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# Exmouth Gulf Prawn Managed Fishery

## Announcement Comment Draft Report

Prepared for MG Kailis, PTY, Ltd

17 March 2020

|                                  |   |
|----------------------------------|---|
| Conformity Assessment Body (CAB) | MRAG Americas, Inc.   |
| Assessment team                  | Richard Banks (TL/P3), Kevin McLoughlin (P1) and Mihaela Zaharia (P2) |
| Fishery client                   | MG Kailis   |
| Assessment Type                  | First Reassessment  |

## Document Control Record

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|                |              |               |             |               |
|                |              |               |             |               |

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## 2 Glossary

|        |   |        |  |
|--------|---|--------|--|
| AAC    | Aquatic Advisory Committee  | IMCRA  | Integrated Marine and Coastal Regionalisation of Australia |
| AFMA   | Australian Fisheries Management Authority                           | IMS    | Introduced Marine Species                                  |
| AIMS   | Australian Institute of Marine Science                              | IOD    | Indian Ocean Dipole  |
| ALC    | Automatic Location Communicator                                     | ITQ    | Individual Transferable Quota                              |
| AMM    | Annual Management Meeting   | IUCN   | International Union for Conservation of Nature             |
| ARMA   | Aquatic Resources Management Act                                    | JAMBA  | Japan-Australia Migratory Bird Agreement                   |
| AS/NZS | Australia and New Zealand Safety Management Standards               | KPI    | Key Performance Indicator                                  |
| BAP    | Bycatch Action Plan   | LOW    | Letters of Warning   |
| BMSY   | Biomass at Maximum Sustainable Yield                                | LENS   | List of Exempt Native Species                              |
| BRD    | Bycatch Reduction Devices   | MAC    | Management Advisory Committee                              |
| CA     | Consequence Analysis  | MCS    | Monitoring, Control and Surveillance                       |
| CALM   | Conservation and Land Management                                    | MDS    | Multi-dimensional Scaling                                  |
| CAMBA  | China-Australia Migratory Bird Agreement                            | MFL    | Managed Fishery Licence                                    |
| CI     | Confidence Interval   | MRAG   | Marine Resource Assessment Group                           |
| CITES  | Convention on International Trade in Endangered Species             | MSC    | Marine Stewardship Council                                 |
| CL     | Carapace Length   | MSY    | Maximum sustainable yield                                  |
| CMS    | Convention on the Conservation of Migratory Species of Wild Animals | NBPMF  | Nickol Bay Prawn Managed Fishery                           |
| CoA    | Commonwealth of Australia   | NESP   | National Environmental Science Program                     |
| CO     | Compliance Observer   | NCWHAC | Ningaloo Coast World Heritage Advisory Committee           |
| CoC    | Chain of Custody  | NPWCA  | National Parks and Wildlife Conservation Act 1975          |
| CPL    | Carnarvon-Peron Line  | NOAA   | National Oceanographic and Atmospheric Administration      |
| CPUE   | Catch per unit of effort  | NTA    | Native Title Act   |
| CSIRO  | Commonwealth Scientific and Industrial Research Organisation        | OCP    | Operational Compliance Plan                                |

|          |   |          |   |
|----------|---|----------|---|
| CSMPA    | Composite Square Mesh Panels (Aft)                                  | OCS      | Offshore Constitutional Settlement                                      |
| CSMPF    | Composite Square Mesh Panels (Forward)                              | OCD      | Operations and Compliance Division, DPIRD                               |
| CSWA     | Circular, Straight-Vertical-Bars, Wide-Bar-Spacing, and Accelerator | OPMF     | Onslow Prawn Managed Fishery  |
| CW       | Carapace Width  | PSA      | Productivity-Susceptibility Analysis                                    |
| DBCA     | Department of Biodiversity, Conservation and Attractions            | PSMA     | Public Sector Management Act  |
| DEC      | Department of Environment and Conservation WA                       | RRAMF    | Risk Ranked Assessment for Multiple Fisheries                           |
| DoE      | Department of Environment   | RBF      | Risk Based Methodology  |
| DPIRD    | Department of Primary Industries and Regional Development           | RMADP    | Research, Monitoring, Assessment and Development Plan                   |
| EBFM     | Ecosystem Based Fisheries Management                                | ROKAMBA  | Republic of Korea-Australia Migratory Bird Agreement                    |
| EEZ      | Exclusive Economic Zone   | RSNA     | Rectangular, Straight-Vertical-Bars, Narrow-Bar-Spacing and Accelerator |
| EG       | Exmouth Gulf  | SAFE     | Sustainability Assessment for Fishing Effects                           |
| EGPMF    | Exmouth Gulf Prawn Managed Fishery                                  | SAT      | State Administrative Tribunal   |
| ENA      | Extended Nursery Area   | SB       | Shark Bay   |
| ENSO     | El Niño/La Niña Southern Oscillation                                | SBBSMNMF | Shark Bay Beach Seine Mesh Net Managed Fishery                          |
| EOI      | Expression of Interest  | SBCIMF   | Shark Bay Crab Interim Managed Fishery                                  |
| EPBC Act | Environment Protection and Biodiversity Conservation Act            | SBPMF    | Shark Bay Prawn Managed Fishery   |
| ERA      | Environmental Risk Assessment                                       | SBPTOA   | Shark Bay Prawn Trawler Operators' Association                          |
| ESD      | Ecologically Sustainable Development                                | SBSMF    | Shark Bay Scallop Managed Fishery                                       |
| ETP      | Endangered, Threatened and Protected                                | SKM      | Sinclair Knight Merz  |
| FAM      | Fisheries Assessment Methodology                                    | SLA      | Service Level Agreement   |
| FAS Act  | Fisheries Adjustment Scheme Act 1987                                | SRE site | Short Recovery Experimental site  |
| FED      | Fish Exclusion Devices  | SRR      | Stock-Recruitment Relationship  |
| FHPA     | Fish Habitat Protection Areas                                       | TACC     | Total Allowable Commercial Catch  |
| FMO      | Fisheries and Marine Officer  | TEP      | Threatened, Endangered and Protected                                    |

|       |   |        |   |
|-------|---|--------|---|
| FRDC  | Fisheries Research and Development Corporation      | T&E    | Teleosts and Elasmobranchs                    |
| FMSY  | Fishing Mortality Rate at Maximum Sustainable Yield | TPSA   | Tiger Prawn Spawning Area                     |
| FRMA  | Fish Resources Management Act                       | UoA    | Unit of Assessment                            |
| FRMR  | Fish Resources Management Regulations               | UoC    | Unit of Certification                         |
| GCB   | Gascoyne Coast Bioregion                            | UWA    | University of Western Australia               |
| GDSF  | Gascoyne Demersal Scalefish Fishery                 | VFAS   | Voluntary Fisheries Adjustment Scheme         |
| GDC   | Gascoyne Development Commission                     | VMS    | Vessel Monitoring System                      |
| GIS   | Geographical Information Systems                    | WA     | Western Australia                             |
| GVP   | Gross Value of Production                           | WAFIC  | WA Fishing Industry Council                   |
| ICU   | Industry Consultation Unit                          | WAMSI  | Western Australian Marine Science Institution |
| IFAAC | Independent Allocation Advisory Committee           | WC Act | Wildlife Conservation Act                     |
| IFM   | Integrated Fisheries Management                     | WTO    | Wildlife Trade Organisation                   |

### 3 Executive summary

To be drafted at Announcement Comment Draft Report stage

To be completed at Public Certification Report stage

The executive summary shall include:

- Date and location of site visit.
- The main strengths and weaknesses of the client's operation.
- The draft determination / determination reached with supporting justification.

Reference(s): FCP v2.1 Section(s) 7.12, 7.18, 7.21

- This report is the Announcement Comment Draft Report (ACDR) which provides details of the MSC re-assessment process for the Exmouth Gulf Managed Prawn Fishery. The process begins with publication of the ACDR on 17 March 2020.
- A review of information presented by the client has been scored by the assessment team where there is sufficient information available to do so. – This does not represent the final scoring outcome or a certification decision.
- The scoring presented in this report has not been reviewed by stakeholders, peer reviewers or the client – these steps will all take place from here onwards. The site visit is scheduled for week commencing 27th April 2020 in Fremantle, Western Australia. MRAG Americas encourages any stakeholder with experience or knowledge of the fishery to participate in these meetings.
- Stakeholders are encouraged to review the scoring presented in this assessment and use the Stakeholder Input Form to provide evidence to the team of where changes to scoring are necessary. MRAG Americas welcomes stakeholder submissions on the ACDR from 17 March 2020 for a period up to 17 April.
- All stakeholder comments will be published ahead of the site visit. Stakeholders can meet with all of the assessment team onsite, week commencing 27th April 2020. Please contact MRAG Americas for more details.



- As this fishery is currently certified, its products are expected to remain continuously eligible to enter further chains of custody as MSC, assuming a successful recertification concluding ahead of the expiration of the currently valid certificate.

### **Client strengths**

- The Exmouth Gulf Prawn Managed Fishery was MSC certified in October 2015 with seven conditions. The fishery has undergone three annual surveillances. All conditions were closed by the completion of the 3<sup>rd</sup> surveillance.
- The fishery is supported well by the Western Australia Department of Primary Industries and Regional Development which provides scientific support. Extensive historical research on the fishery is available.
- The three target species are in a healthy position with the stock fluctuating around a level consistent with MSY, and the harvest strategies in place and the harvest strategy is responsive to the state of the stock.
- The EGPMF is managed according to an EBFM framework, its Harvest Strategy including objectives consistent with the MSC standard for each component of the ecosystem (target species, primary species (part of retained), secondary species, ETP species, habitat and ecosystem overall), and not only for target species. For each objective there are set performance indicators which are assessed annually through DPIRD internal qualitative Ecological Risk Assessments and regularly (at least every 5 years) through qualitative ERAs with stakeholder participation.
- The EGPMF does not impact on “main” primary species because no non-target species have percentage contributions to total catch  $\geq 5\%$  and no species  $\geq 2\%$  are less resilient.
- Secondary species component consists in numerous different species (over 100) caught in very low quantity, with no species  $>5\%$  of the total catch by the fishery. Results from recent catch composition surveys (2014-2017) show high similarity with historical data, suggesting no increase in risks to incidentally caught species. Stakeholder ERA assessment from 2019 found low or negligible risk from EGPMF to secondary species.
- Significant progress has been made in species identification and reporting of ETPs by the Crew Member Observer Program (especially for sea snakes, the group that mostly interact with SBPMF).
- Most sensitive benthic habitats are protected within areas closed to trawling. Exmouth Gulf is adjacent to the Ningaloo Marine Park which protects extensive filter feeder communities and offers refuge to ETP species. Currently, there are no habitats within Exmouth Gulf, that meet the definition of VME.
- Trawl footprint has been calculated and the fishery’s overlap with each benthic habitat type is assessed annually. Changes to habitat ranges are video-monitored.
- The risks to Exmouth Gulf ecosystem are regularly assessed in stakeholder ERA workshops. DPIRD is currently seeking funds for an ecosystem modelling study. Climate change is taken into account when setting and modifying harvest strategies for the commercial invertebrate species.
- Governance performance indicators are likely to score highly with strong legal structures, well defined roles and responsibilities, an extensive consultation system and clear short and long-term objectives
- Fishery specific management performance indicators are likely to score highly with well a defined and measurable harvest strategy and a bycatch action plan, an effective decision making process and a strong compliance system.

### **Client weaknesses**

- Recent low recruitment with confidence intervals approaching the limit reference point suggests a level of uncertainty in the stock status.
- The effectiveness of the harvest strategy has not been fully evaluated (e.g., using MSE)
- Evidence needs to be presented to show that 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, main secondary species and ETP species, and that they have been implemented

## 4 Report details

### 4.1 Authorship and peer review details

## 5 Assessors

**Richard Banks** (Lead assessor and P3) has considerable MSC experience having served as the Lead Assessor on several Australian Full Assessments, including the first assessment of the Exmouth Gulf Prawn Managed Fishery. Mr. Banks is an MSC qualified ND ISO 1901 team leader and qualified in the MSC risk-based framework (RBF). Richard has also designed several fishery improvement plans in South East Asia and the Pacific, and has acted as external reviewer to a number of MSC assessments on behalf of WWF. Richard is also co-author of the blueprint for sustainable tropical shrimp trawl fisheries, prepared for WWF. He has over 30-years' experience in fisheries management, research and consultancy covering all regions of the World. Richard currently works as an advisor to PNA and Pacific Island countries as an offshore tuna advisor. He is an economist and fisheries management and policy programming specialist having worked on similar issues for international agencies including FAO, World Bank, ADB, MFAT, DFAT and the European Union in more than 70 countries. Richard has also worked with a number of Australian Commonwealth and State Fisheries. Richard holds a Bachelors degree in Fisheries Economics and a Masters in Agricultural Economics from the University of Portsmouth, and Imperial College, London, respectively.

