specific to the issue of undersized crabs caught from recreational scoop nets and the assessment team considered this to be evidence of systematic non-compliance and therefore SG80 is not met.



5	Milesto	ne(s)				
	Year 1:	2021/22 crabbing season	Season starts December 2021	Season starts December 2021		
	Year 1	audit	November 2022			
	Year 2:	2022/23 crabbing season	Season starts December 2022			
	Year 2	audit	November 2023			
	Year 3:	2023/24 crabbing season	Season starts December 2023			
	Year 3	audit	November 2024			
6	Summa	ary of action plan				
	<u>Recreational drop-nets (UoA 2) and Recreational scoop-nets (UoA 3)</u> : Meeting this Condition will require substantial changes to the management and monitoring of the fishery. Once the root causes of non-compliance have been identified, discussions will take place with the relevant stakeholders to decide on actions to mitigate the non-compliance and to agree on measure to be implemented to reduce them. An annual report will detail catch and effort statistics as well as any management actions required to be taken during the season.					
Milestone			Action(s)	Responsibilities	Outputs	
Year 1: 2021/22 crabbing season		1/22 Review and document the root causes of non-compliance within all categories of recreational fishers for blue swimmer crab in the fishery.	Identify root causes of non- compliance in the recreational crabbing fisheries.	DPIRD Aquatic Management (Nearshore) DPIRD Compliance (Mandurah)	<ul> <li>Summary of consultations, communications and results</li> </ul>	
		Identify and consult with all interested and affected parties, regarding measures capable of ensuring compliance with the management system.	Commence discussions with stakeholders. Form working group to define and negotiate changes that need to be made to the management of the fishery to mitigate the issue of systematic non-compliance (repeat offenders) and the broader issue of non-repeat offenders. This may include a range of options including changes to closures, penalties and communication.	DPIRD Aquatic Management (Nearshore)	- Working group minutes	



Year 1 audit: Nov 2022	Report on progress and assess against the Condition and Milestone.	Report on progress made by the working group and preliminary actions being considered for Ministerial approval.	DPIRD Aquatic Management (Nearshore)	- Presentation at audit
		Present compliance statistics for the 2021/22 crabbing season.	DPIRD Compliance (Mandurah)	
Year 2: 2022/23 crabbing season	Determine suitable measures and test measures to determine if they would be effective.	Trial measures that have been approved by the Minister and enact MCS mechanisms to support them. Collect data to verify whether measures could demonstrably reduce non-compliance.	DPIRD Aquatic Management (Nearshore) DPIRD Compliance (Mandurah)	<ul> <li>Annual Report</li> <li>Compliance statistics</li> </ul>
Year 2 audit: Nov 2023	Report on progress and assess against the Condition and Milestone.	Report on progress made by the working group and actions that have been submitted for Ministerial approval.	DPIRD Aquatic Management (Nearshore) DPIRD Compliance (Mandurah)	- Presentation at audit
		Present compliance statistics for the 2022/23 crabbing season.	DPIRD Compliance (Mandurah)	
Year 3: 2023/24 crabbing season	Implement new measures.	Implement measures that have been approved by the Minister and enact MCS mechanisms to support them. Collect data to verify that measures are having the desired outcome, noting that there may be an initial increase in non-compliance with new regulations or management if the trial was not able to be conducted.	DPIRD Aquatic Management (Nearshore) DPIRD Compliance (Mandurah)	- Annual Report - Compliance statistics
Year 3 audit: Nov 2024	Report on progress and assess against the Condition and Milestone.	Report on final actions that have been approved/submitted for approval and a timeline for their implementation.	DPIRD Aquatic Management (Nearshore)	- Presentation at audit
		Present compliance statistics for the 2023/24 crabbing season.	DPIRD Compliance (Mandurah)	



Year 4: 2024/25 crabbing season	Provide evidence to demonstrate that fishers comply with the management system.	Implement measures that have been approved by the Minister and enact MCS mechanisms to support them. Collect data to verify that measures are having the desired outcome.	DPIRD Aquatic Management (Nearshore) DPIRD Compliance (Mandurah)	<ul> <li>Annual Report</li> <li>Compliance statistics</li> </ul>
Year 4 audit: Nov 2025	Report on outcomes and assess against the Condition and Milestone.	Report on implementation of measures and the MCS mechanisms to reduce non-compliance.	DPIRD Aquatic Management (Nearshore)	- Presentation at audit
		Present compliance statistics for the 2024/25 crabbing season.	DPIRD Compliance (Mandurah)	

## 9.7 Surveillance

## To be drafted at Client and Peer Review Draft Report stage

Table 51 – Fishery surveillance program				
Surveillance level	Year 1	Year 2	Year 3	Year 4
Level 4	Off-site surveillance audit	On-site surveillance audit	Off-site surveillance audit	On-site surveillance audit & re-assessment site visit

Table 52 – Timing of surveillance audit				
Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale	
1	December 2022	November 2022	Hold the audit before the start of the recreational BSC fishery	

## 9.8 Harmonised fishery assessments

The fishery shares a management system with the MSC-certified fisheries in Western Australia. Harmonisation is, therefore, required with the Governance and Policy PIs (3.1.1-3.1.3). Efforts have been made to harmonise those parts of Principle 3 with the most recent full assessment and certification outcome from a Western Australian fishery.