**Kevin McLoughlin** (P1) has over 30 years' experience in fisheries science and currently works as a fisheries consultant. As a Senior Fisheries Scientist with the Bureau of Rural Sciences, he engaged in a wide range of international and domestic fisheries issues with close links to Government policy. Responsibilities included production of BRS Fishery Status Reports—these have had a major influence on the direction of Australia's fisheries management and policy. Mr McLoughlin represented BRS on many committees and groups such as Australian Fishery Management Authority fishery assessment groups (including for the Southern and Eastern Scalefish and Shark Fishery, the Northern Prawn Fishery, the Bass Strait Scallop Fishery, and the Western Tuna and Billfish Fishery), DAFF's Shark Implementation Group for implementation of the National Plan of Action for Sharks, and others. He represented Australia on scientific issues at the Indian Ocean Tuna Commission and was Chair of the IOTC Working Party on Ecosystems and Bycatch. Mr McLoughlin has worked predominantly on Principle 1 aspects of MSC assessments but has also undertaken Principle 2 and 3 work, as well as peer review and surveillance audits for several fisheries. He has completed MSC training and has no conflict of interest in relation to this fishery. His MSC work includes being a team member for the assessment of the Fiji albacore longline fishery, the New Zealand Albacore Fishery, the New Zealand Skipjack Fishery, the Parties to the Nauru Agreement Western and Central Pacific Skipjack and Yellowfin unassociated purse seine fishery, the Tri Marine Western and Central Pacific Skipjack and Yellowfin Tuna Fishery, Australia's Northern Prawn Fishery and Australia's blue grenadier fishery.

**Ms. Mihaela Zaharia** (P2) has over 20 years experience in marine biology and ecosystem sciences. Her relevant experience includes involvement as a marine science researcher for the National Institute for Marine Research and Development, Romania and for Poseidon Aquatic Resources Management Consultants Ltd. Ms. Zaharia was the P2 Assessor for a number of Australian Commonwealth fishery and South Australian fishery assessments. These include the Spencer Gulf Prawn trawl and Northern Prawn fisheries. Mihaela has also participated as a team member in a number of pre-assessments on clam, tuna, blue swimming crab and tropical prawn assessments and Fisheries Improvement Plans and prepared Risk Based Framework templates for the MSC. In addition to her employment history, Ms. Zaharia has also contributed several publications on fishery biology and science. Ms Zaharia holds a B.Sc (Marine Biology) M.Sc. in Ecosystem Sciences, "OVIDIUS" Univ. Constanta, 1991-97 and a B Bus (Economics) and B Psych (with Hons), James Cook University 2012-2016.

A discussion between team members regarding conflict of interest and biases was held and none were identified.

## Peer Reviewers

TBD

## 5.1 Version details

### To be drafted at Announcement Comment Draft Report stage

The report shall include a statement on the versions of the fisheries program documents used for this assessment.

**Table 1 – Fisheries program documents versions**

| Document                               | Version number       |
|--|----------------------|
| MSC Fisheries Certification Process    | <b>Version 2.1</b>   |
| MSC Fisheries Standard                 | <b>Version 2.01</b>  |
| MSC General Certification Requirements | <b>Version 2.4.1</b> |
| MSC Reporting Template                 | <b>Version 1.1</b>   |

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

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

#### 6.1.1 Unit(s) of Assessment

### To be drafted at Announcement Comment Draft Report stage

The report shall include a statement of the CABs determination that the fishery is within scope of the MSC Fisheries Standard. For geographical area, the CAB should include stock region, common name of the body of water (e.g. North Sea), FAO statistical area(s), and any local fisheries management area(s) (e.g. ICES divisions VI, VII and VIIIabc).

Reference(s): FCP v2.1 Section 7.4

MRAG Americas has confirmed that this fishery is within scope for MSC fisheries certification through the following determinations (FCP v2.1:7.4):

- 7.4.2.1 The following taxa are not target species under Principle 1:
  - a. Amphibians
  - b. Reptiles
  - c. Birds.
  - d. Mammals
- 7.4.2.2 The fishery does not use poisons or explosives.
- 7.4.3 The fishery is not conducted under a controversial unilateral exemption to an international agreement.
- 7.4.4 No member of the client group has been successfully prosecuted for a forced or child labour violation in the last 2 years.

Table 2 – Unit(s) of Assessment (UoA)

| UoA 1                  | Description  |
|------------------------|--|
| Species                | Brown tiger prawn ( <i>Penaeus esculentus</i> )  |
| Stock                  | Exmouth Gulf   |
| Geographical area      | The Exmouth Gulf Prawn Trawl Fishery operates in the waters of Exmouth Gulf, a tropical gulf, 22 ° S, within the Gascoyne Coast Bioregion of Western Australia, Indian Ocean (FAO 57), immediately east of the Cape Range Peninsula approximately 1,100 km north of Perth. The Gulf is a marine embayment open to the north covering approximately 2,200 km <sup>2</sup> (White 1975) and extending approximately 40 km east to west and 80 km north to south. |
| Harvest method / gear  | Quad rigged otter trawl  |
| Client group           | MG Kailis  |
| Other eligible fishers | None   |
| UoA 2                  | Description  |
| Species                | Western king prawn ( <i>P. latisulcatus</i> )  |
| Stock                  | Exmouth Gulf   |
| Geographical area      | The Exmouth Gulf Prawn Trawl Fishery operates in the waters of Exmouth Gulf, a tropical gulf, 22 ° S, within the Gascoyne Coast Bioregion of Western Australia, immediately east of the Cape Range Peninsula approximately 1,100 km north of Perth. The Gulf is a marine embayment open to the north covering approximately 2,200 km <sup>2</sup> (White 1975) and extending approximately 40 km east to west and 80 km north to south.                        |
| Harvest method / gear  | Quad rigged otter trawl  |
| Client group           | MG Kailis  |
| Other eligible fishers | None   |
| UoA 3                  | Description  |
| Species                | Blue endeavour prawn ( <i>Metapenaeus endeavouri</i> )   |
| Stock                  | Exmouth Gulf   |
| Geographical area      | The Exmouth Gulf Prawn Trawl Fishery operates in the waters of Exmouth Gulf, a tropical gulf, 22 ° S, within the Gascoyne Coast Bioregion of Western Australia, immediately east of the Cape Range Peninsula approximately 1,100 km north of Perth. The Gulf is a marine embayment open to the north covering approximately  |

|                        |   |
|------------------------|---|
|                        | 2,200 km <sup>2</sup> (White 1975) and extending approximately 40 km east to west and 80 km north to south. |
| Harvest method / gear  | Quad rigged otter trawl   |
| Client group           | MG Kailis   |
| Other eligible fishers | None  |

### 6.1.2 Unit(s) of Certification

To be drafted at Client and Peer Review Draft Report stage

To be completed at Public Certification Report stage

The report shall include a justification for any changes to the proposed Unit(s) of Certification (UoC).

Reference(s): FCP v2.1 Section 7.5

The UoCs presented in Table 3 are those currently certified. If there are any changes as a result of this reassessment they will be reflected in further versions of this report.

Table 3 – Unit(s) of Certification (UoC)

| UoC 1                  | Description   |
|------------------------|---|
| Species                | Brown tiger prawn ( <i>Penaeus esculentus</i> )   |
| Stock                  | Exmouth Gulf  |
| Geographical area      | The Exmouth Gulf Prawn Trawl Fishery operates in the waters of Exmouth Gulf, a tropical gulf, 22 ° S, within the Gascoyne Coast Bioregion of Western Australia, immediately east of the Cape Range Peninsula approximately 1,100 km north of Perth. The Gulf is a marine embayment open to the north covering approximately 2,200 km <sup>2</sup> (White 1975) and extending approximately 40 km east to west and 80 km north to south. |
| Harvest method / gear  | Quad rigged otter trawl   |
| Client group           | MG Kailis   |
| Other eligible fishers | None  |
| UoC 2                  | Description   |
| Species                | Western king prawn ( <i>P. latisulcatus</i> )   |
| Stock                  | Exmouth Gulf  |
| Geographical area      | The Exmouth Gulf Prawn Trawl Fishery operates in the waters of Exmouth Gulf, a tropical gulf, 22 ° S, within the Gascoyne Coast Bioregion of Western Australia, immediately east of the Cape Range Peninsula approximately 1,100 km north of Perth. The Gulf is a marine embayment open to the north covering approximately   |

|                        |   |
|------------------------|---|
|                        | 2,200 km <sup>2</sup> (White 1975) and extending approximately 40 km east to west and 80 km north to south.   |
| Harvest method / gear  | Quad rigged otter trawl   |
| Client group           | MG Kailis   |
| Other eligible fishers | None  |
| UoC 3                  | Description   |
| Species                | Blue endeavour prawn ( <i>Metapenaeus endeavouri</i> )  |
| Stock                  | Exmouth Gulf  |
| Geographical area      | The Exmouth Gulf Prawn Trawl Fishery operates in the waters of Exmouth Gulf, a tropical gulf, 22 ° S, within the Gascoyne Coast Bioregion of Western Australia, immediately east of the Cape Range Peninsula approximately 1,100 km north of Perth. The Gulf is a marine embayment open to the north covering approximately 2,200 km <sup>2</sup> (White 1975) and extending approximately 40 km east to west and 80 km north to south. |
| Harvest method / gear  | Quad rigged otter trawl   |
| Client group           | MG Kailis   |
| Other eligible fishers | None  |

## 6.2 Assessment results overview

### 6.2.1 Determination, formal conclusion and agreement

To be drafted at Final Draft Report

To be completed at Public Certification Report

The report shall include a formal statement as to the certification determination recommendation reached by the assessment team on whether the fishery should be certified.

The report shall include a formal statement as to the certification action taken by the CAB's official decision-makers in response to the Determination recommendation.

Reference(s): FCP v2.1 Section 7.21

### 6.2.2 Principle level scores

To be drafted at Client and Peer Review Draft Report

The report shall include scores for each of the three MSC principles in the table below.

Reference(s): FCP v2.1 Section 7.17

Table 4 - Principle level scores

| Principle                       | UoA 1 | UoA 2 | UoA 3 |
|---------------------------------|-------|-------|-------|
| Principle 1 – Target species    |       |       |       |
| Principle 2 – Ecosystem impacts |       |       |       |
| Principle 3 – Management system |       |       |       |

### 6.2.3 Summary of conditions

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

The report shall include a table summarising conditions raised in this assessment. Details of the conditions shall be provided in the appendices. If no conditions are required, the report shall include a statement confirming this.

Reference(s): FCP v2.1 Section 7.18

Table 5 – Summary of conditions

| Condition number | Condition | Performance Indicator (PI) | Related to previous condition? |
|------------------|-----------|----------------------------|--------------------------------|
|                  |           |                            | <b>Yes / No / NA</b>           |
|                  |           |                            | <b>Yes / No / NA</b>           |
|                  |           |                            | <b>Yes / No / NA</b>           |

### 6.2.4 Recommendations

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

If the CAB or assessment team wishes to include any recommendations to the client or notes for future assessments, these may be included in this section.

## 7 Traceability and eligibility

### 7.1 Eligibility date

The report shall include the eligibility date and the justification for selecting this date, including consideration of whether the traceability and segregation systems in the fishery are appropriately implemented.

Reference(s): FCP v2.1 Section 7.8

### 7.2 Traceability within the fishery

#### To be drafted at Announcement Comment Draft Report stage

**To be completed at Public Certification Report stage**

The report shall include a description of the tracking, tracing and segregation systems within the fishery and how these systems will allow any products sold as MSC certified to be traced back to the Unit of Certification.

The report shall include an evaluation of the robustness of the management systems related to traceability.

The report shall include any traceability references, including hyperlinks to publicly-available documents.

The report shall include a description of the factors that may lead to risks of non-certified seafood being mixed with certified seafood prior to entering Chain of Custody using the table below. For each risk factor, there shall be a description of whether the risk factor is relevant for the fishery and, if so, a description of the relevant mitigation measures or traceability systems in place.

Reference(s): FCP v2.1 Section 7.9

See section 7.3, below.

**Table 6 – Traceability within the fishery**

| Factor  | Description  |
|---|--|
| Will the fishery use gears that are not part of the Unit of Certification (UoC)?  | No   |
| Will vessels in the UoC also fish outside the UoC geographic area?  | No   |
| 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.<br><br><ul style="list-style-type: none"> <li>- Transport</li> <li>- Storage</li> <li>- Processing</li> <li>- Landing</li> <li>- Auction</li> </ul> | <i>Please state whether any of these activities occur within the fishery and a description of this activity including how this potential traceability risk is addressed or mitigated.</i><br><br><i>If this is covered by relevant regulatory frameworks, you may link to the relevant section in Section 5 MSC Fisheries Standard – Principle 3 – Effective management.</i> |
| If Yes, please describe how any risks are mitigated.  |  |
| Does transshipment occur within the fishery?  | No   |
| Are there any other risks of mixing or substitution between certified and non-certified fish?   | No   |

### 7.3 Eligibility to enter further chains of custody

**To be drafted at Announcement Comment Draft Report stage**

**To be completed at Public Certification Report stage**



The report shall include a determination of whether the seafood product will be eligible to enter certified chains of custody, and whether the seafood product is eligible to be sold as MSC certified or carry the MSC ecolabel.

The report shall include a list of parties, or category of parties, eligible to use the fishery certificate, and sell product as MSC certified.

The report shall include the point of intended change of ownership of product, a list of eligible landing points, and the point from which subsequent Chain of Custody certification is required.

If the CAB makes a negative determination under FCP v2.1 Section 7.9, the CAB shall state that fish and fish products from the fishery are not eligible to be sold as MSC certified or carry the MSC ecolabel. If the client group includes other entities such as agents, unloaders, or other parties involved with landing or sale of certified fish, this needs to be clearly stated in the report including the point from which Chain of Custody is required.

Reference(s): FCP v2.1 Section 7.9

To be drafted

## 8 Scoring

### 8.1 Summary of Performance Indicator level scores

To be drafted from Announcement Comment Draft Report

| Principle | Component          | Performance Indicator (PI) |                                  | UoA 1<br>Brown<br>tiger | UoA 2<br>Western<br>king | UoA 3<br>Blue<br>endeavour |
|-----------|--------------------|----------------------------|----------------------------------|-------------------------|--------------------------|----------------------------|
| One       | Outcome            | 1.1.1                      | Stock Status                     | ≥80                     | ≥80                      | ≥80                        |
|           |                    | 1.1.2                      | Stock Rebuilding                 | ≥80                     | ≥80                      | ≥80                        |
|           | Management         | 1.2.1                      | Harvest Strategy                 | ≥80                     | ≥80                      | ≥80                        |
|           |                    | 1.2.2                      | Harvest Control rules<br>& tools | ≥80                     | ≥80                      | ≥80                        |
|           |                    | 1.2.3                      | Information/Monitoring           | ≥80                     | ≥80                      | ≥80                        |
|           |                    | 1.2.4                      | Assessment of stock<br>status    | ≥80                     | ≥80                      | ≥80                        |
|           |                    | Overall Principle One      |                                  | ≥80                     | ≥80                      | ≥80                        |
| Two       | Primary<br>Species | 2.1.1                      | Outcome                          | ≥80                     |                          |                            |
|           |                    | 2.1.2                      | Management                       | ≥80                     |                          |                            |

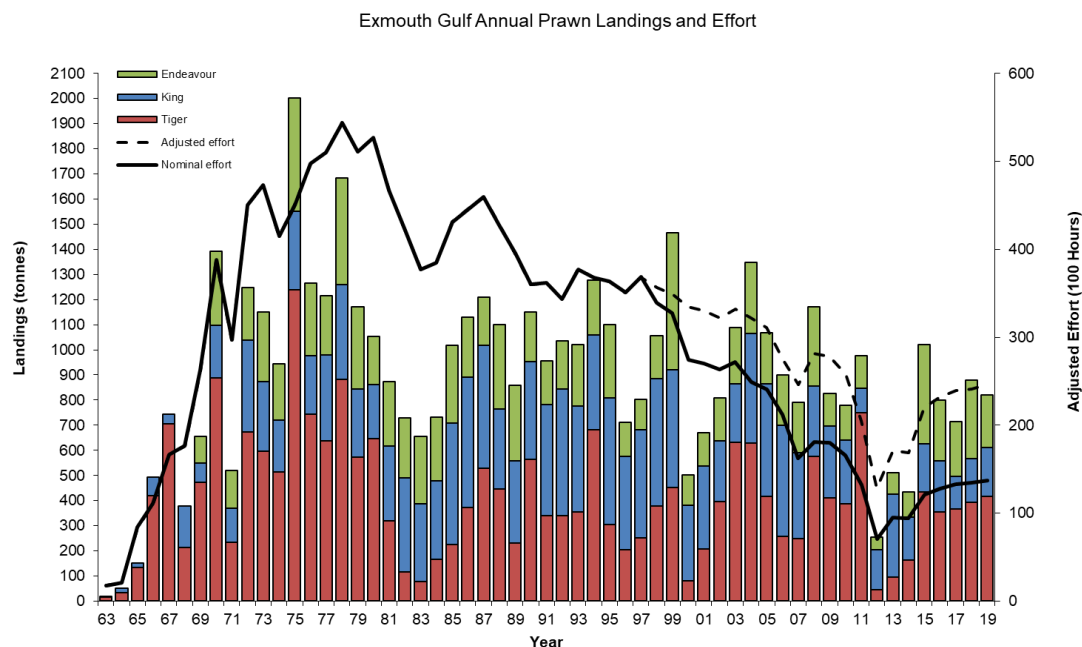
|       |                                      |                         |   |       |
|-------|--------------------------------------|-------------------------|---|-------|
|       |                                      | 2.1.3                   | Information                             | ≥80   |
|       | Secondary species                    | 2.2.1                   | Outcome                                 | ≥80   |
|       |                                      | 2.2.2                   | Management                              | ≥80   |
|       |                                      | 2.2.3                   | Information                             | ≥80   |
|       | ETP species                          | 2.3.1                   | Outcome                                 | ≥80   |
|       |                                      | 2.3.2                   | Management                              | 60-79 |
|       |                                      | 2.3.3                   | Information                             | ≥80   |
|       | Habitats                             | 2.4.1                   | Outcome                                 | ≥80   |
|       |                                      | 2.4.2                   | Management                              | ≥80   |
|       |                                      | 2.4.3                   | Information                             | ≥80   |
|       | Ecosystem                            | 2.5.1                   | Outcome                                 | ≥80   |
|       |                                      | 2.5.2                   | Management                              | ≥80   |
|       |                                      | 2.5.3                   | Information                             | ≥80   |
|       |                                      | Overall Principle Two   | ≥80                                     |       |
| Three | Governance and policy                | 3.1.1                   | Legal Customary framework               | ≥80   |
|       |                                      | 3.1.2                   | Consultation roles and responsibilities | ≥80   |
|       |                                      | 3.1.3                   | Long term objectives                    | ≥80   |
|       | Fisheries specific Management system | 3.2.1                   | Fishery specific objectives             | ≥80   |
|       |                                      | 3.2.2                   | Decision making processes               | ≥80   |
|       |                                      | 3.2.3                   | Compliance and Enforcement              | ≥80   |
|       |                                      | 3.2.4                   | Monitoring and management performance   | ≥80   |
|       |                                      | Overall Principle Three | ≥80                                     |       |

## 8.2 Principle 1

### 8.2.1 Principle 1 background

### 8.2.2 Catch profiles

Historical catch and effort data for the fishery are shown in Figure 1 and Table 7. The history of the fishery is described in Banks et al. (2015).



**Figure 1. Annual prawn landings (t) and fishing effort for the Exmouth Gulf Prawn Managed Fishery 1963-2019 (Kangas et al. 2020).**

**Table 7. Catch and effort of major prawn species in the EGPMF between 2002 and 2019.**

| Year | Tiger     |                    | Western king |                    | Blue endeavour |                    | Banana catch (t) | Total prawn (t) | Nominal effort (hrs) | Adjusted effort (hrs) | No. boats |
|------|-----------|--------------------|--------------|--------------------|----------------|--------------------|------------------|-----------------|----------------------|-----------------------|-----------|
|      | Catch (t) | Catch rate (kg/hr) | Catch (t)    | Catch rate (kg/hr) | Catch (t)      | Catch rate (kg/hr) |                  |                 |                      |                       |           |
| 2002 | 395       | 12.3               | 244          | 7.6                | 170            | 5.3                |                  | 809             | 26358                | 32186                 | 13        |
| 2003 | 633       | 19.1               | 231          | 7.0                | 225            | 6.8                |                  | 1089            | 27161                | 33167                 | 13        |
| 2004 | 629       | 19.6               | 436          | 13.6               | 282            | 8.8                | 0                | 1347            | 24874                | 32165                 | 12        |
| 2005 | 416       | 13.4               | 449          | 14.4               | 203            | 6.5                |                  | 1068            | 24039                | 31097                 | 12        |
| 2006 | 258       | 9.4                | 442          | 16.1               | 199            | 7.2                |                  | 899             | 21184                | 27511                 | 12        |
| 2007 | 248       | 10.1               | 342          | 13.9               | 200            | 8.1                |                  | 790             | 16278                | 24650                 | 9         |
| 2008 | 576       | 20.5               | 279          | 9.9                | 315            | 11.2               | 0                | 1170            | 18123                | 28119                 | 9         |
| 2009 | 412       | 14.8               | 284          | 10.2               | 132            | 4.8                | 1                | 829             | 17971                | 27851                 | 9         |
| 2010 | 388       | 15.0               | 254          | 9.8                | 138            | 5.3                | 0                | 779             | 16606                | 25787                 | 9         |
| 2011 | 749       | 36.5               | 97           | 4.7                | 130            | 6.3                | 3                | 979             | 13220                | 20532                 | 9         |
| 2012 | 46        | 3.6                | 157          | 12.3               | 51             | 3.9                | 33               | 288             | 7042                 | 12814                 | 6         |
| 2013 | 95        | 5.6                | 331          | 19.3               | 85             | 5.0                | 74               | 585             | 9503                 | 17124                 | 6         |
| 2014 | 162       | 9.6                | 171          | 10.1               | 101            | 6.9                | 29               | 463             | 9433                 | 16841                 | 6         |
| 2015 | 433       | 19.7               | 192          | 8.7                | 397            | 18.0               | 46               | 1067            | 12106                | 21983                 | 6         |
| 2016 | 356       | 15.4               | 201          | 8.7                | 244            | 10.5               | 21               | 822             | 12803                | 23166                 | 6         |
| 2017 | 366       | 15.3               | 130          | 5.4                | 217            | 9.0                | 0                | 713             | 13285                | 23967                 | 6         |
| 2018 | 392       | 16.2               | 174          | 7.2                | 313            | 13.0               | 1                | 880             | 13444                | 24131                 | 6         |
| 2019 | 418       | 17.0               | 194          | 7.9                | 208            | 8.5                | 1                | 821             | 13707                | 24599                 | 6         |

### 2018 season overview

The total 2018 landings of prawns were 880 t; brown tiger prawn landings were 390 t, western king prawns 174 t and blue endeavour prawns 312 t. The 2018 fishing season official opening and closing dates were set

at 3 April and 17 December, providing a possible 218 nights fishing. Actual fishing took place from 16 April to 12 December (200 nights).

Recorded landings of by-product were; 20.4 t of coral prawns (several species), 2.8 t of bugs (*Thenus orientalis*), 2.2 t of squid (several species), 7.5 t of cuttlefish (several species), 0.9 t of blue swimmer crab (*Portunus armatus*), 0.3 t of octopus (several species) and 1.2 t of mantis shrimp (several species).

### **2019 season overview**

The total 2019 landings of prawns were 821 t; brown tiger prawn landings were 418 t, western king prawns 194.2 t and blue endeavour prawns 208.4 t (Kangas et al. 2020). The 2019 fishing season official opening and closing dates were set at 2 April and 10 December, providing a possible 212 nights fishing. This is a flexible arrangement and the season actually commenced on 14 April and finished on 8 December.

Recorded landings of by-product were; 21.1 t of coral prawns, 2.3 t of bugs, 1.8 t of squid, 5.8 t of cuttlefish, 6.2 t of blue swimmer crab and 0.4 t of octopus, which all met the target reference levels within the harvest strategy. No mantis shrimp were landed in 2019.

Following an assessment against the annual operation performance indicators in the harvest strategy, no changes to the season arrangements are predicted for 2020.