For this assessment, harmonization is required for the following fisheries (latest certification at the end) and PIs in accordance with FCP v2.2 Annex PB:

Table 53 – Overlapping fisheries			
Fishery name	Certification status and date	Performance Indicators to harmonise	
West Coast Deep Sea Crab	July 2016 – Jan. 2022	3.1.1, 3.1.2, 3.1.3	
Western Australia Abalone	April 2017-Oct. 2022	3.1.1, 3.1.2, 3.1.3	
Western Rock Lobster	May 2017-Nov. 2022	3.1.1, 3.1.2, 3.1.3	
Australia Silver-lipped Pearl Oyster	Sept. 2017 - March 2023	3.1.1, 3.1.2, 3.1.3 (WA only)	
Western Australia Octopus	Oc.t 2019- April 2025	3.1.1, 3.1.2, 3.1.3	
Sea cucumber	Dec. 2019 – Dec. 2025	3.1.1, 3.1.2, 3.1.3	
Exmouth Gulf Prawn Trawl	Dec. 2020-December 2025	3.1.1, 3.1.2, 3.1.3	
Shark Bay Prawn Trawl	Dec. 2020-December 2025	3.1.1, 3.1.2, 3.1.3	
### Table 54 – Overlapping fisheries

#### Supporting information

The PI 3.1.2 was further examined, at the site visit, in order to seek a harmonised outcome for all PIs.

Was either FCP v2.2 Annex PB1.3.3.4 or PB1.3.4.5 applied when harmonising?	NA
Date of harmonisation meeting	NA
If applicable, describe the meeting outcome	
- e.g. Agreement found among teams or lowest score adopted.	

Table 55 – Scoring differences									
Performance Indicators (PIs)	Exmouth Gulf Prawn	Silver Lipped Pearl Oyster Fishery	WC Deep Sea Crab Fishery	Shark Bay Prawn Fishery	Western Australia Abalone Fishery	Western Australian Rock Lobster Fishery	Western Australian Sea Cucumber Fishery		
PI 3.1.2	100	100	85	95	100	100	100		

#### Table 56- Rationale for scoring differences

If applicable, explain and justify any difference in scoring and rationale for the relevant Performance Indicators (FCP v2.2 Annex PB1.3.6).

3.1.2 c is scored 80 in the ACDR for this fishery which varies from other assessments as outlined below. Further evidence was provided at the onsite visit and the score was increased to 100 to an overall PI score of 100. It is therefore harmonised with most WA fisheries.

- **Exmouth Gulf Prawn** In this fishery assessment, evidence was required to demonstrate that consultation processes provide an opportunity for all interested and affected parties to be involved, resulting in a score of 75 for PI 3.1.2. This PI has been re-scored at the SG100 level in subsequent surveillance audits.
- Silver Lipped Pearl Oyster Fishery A score of 100 was awarded for this fishery for PIs 3.1.1, 3.1.2 and 3.1.3 in WA. The score of 75 for PI 3.1.2 in UoC1 of this fishery relates to Governance and Policy issues in the Northern Territory and is not therefore relevant to Western Australia.
- West Coast Deep Sea Crab Fishery a score of 75 for PI 3.1.2 was awarded due to limited stakeholder engagement. This was increased to 85 at the first surveillance audit in 2017. The fishery is now in re-assessment and a higher score of 95 is proposed in the recent draft report. A higher score was not deemed appropriate because at that time no evidence was provided on how the consultation processes "encourage" all interest groups to be involved and facilitate effective engagement.

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- Shark Bay Prawn Fishery a score of 75 was awarded for PI 3.1.2 when the fishery was certified, in response to concern about the level of stakeholder engagement in management. This score was revised to 95 at the first surveillance audit in 2016.
- **Western Australia Abalone Fishery** scores of 100 were awarded for 3.1.2 when this fishery was certified in April 2017.
- Western Australian Rock Lobster Fishery the original score of 95 for PI 3.1.2 was revised to 75 at the third surveillance audit as a harmonisation response to the Shark Bay Prawn Fishery assessment. At the fourth surveillance audit, progress with the condition raised in response to this issue was found to be on target. A score of 100 was awarded when the fishery was re-certified in 2016.
- Western Australian Sea Cucumber Fishery. 3.1.2 was awarded a score of 100.

If exceptional circumstances apply, outline the situation and whether there is agreement between or among teams on this determination.

# 9.9 Objection Procedure – delete if not applicable

## To be added at Public Certification Report stage

The CAB shall include in the report all written decisions arising from the Objection Procedure.

Reference(s): MSC Disputes Process v1.0, FCP v2.2 Annex PD Objection Procedure