### **Stock biology and structure**

The biology and stock structure of the three UoAs are presented in previous assessment reports (Banks et al. 2015, Banks and McLoughlin, 2019) and are summarized below. The assessment team has determined that none of the species under assessment is a key low trophic level species.

#### **Brown tiger prawn (*Penaeus esculentus*):**

The brown tiger prawn is endemic to Australian waters and found in warm waters from Sydney northwards around to Shark Bay in Western Australia. living offshore in depths up to 200 m but chiefly in waters to depths of 20 m. The main spawning season in Exmouth Gulf is between August and October. The longevity of brown tiger prawns is generally 2–3 years.. Individuals of this species grow very rapidly early in life, reaching sexual maturity at six to seven months. They attain an economically valuable size at about eight months of age. Fishing thus concentrates on the 0 + and, to a less extent, 1 + (residual) individuals (Kangas et al. 2015).

Genetic studies indicate a small differentiation between the functionally-independent populations of this species in Shark Bay and Exmouth Gulf, and a larger differentiation of these stocks from those in the Gulf of Carpentaria and Moreton Bay in Queensland (Kangas et al. 2015). Brown tiger prawns in Exmouth Gulf are treated as a separate stock for management purposes.

#### **Western king prawn (*P. latisulcatus*):**

The western king prawn is widely distributed throughout the Indo-West Pacific region. In Australian waters the species occurs in South Australia, Western Australia, Northern Territory, Queensland, and down the east coast to northern New South Wales. They are treated as a separate stock in Exmouth Gulf for management purposes. Living on hard bottoms of sand, sandy mud or gravel, the species prefers shallow marine water to depths of around 90 m. Western king prawns typically use marine to hypersaline coastal embayments and estuaries as nursery areas. In Exmouth Gulf the species occupies the hypersaline nursery sand flats along the eastern Gulf. Spawning occurs throughout the year in tropical areas but the peak spawning period in Exmouth Gulf extends from May to October. The western king prawn is a fast growing species, reaching sexual maturity at six to nine months, and is highly fecund. The life cycle of western king prawns is generally 2–3 years. As with brown tiger prawns, individuals of this species grow very rapidly early in life and attain an economically valuable size at about eight months of age. Fishing thus concentrates on the 0 + and, to a lesser extent, 1 + (residual) individuals (Kangas et al. 2015).

#### **Blue endeavour prawn (*Metapenaeus endeavouri*):**

The blue endeavour prawn is endemic to Australia and is found in warm waters from between Shark Bay, Western Australia and northern New South Wales. Blue endeavour prawns are a by-product species whose distribution partly overlaps that of both brown tiger and to a lesser extent, western king prawns, and are caught when fishers are targeting these two species. Blue endeavour prawns are considered to be more resilient to fishing pressure due to their smaller size and lower catchability, as well as the lower level of targeting in Exmouth Gulf compared to brown tiger and western king prawns (Kangas et al. 2006). A

significant portion of the blue endeavour prawn breeding biomass is protected by the brown tiger prawn spawning closures. Additional protection is afforded to blue endeavour prawns by their distribution for much of the year in permanently closed inshore nursery areas.

There is limited research on the stock structure of blue endeavour prawns in Australia. Within WA, the low numbers of blue endeavour prawns in Shark Bay, and 400 km of separation suggests there is unlikely to be much movement of prawns southward from Exmouth Gulf. There may be some interchange of blue endeavour prawns between the EGPMF and the Onslow Prawn Managed Fishery (OPMF), as they share a management boundary. Blue endeavour prawns in Exmouth Gulf are treated as a separate stock for management purposes.

It is likely blue endeavour prawns live for 2–3 years, however individuals older than two years of age are rarely caught under current harvest practices. Blue endeavour prawns first reach maturity at a size of 23 mm carapace length, with 50% of the population mature at 30 mm, around six to seven months of age. Adult prawns are typically found at depths of 20–40 m on a variety of substrates. In the EGPMF, the widespread distribution of adult blue endeavour prawns suggests they prefer sandy regions with coarser sediments.

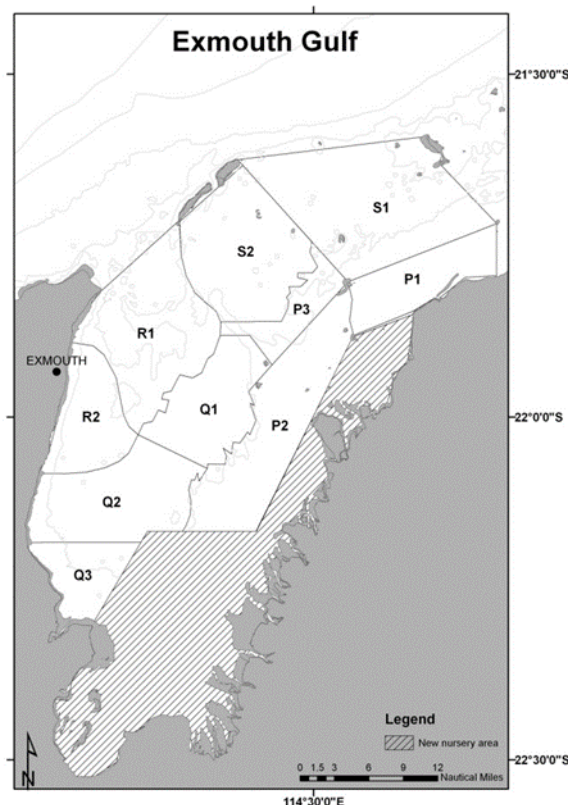
In Exmouth Gulf, it appears that spawning occurs year round, but with a drop in the proportion of mature females observed in the winter months. Mature females are most commonly found in the deeper waters of the Gulf; > 20 m.

### **Assessment approach**

The fishery is managed in accordance with the Exmouth Gulf Prawn Managed Fishery Harvest Strategy 2014-2019 to achieve the long and short term management objectives for the fishery (DPIRD 2018). The Harvest Strategy outlines performance indicators, reference levels and harvest control rules designed to maintain the prawn resources at target levels and to achieve the management objectives for the fishery. Assessment of stock status is based on a number of lines of evidence to support what WA Fisheries term a “weight of evidence” approach. Agreed indicators (primarily based on surveys, catch rates and length distributions) are established so that pre-agreed management actions can be triggered and guided according to the adopted harvest strategy. The suite of reference points is complex, including a wide range of in-season and annual measures which are used to guide annual harvest strategy setting and in-season, adaptive management.

Prawn stock status in the EGPMF is annually assessed, primarily through monitoring of fishery-independent and fishery-dependent catch rates (used as indices of recruitment and spawning stock levels) relative to specified reference points. Although these abundance indices represent key indicators for the stocks, other information collected throughout the season (e.g. commercial catches, effort and environmental data) is also evaluated to provide insight on, for example, any environmental factors affecting prawn recruitment. In addition, since the 2015 certification of the fishery WA Fisheries has been developing model-based stock-assessment approaches for the three major prawn species.

Fishery-independent recruitment surveys are undertaken in March and April each year (prior to the fishing season commencing) to provide abundance (and size/grade) information from the key recruitment areas within Exmouth Gulf (Figure 2). Mean catch rate data for the target species from these surveys is used as an index of recruitment strength (derived from the previous year’s spawning). These are compared against species-specific reference points and used to inform the timing of the openings of different management areas within the fishery for the fishing season.



**Figure 2. Fishing grounds in Exmouth Gulf used for analysis of catch and effort data**

Banks et al. (2015) provides additional detail on the survey approach designed to monitor brown tiger prawn and western king prawn status. The fishery-independent recruitment surveys of brown tiger and western king prawns also record the abundance of blue endeavour prawns.

The latest MSC certification requirements provide guidance on the use of proxy indicators and reference points for  $B_{MSY}$  and  $PR_I$  (the stock point where recruitment would be impaired) (MSC CR v2.0, GSA2.2.3.1). SA2.2.3 of MSC CR v2.0 confirms that teams may allow the use of surrogate or proxy indicators and reference points in scoring both stock biomass and exploitation rate. The terms “likely”, and “highly likely” are used to allow scoring by either qualitative or quantitative approaches.

Examples of qualitative interpretation include analogy with similar situations, plausible argument, empirical observation of sustainability and qualitative risk assessment. Examples of quantitative interpretation include the use of measured data from the relevant fishery, statistical analysis, quantitative risk assessment and quantitative modelling.

The evaluation of blue endeavour prawn stock status has been based on fishery-independent survey abundance indices of recruitment and spawning stock from the same standardised sites sampled for brown tiger prawns in Exmouth Gulf. These surveys cover a large proportion of the spatial area where blue endeavour prawns are harvested by the commercial fleet. Further information on the blue endeavour status evaluation is provided in Banks and McLoughlin (2019).

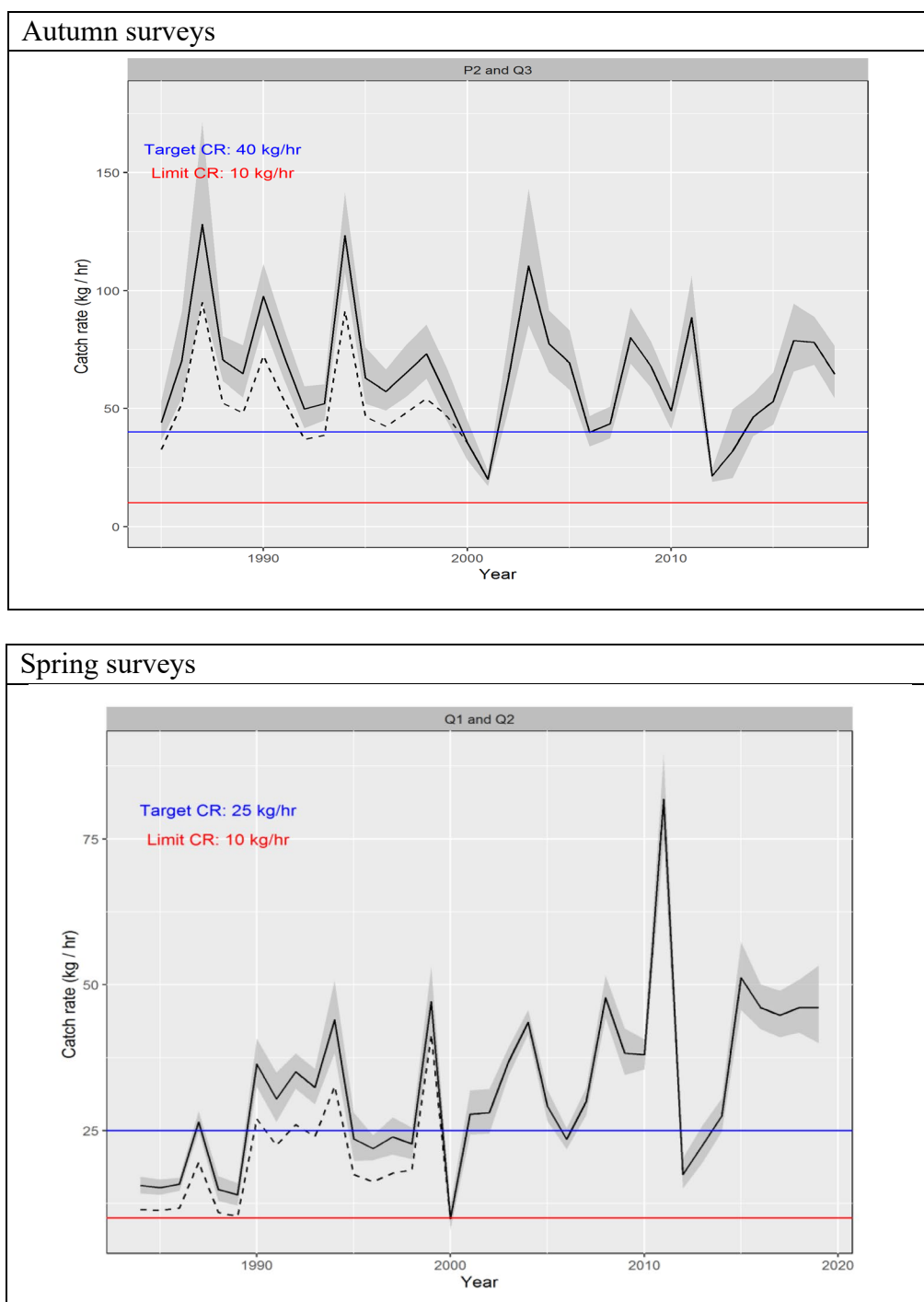
## **Stock status and evidence of sustainability**

### **Brown tiger prawn**

#### Performance against harvest strategy

The 2018 and 2019 brown tiger prawn landings (392 t and 418 t) were within with the normal catch range (250-550 t). These landings were within the predicted range (i.e. 290 to 440 t for 2018 and 370 to 550 t for

2019). The 2018 and 2019 adjusted annual CPUE values of 16.2 and 17.0 kg/hr, respectively, for brown tiger prawn were well above the reference catch rate of 10 kg/hr.



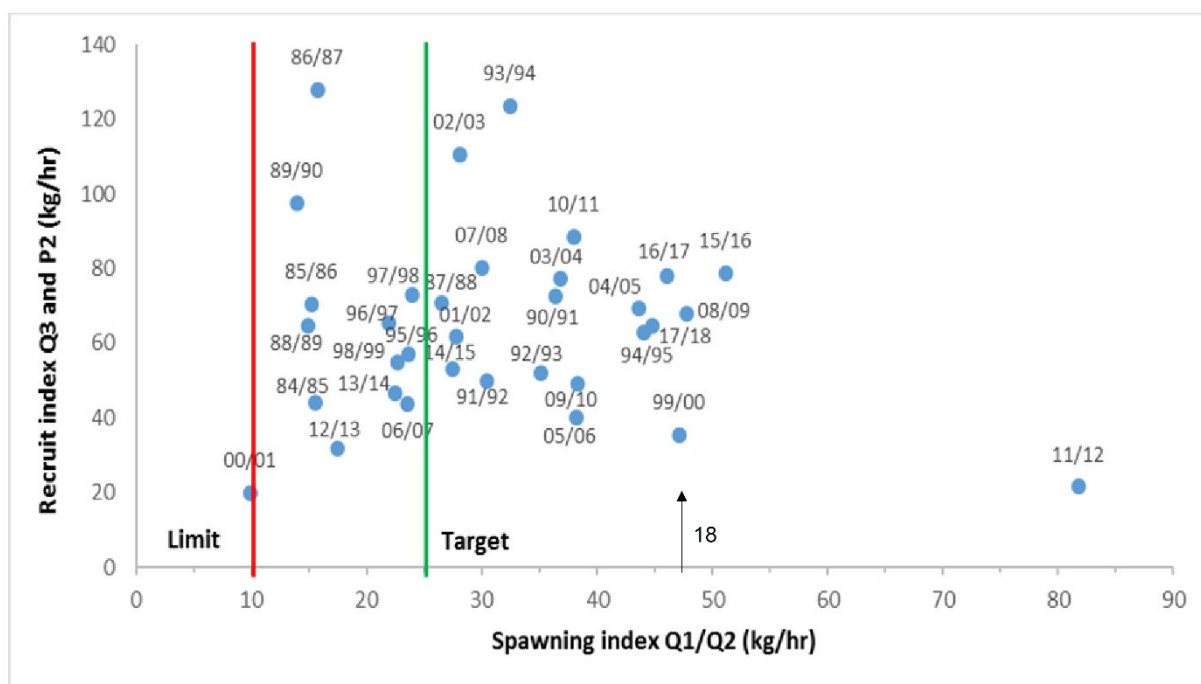
**Figure 3. Fishery-independent mean survey catch rates of brown tiger prawns in Exmouth Gulf recorded for recruitment surveys conducted in autumn (March/April) in the fishing grounds P2 and Q3, and spawning stock surveys in spring (August, September and October) in fishing grounds Q1 and Q2. The dashed line prior 2000 indicates twin gear catch rates that were documented historically but have been adjusted to represent quad gear catch rate incorporating gear efficiency and increased net spread. The target and limit reference lines from the harvest strategy are shown. The shaded areas represent the 95% confidence interval. Source DPIRD-EGPMF 2019a and Kangas et al. 2020.**

The management objective for brown tiger prawns is to maintain the spawning biomass above the historically determined biological reference points, with the present target of 25 kg/hr and a limit of 10 kg/hr in the spawning stock surveys. Daily monitoring of catch rates ensures cessation of fishing at the target catch rate

within the key spawning area. Fishing ceases in early August even if catch rates are above the target level. The spawning stock indices have been well above the target since 2013 (44.8 kg/hr in 2017; 46.3 kg/hr in 2018 and 46.2 kg/hr in 2019) (Figure 3).

There is no evidence of a declining trend in recruitment in fishery-independent survey indices since 1983, however there are years when recruitment levels have fallen below the target which have been attributed to negative impacts on structured habitats in nurseries (cyclone and heatwave) resulting in low recruitment. In 2017, 2018 and 2019 the brown tiger prawn recruitment levels were well above the target level (45.8 kg/hr in 2019) (Figure 3).

Using the spring survey catch rates (in year t) as a measure of spawning stock, and the autumn survey catch rates (in year t+1) as a measure of recruitment, the data indicate that 1) relatively low recruitment can result from even relatively high spawning stock levels but that 2) recruitments resulting from spawning index levels above ~10 kg/h (i.e. limit reference point) are of a similar range (Figure 4).



**Figure 4. Relationship between fishery-independent survey catches rates in spring (August to October) in areas Q1 and Q2 in year t, as a measure of spawning stock abundance, and fishery-independent survey catch rates in autumn (March/April) in areas Q3 and P2 in year t+1, as a measure of recruitment. The fishery limit (10.0 kg/h) and target (25.0 kg/h) catch rates for the spring survey are plotted over the data. Source DPIRD-EGPMF 2019a.**

WA Fisheries suggest that the fishery has fully recovered from the effects of the marine heat wave that may have affected the structured inshore nursery habitat in recent years (Kangas et al. 2018). WA Fisheries conclude from the above evidence that the biomass of the stock is unlikely to be recruitment overfished and the stock level is considered sustainable (DPIRD-EGPMF 2019a).

#### Development of approaches to address 2015 P1 certification conditions

At certification in 2015, a condition was set for each of western king prawn and brown tiger prawn for PI 1.1.2 (under FCR v1.3) requiring the development of target reference points consistent with  $B_{MSY}$  or a surrogate. DPIRD scientists have developed a weight of evidence approach exploring several assessment approaches to address this issue (DPIRD-EGPMF 2019a, DPIRD-EGPMF 2019b).

DPIRD-EGPMF (2019a) provides a description of several model-based approaches undertaken to examine stock status. Two biomass dynamics models with different assumptions estimated biomass to be well above 50% of the unfished level (i.e.  $B_{MSY}$ ) and estimated that fishing mortality is very low relative to historic levels



in the early 1980s. On average, catches since the mid-1980s have been below the estimated MSY (507 t). The estimated spawning survey catch rate at  $B_{MSY}$  (26.9 t) is similar to the currently-adopted target reference point (25 kg/h), and that at  $0.5B_{MSY}$  (13.6 kg/h) is slightly above the current limit reference point (10 kg/h), although the 95% confidence limits overlap.

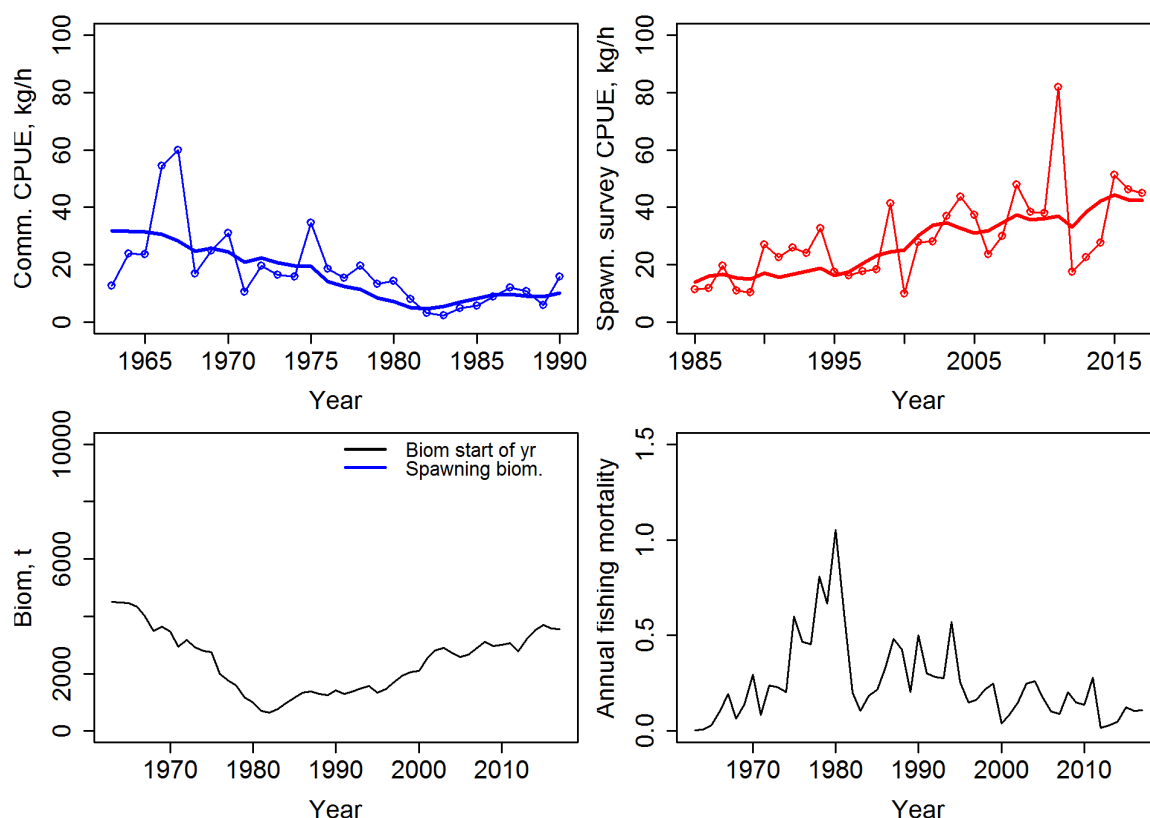
The models and outcomes are described in more detail in DPIRD-EGPMF (2019a).

#### *Annual Schaefer production model*

A discrete version of the annual Schaefer production (or biomass dynamics) model (Schaefer 1954) was fitted to commercial catch rate data (1963-1990, adjusted for 1.5% annual fishing efficiency increase) and spawning survey catch rate data (1984-2017) (DPIRD-EGPMF 2019a). The model (the “base model”) follows the description in Haddon (2001), but employs separate catchability ( $q$ ) parameters for the two abundance indices. Annual catch data used is from 1963-2017.

The model provides a relatively good visual fit to both the commercial catch rate data (after adjustment for fishing efficiency) and the fishery-independent survey data (Figure 5). The estimated population biomass declined from > 4000 t in 1962 to well below 1000 t in the early 1980s, before steadily increasing to almost 4000 t in 2017.

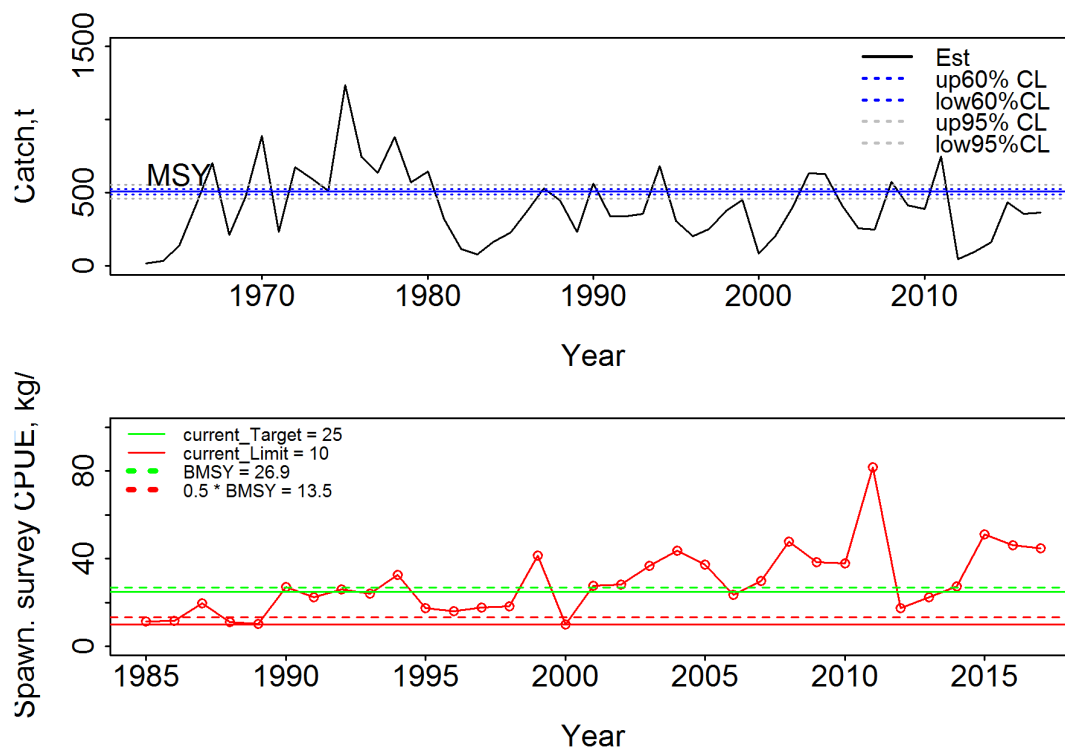
The estimated fishing mortality increased from a very low level in 1963 to a peak of > 1.0 year<sup>-1</sup> in the late 1970s before declining precipitously to < 0.3 year<sup>-1</sup> during the early 1980s, coinciding to a marked reduction in brown tiger prawn catches and also reduction in fishing effort. The estimated fishing mortality again increased in the 1990s but has declined in recent years to relatively low levels (< ~0.3 year<sup>-1</sup> since the mid-2000s). As the fishery has experienced periods of both declining and increasing catch rates, it is likely that these data provide a good level of signal, in terms of stock status, for population modelling.



**Figure 5. Fit of the annual biomass dynamics model to commercial catch rate data (top left) and fishery independent catch rate data from spawning surveys (top right), estimated stock biomass (bottom left) and annual fishing mortality (bottom right) for brown tiger prawns in Exmouth Gulf.**

Catches in recent decades have fluctuated around the model estimate for MSY (507 t  $\pm$  1SE 24 t). The estimated spawning survey catch rate equivalent to biomass at maximum sustainable yield ( $B_{MSY}$ ) of 26.9 kg/h ( $\pm$  1SE 4.2 kg/h) is similar to the current spawning survey “target reference point” of 25 kg/h). The estimated spawning survey catch rate corresponding to half  $B_{MSY}$  of 13.5 kg/h ( $\pm$  1SE 2.1 kg/h) is a little higher than the spawning survey “limit reference point” of 10 kg/h (Figure 6). Note that 10 kg/h is above the lower

95% confidence limit for the estimated spawning survey catch rate corresponding to  $0.5B_{MSY}$  (i.e. if applying  $1.96SE$  to calculate the confidence intervals). Broadly, on the basis of these results, the current values of the spawning survey catch rate-based reference points are appropriate (DPIRD-EGPMF 2019a).



**Figure 6. Estimated maximum sustainable yield (MSY) and associated 60% and 95% confidence limits superimposed over the annual catch series (top) and values of the currently adopted target and limit survey catch rate reference points and estimated catch rates corresponding to stock biomass at maximum sustainable yield ( $B_{MSY}$ ) superimposed over the spawning survey catch rate series (bottom), for brown tiger prawns in Exmouth Gulf. Source DPIRD-EGPMF 2019a.**

#### *Biomass dynamics model for short-lived species*

An alternative annual production model, based on that of Zhou et al. (2009) developed for short-lived species, was fitted to the same data as the “base model”. Results from this approach are similar to those of the base model. The estimate of MSY produced by this model was 613 t ( $\pm 1SE$  52 t). As with the results of the standard model, the estimated spawning catch rate corresponding to  $B_{MSY}$  was 24.5 kg/h ( $\pm 1SE$  2.0 kg/h), and that corresponding to  $0.5B_{MSY}$  was 12.2 kg/h ( $\pm 1SE$  1.0 kg/h).

#### Additional information

DPIRD-EGPMF (2019a) also provides information on additional lines of evidence used to examine stock status and reference points. The information examined includes:

- Annual catches – catches in recent decades have consistently been well below the level in the late 1980s, that led to a major decline in the stock. Overall fishing effort in the fishery in recent years is substantially less than historical levels, thus limiting or reducing fishing impacts on this species. Management has been effective in ensuring the sustainability of the brown tiger prawn, including the use of spatial and temporal closures which provide substantial stock protection. In addition, the increasing levels in commercial catch rates and fishery-independent catch rates in recent years indicate increasing stock levels, suggesting it is likely that biomass is above  $B_{MSY}$ .

- Within season catch rates – area openings and area closures are implemented to protect overall abundance and spawning brown tiger prawns. As fishing tends to cease each year when catch rates of brown tiger prawns are at a moderate level (cessation at target catch rate), complemented by area closures, fishing pressure on this species is not likely to be causing unacceptable stock depletion.
- Species catch composition – since management measures were introduced to protect brown tiger prawn stocks in the early 1980s, there has not been any marked declining trend in the contributions made by brown tiger prawns to combined catches of key target species. With recent catch proportions at historical levels, this indicates that unacceptable stock depletion has not occurred.
- Spatial distribution of catches and catch rates –there is no evidence of contraction of the stock that is indicative of unacceptable stock depletion.
- Size composition data – the similarity between the size compositions for brown tiger prawns caught in the same areas and same months of the year during 1989-1993 compared with 2015-2018 provide no strong indication that fishing mortality has increased over this period.
- Stock recruitment data – recent stock recruitment data years provides no indication of unacceptable stock depletion leading to recruitment failure.

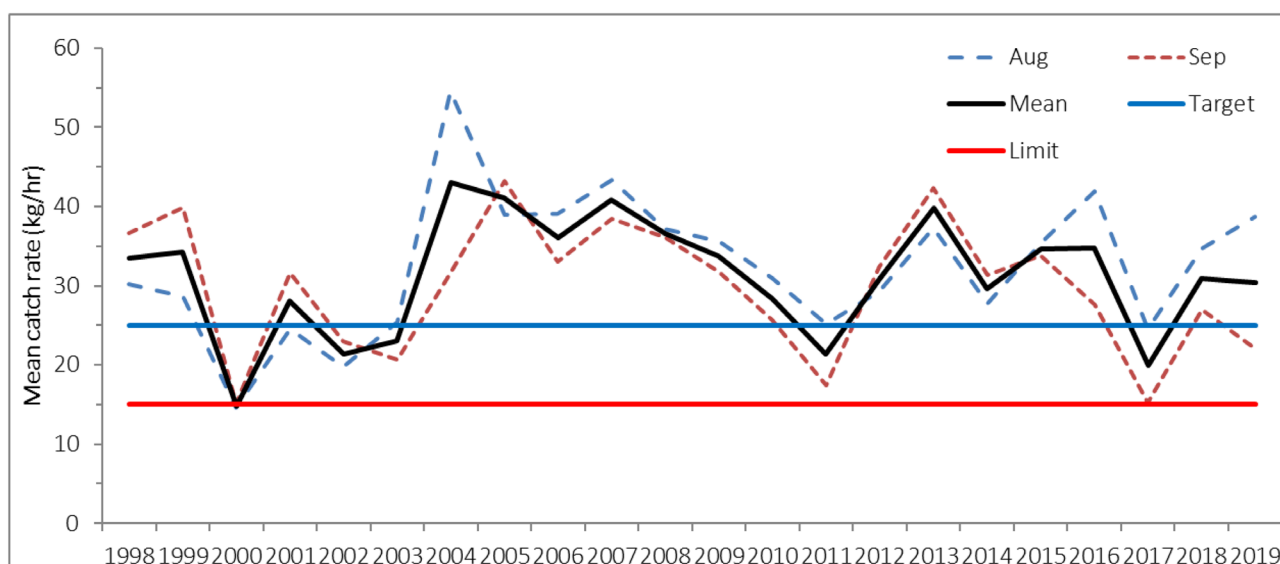
## Western King Prawns

### Performance against harvest strategy

Banks et al. (2015) reports that catch and catch rate levels from 1989 to 1998 were used as the basis for calculating king prawn target catch ranges of 350 to 500 t and a catch rate of 12 kg/hr (range 8 to 14 kg/hr). However, this target catch range has been reviewed due to the apparent negative impacts of increased water temperature on recruitment and with the level of effort having declined for the fishery due to fleet restructures and targeting larger prawns (Kangas et al. 2020). There has been concern for the western king prawn stock as total landings remain below the acceptable catch range after a 'recovery' of stocks in 2013 from the 2011 heat wave. Elevated water temperature rather than fishing effort appears to be the main cause of the decline in annual landings at current effort levels, however, WA Fisheries have indicated that there may need to be a consideration of implementing a small area closure during the spawning season to provide further protection to some of the spawning stock. A catch range based on the last 15 years of production sets a revised catch range of 100-450 t and a mean catch rate range (8-16 kg/hr). Mean catch rate in 2017 was 5.4 kg/hr, well below the reference catch rate. Mean catch rate in 2018 improved to 7.2 kg/hr and in 2019 was 7.9 kg/hr, slightly below the mean historical level. The 2017 western king prawn landings (130 t) were below the target catch range (155 to 230 t). Landings in 2018 increased to 174 t and also in 2019 to 194 , within the revised target range.

Western king prawns were fished conservatively in the early part of the season. Fishing effort in the northern area (the main western king prawn fishing grounds) was focused mainly in the latter part of the season (Kangas et al. 2020). Also, in the early part of the season, areas where small size western king prawns were located were closed to fishing to ensure that size and quality were maintained.

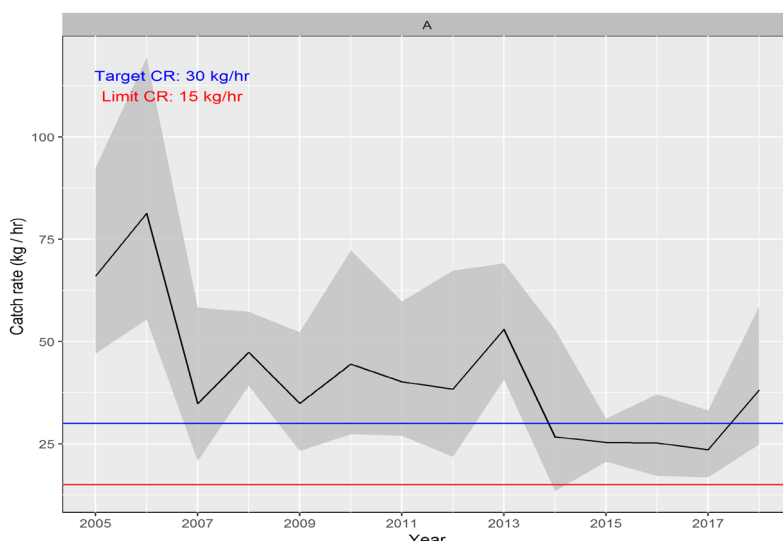
The spawning stock index for 2017 of 19.9 kg/hr (commercial catch rates in key western king prawn fishing ground in August and September) was below the target (Figure 7). The 2018 value increased to 30.9 kg/hr and was 30.4 kg/hr in 2019.



**Figure 7. Western king prawn spawning stock index (mean commercial catch rate (kg/hr)) in the key spawning areas (R1 and S2) in Exmouth Gulf during August and September between 1998 and 2019 (Source: Kangas et al. 2020).**

A fishery-independent survey of seven sites within the western king prawn grounds commenced in 2015 during August to October and these sites are considered to represent key western king spawning grounds. The location of sites were slightly modified in 2016 and 2017; these sites will continue to be sampled regularly in the future. A longer time series of survey data is required to enable a full comparison of these indices with the commercial indices.

Each year since 2005 fishery-independent recruitment surveys have been undertaken in March and April to assess prawn abundance and size structure and are used for a catch prediction and management decisions, such as spatial-temporal opening of fishing areas (Kangas et al. 2020). The 2017 recruitment index for western king prawn was 23.6 kg/hr, below the level of target). In 2018 the index was 38.2 kg/hr, above the target level (Figure 8). In 2019, the mean recruitment index was 47.6 kg per hour, well above the target (30 kg per hour). The catch prediction was 300 t (range 240-360 t), with the 2019 landings of 194 t falling significantly below the predicted catch. The reason for this discrepancy is currently being investigated (Kangas et al. 2020).



**Figure 8. Mean and 95% confidence interval for western king prawn recruitment index in Area A in Exmouth Gulf between 2005 and 2018 (Source: DPIRD-EGPMF 2019b).**

WA Fisheries conclude that the biomass of the stock is unlikely to be recruitment overfished and the stock status is considered sustainable (DPIRD-EGPMF 2019b).

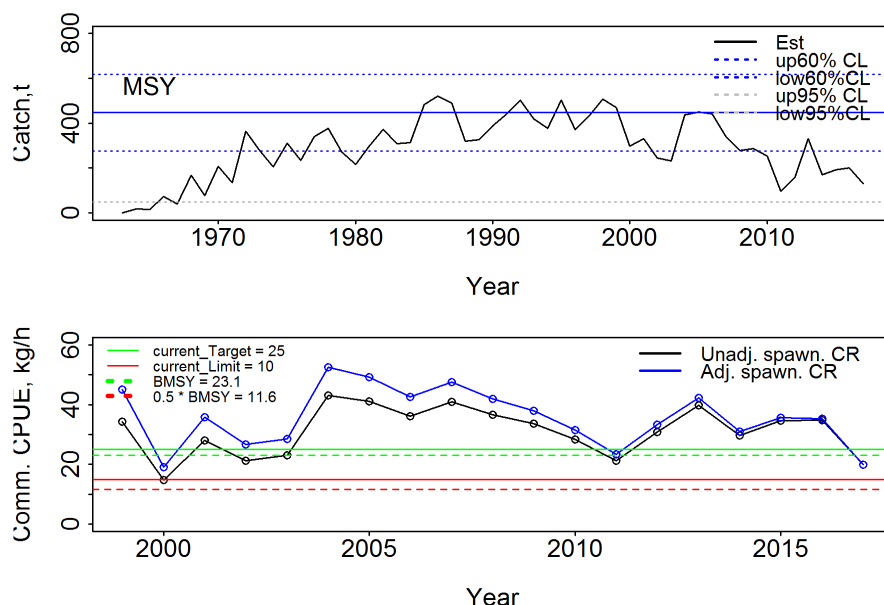
#### Development of approaches to address 2015 P1 certification conditions

At certification in 2015, a condition was set for each of western king prawn and brown tiger prawn for PI 1.1.2 (under FCR v1.3) requiring the development of target reference points consistent with  $B_{MSY}$  or a surrogate. DPIRD scientists have developed a weight of evidence approach exploring several assessment approaches to address this issue (DPIRD-EGPMF 2019a, DPIRD-EGPMF 2019b).

The modelling approaches described above for brown tiger prawns were also undertaken for western king prawns.

#### *Biomass dynamics models*

In recent years, annual catches have been well below estimated MSY (various point estimates across sensitivity analyses range from ~300-450 t). The biomass dynamics modelling indicates that the current target reference point associated with the fishery-dependent spawning stock abundance (25 kg/h) is close to the catch rate corresponding to  $B_{MSY}$  (23.1 kg/h) and the current limit (15 kg/h) is a little higher than the catch rate corresponding to  $0.5B_{MSY}$  (Figure 9) (DPIRD-EGPMF 2019b). The modelling undertaken has considered changes in commercial fishing efficiency over time and various sensitivity analyses were undertaken to explore the key uncertainties. The results from the annual biomass dynamics model fitted to the available catch and CPUE data do not indicate current unacceptable stock depletion, and suggest the spawning survey target and limit reference points are at least broadly appropriate (noting that results are considered preliminary and the analyses require a number of assumptions).



**Figure 9: Estimated maximum sustainable yield (MSY) and associated 60% and 95% confidence limits superimposed over the annual catch series (top) and values of commercial spawning index (catch rate) reference points and estimated catch rates corresponding to stock biomass at maximum sustainable yield ( $B_{MSY}$ ) (bottom), for western king prawns in Exmouth Gulf. The value for  $r$  (intrinsic increase) has been set to 0.11 (estimate for this species from Shark Bay). Fishing efficiency has been assumed to increase each year by 1.5% (except in 1981-1984, by 50%). Source DPIRD-EGPMF 2019b.**

#### Additional information

DPIRD-EGPMF (2019b) provides extensive information on the lines of evidence used to examine stock status and reference points. As well as the model-based approaches discussed above, the information examined includes:

- Annual catches – Overall fishing effort in the fishery in recent years is substantially less than historical levels, thus limiting or reducing fishing impacts on this species. The annual catch of western king prawns reached 350 to 500 t in the 1980s and remained relatively stable until 2000. Catches then dipped for several years, in part due to the effects of a cyclone, and then returned to pre-cyclone levels. Catches were very low in 2011 due to a marine heatwave event. In the last six out of seven years, landings have been between 100 and 200 t range (Figure 1). These lower catch levels in recent years are considered to reflect a lowering of stock abundance, likely attributable to increasing water temperatures associated with climate change.
- Annual fishing effort – Overall fishing effort in the fishery in recent years is substantially less than historical levels, thus limiting or reducing fishing impacts on this species. At least in part, reduced effort in recent years reflects an increased focus from industry to maximise economic returns by targeting larger prawns through delaying fishing at the start of the season to allow prawns to grow and fishing at optimal times when catch rates are highest. Fishing effort trends indicate there has not been a recent increase in effort which should negatively affect the stock status of this species and during periods of lower abundance effort has been reduced as well as moved away from key western king prawn grounds.
- Fishery-dependent spawning stock catch rate series and stock-recruitment data; western king prawn fishery-dependent catch rates (1998 to 2018) do not indicate unacceptable depletion of the spawning stock. Secondly, the fishery-independent survey catch rate for 2017 and 2018 (August and September combined) is slightly higher than the mean commercial catch rate for the same time period and both are well above the limit and therefore also support there has not been unacceptable depletion. As targeted fishing on western king prawns does not commence before survey catch rates are above the target level, complemented by area closures, fishing pressure on this species is

not likely to be excessive and recent prawn fishing effort trend is unlikely to negatively affect the stock status for western king prawns.

- The western king prawn catch rates from fishery-independent surveys in March and April do not provide evidence of recruitment failure, though the declining trend is of some concern. The low recruitments are likely associated with warming water temperatures (climate change), as Exmouth Gulf, which is a tropical environment, is located at the upper end of the distribution of western king prawns which is mainly a temperate species. The lower recruitment for the last few years have been mitigated by monitoring of the western king prawn catch rates beyond March/April i.e. June and July and only directing fishing effort onto this species if and when the catch rates are above the target in combination with spatial closures.
- Spatial distribution of catches and catch rates – there is no evidence of contraction of the stock that would otherwise be indicative of unacceptable stock depletion.

## **Blue endeavour prawns**

### Performance against harvest strategy

Blue endeavour prawns were assessed as a Principle 2 species in the original assessment, but were added to the certificate in February 2019 following an expedited assessment (Banks and McLoughlin, 2019). Further detail on blue endeavour prawns is provided in Banks and McLoughlin (2019).

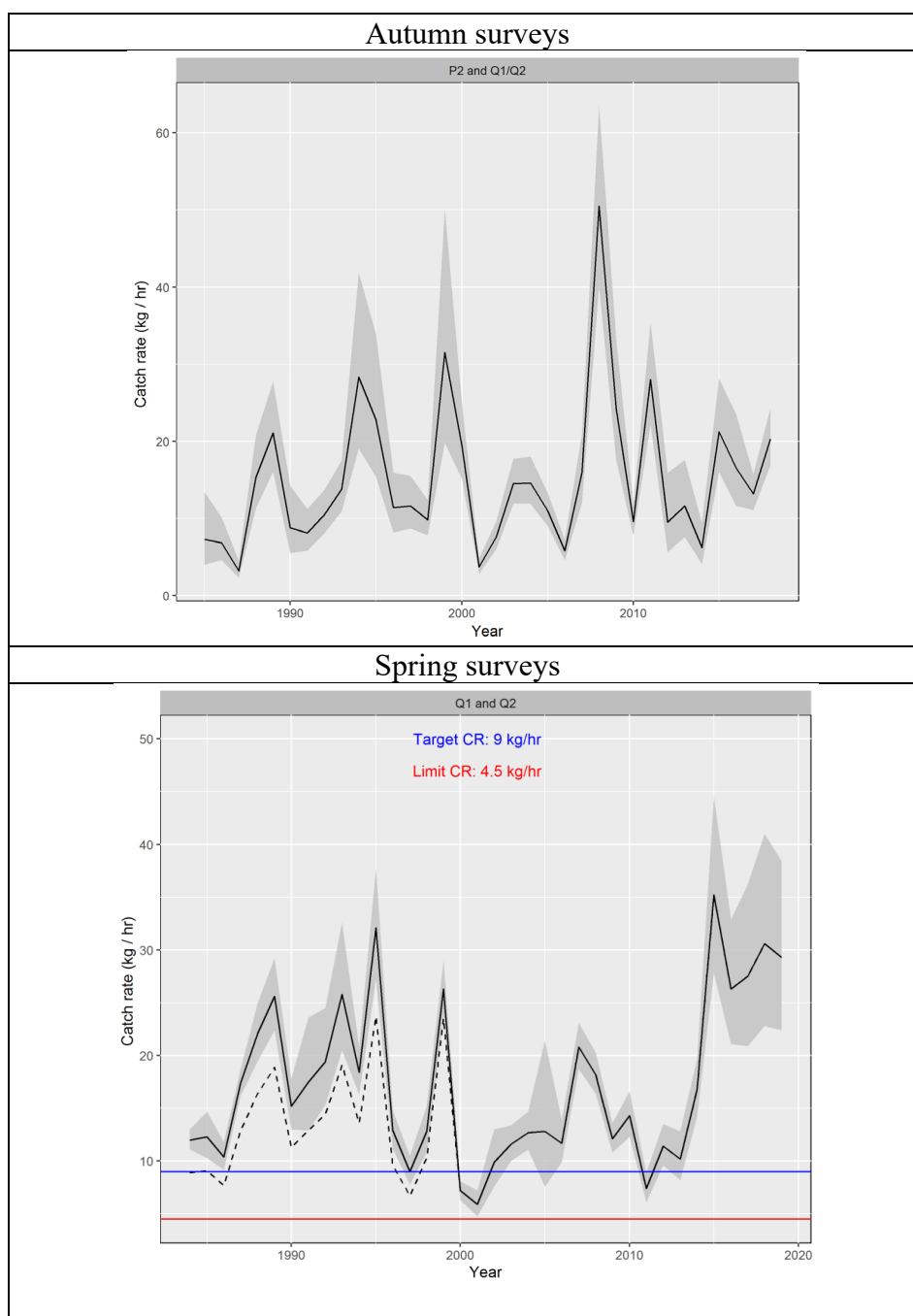
Endeavour prawn landings in 2017 (217 t) were within the normal catch range of 120-300 t, below the high catches of 2015 (397 t). The 2018 catch increased to 312 t but decreased to 208 t in 2019. The 2017 endeavour prawn adjusted mean annual CPUE of 9.0 kg/hr was significantly above the average mean annual catch rate of 5.6 kg/hr, though much lower than 2015's highest recorded catch rate of 18.0 kg/hr. The 2018 catch rate was 13.0 kg/hr. The 2019 catch rate was 8.5 kg/hr, the lowest since 2014.

Multiple fishery-independent surveys undertaken in March/April each year provide recruitment information for brown tiger and western king prawns, as described in Banks et al. (2015). These surveys also provide recruitment indices for blue endeavour prawns. The timing of recruitment of blue endeavour prawns likely differs from the two other species (with substantial recruitment later in the year), and thus the autumn survey catch rates measure only part of the blue endeavour prawn recruitment (DPIRD-EGPMF 2018). The mean fishery-independent survey catch rates do not exhibit any pronounced increasing or decreasing trend since 1985. Catch rates in 2012-2014 were low relative to historic levels, possibly associated with environmental effects (2011 extreme marine heatwave) on seagrass areas, important for prawn recruitment. Catch rates have since increased.

Similar to that described above, a time series of fishery-independent catch rates for blue endeavour prawns is available for 1984-2019, from multiple surveys in August, September and October. These were aimed at mainly measuring annual spawning stock levels of brown tiger prawns and western king prawns, but also measure abundance of blue endeavour prawns. As blue endeavour prawns also commence spawning around this time, the surveys likely provide a useful measure of spawning stock levels for this species.

The mean fishery-independent survey catch rates for surveys conducted in August to October do not exhibit any pronounced increasing or decreasing trend since 1985. Recent catch rates in last three years are well above historic ranges. The 2017 mean catch rate was 26.5 kg/hr and in 2018 was 30.6 kg/hr (Figure 10). The 2019 catch rate was 28.5 kg/hr.

WA Fisheries conclude that the current level of effort is unlikely to cause the stock to become recruitment overfished and stock level is considered sustainable.



**Figure 10. Fishery-independent mean survey catch rates and 95% confidence intervals of endeavour prawns in Exmouth Gulf recorded for surveys conducted in autumn (March/April; 1985 - 2018) in the fishing grounds P2, Q1 and Q2, and in Spring (September/October; 1984 - 2018) in fishing grounds Q1 and Q2. Note that the 2018 data for the spring surveys are preliminary (Source: DPIRD-EGPMF 2019c and Kangas et al. 2020)).**

#### Model-based outcomes

Since the certification of brown tiger and western king prawn, DPIRD has been developing model-based stock-assessment approaches for the three major prawn species.

#### Catch-MSY model

A Catch-MSY model (Martell and Froese, 2013), implemented within the “simpleSA” R package (Haddon et al. 2018) has been run for blue endeavour prawns in Exmouth Gulf. The results are described in DPIRD-EGPMF (2018). The approach is a “data-poor” stock assessment method that can be used to estimate biomass and fishing mortality trends based on a catch history and inputs relating to the assumed productivity of the stock. Although reliable abundance indices for this species exist from fishery independent surveys, they lack “contrast” (i.e. no trend) making it difficult to obtain reliable outcomes with

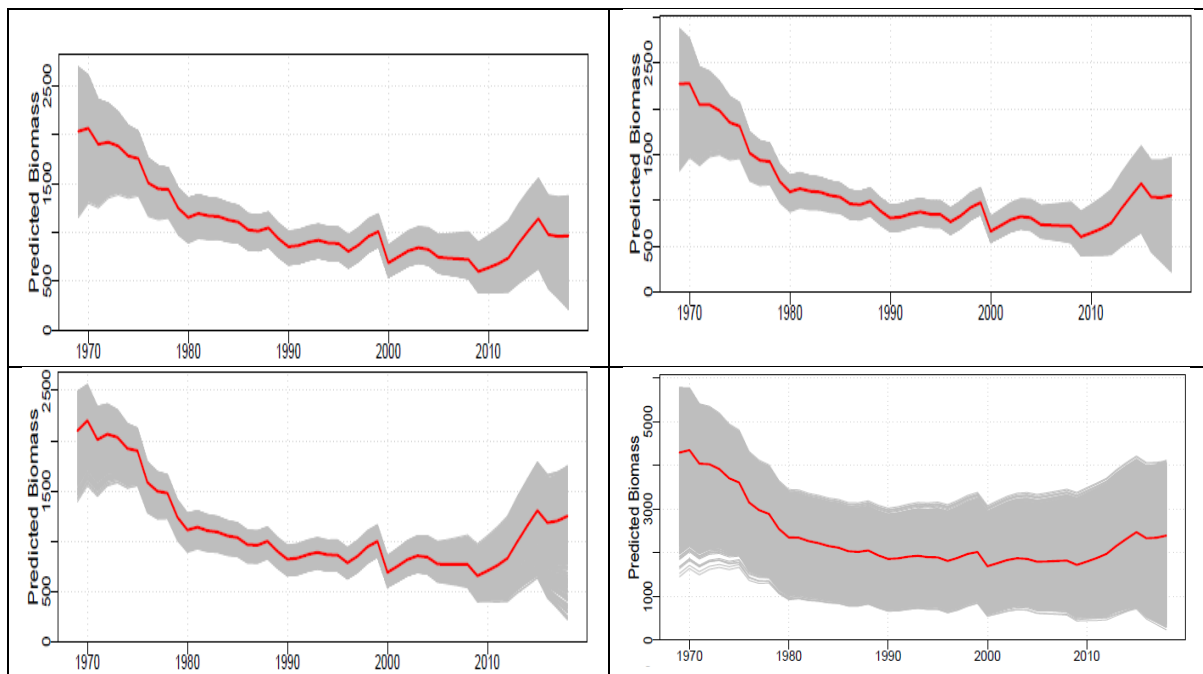


many of the fisheries models typically used (although this has now been achieved, see below). The Catch-MSY method makes some strong assumptions and biomass estimates typically exhibit large uncertainty (DPIRD-EGPMF 2018). The model produces estimates of MSY,  $K$  (maximum population size),  $r$  (intrinsic population growth rate), and annual biomass and harvest rates.

Anecdotal evidence suggests that in the early years of the Exmouth Gulf fishery (mainly before 1985), some blue endeavour prawn catches were discarded (and thus not reported) when hold space was limited, due to their lower value compared with western king and brown tiger prawns. The levels of discarding are unknown.

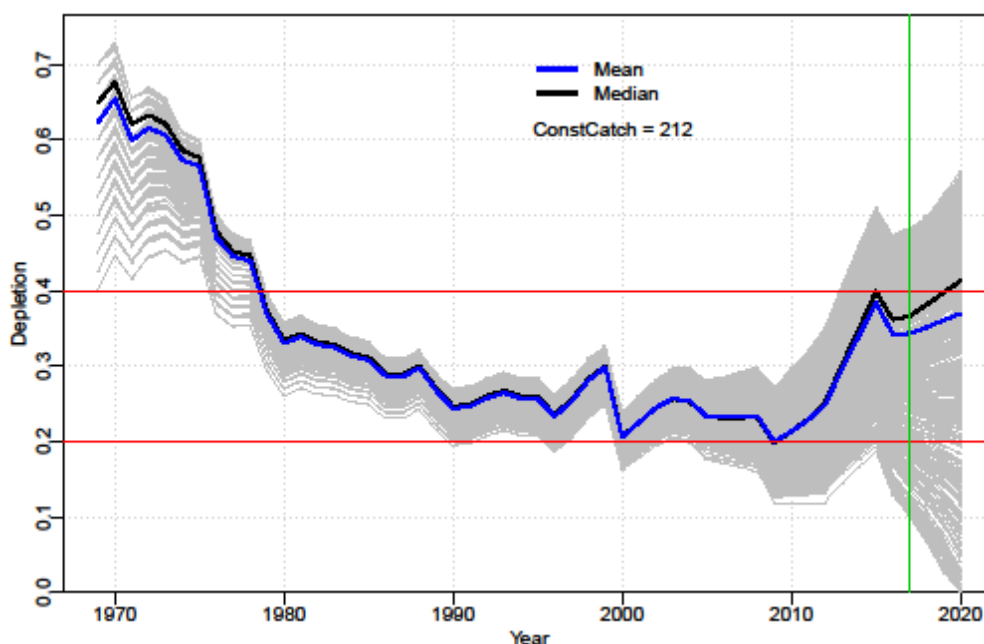
Four catch scenarios were modelled including 1) using unadjusted annual commercial blue endeavour catches; 2) catches with those prior to 1985 adjusted upwards to account for an assumed level of discarding (see below), with the recorded catch for the first year increased by 25%, with a downwards linear ramp for the increase to zero by 1985; 3) similar to 2), but with the recorded catch in the first year being increased 50%; and 4) similar again but with the recorded catch in the first year doubled.

For scenarios 1-3, the resilience level was set to “medium” corresponding to an initial  $r$  range of 0.3 - 0.8. Scenario 4 required a “low” resilience level ( $r$  between 0.1 – 0.6) to generate realistic outputs. The results of all four scenarios suggest the blue endeavour prawn stock in Exmouth gulf is not currently overfished, with median predicted biomass increasing since 2010 (Figure 11 and Figure 12).



**Figure 11. Predicted biomass estimates (t) for the blue endeavour prawn stock in Exmouth Gulf from the Catch-MSY analysis. The red line is the median and the grey lines are the successful biomass trajectories for**

the range of initial  $r$  and  $K$  values. top left, predicted values for scenario 1; top right, predicted values for scenario 2; bottom left, predicted values for scenario 3; bottom right, predicted values for scenario 4.



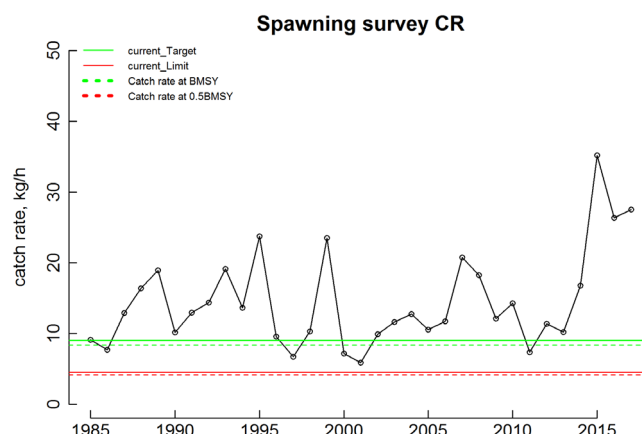
**Figure 12. Predicted depletion trajectories for scenario 3 under a constant catch of 212 tonnes for the blue endeavour prawn stock in Exmouth Gulf. The grey lines show the range of predicted trajectories. The green line shows the most recent year for which data is available. The red lines show 0.2 and 0.4 depletion levels.**

Values for estimated MSY ranged from 236 to 292 tonnes for scenarios 1-4, which is greater than the mean catch of 212 tonnes since 1985. The current level of depletion estimated from scenario 3 (initial catches increased by 50%), is ~40%.

DPIRD-EGPMF (2018) acknowledges the high level of uncertainty and assumptions required in this approach, however, the outputs provide no indication of current overfishing or unacceptable stock depletion.

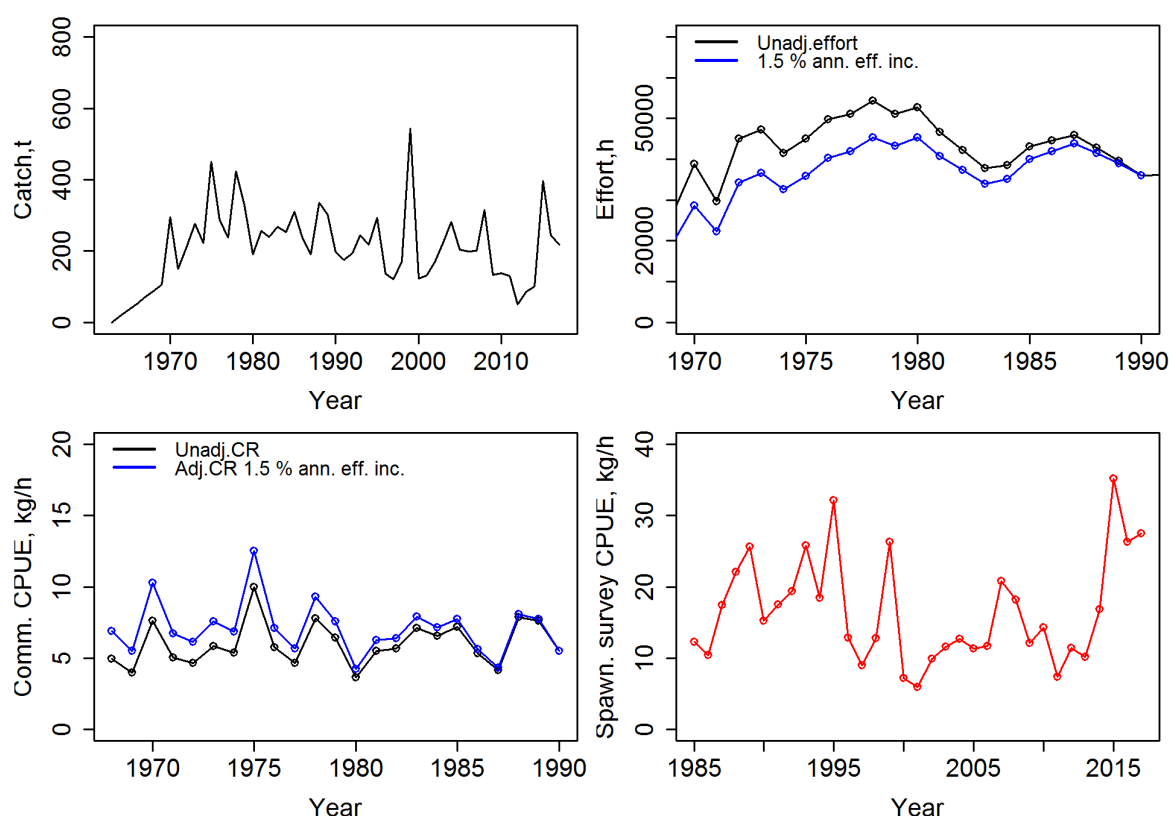
#### Preliminary biomass-dynamics modelling

Preliminary modelling approaches undertaken for blue endeavour prawn are described in the 2019 expedited assessment for the species (Banks and McLoughlin, 2019). The biomass-dynamic model provided estimates of how the adopted target (9 kg/h) and limit (4.5 kg/h) reference points associated with the Spring fishery-independent spawning surveys compared with the catch rates corresponding to  $B_{MSY}$  and  $0.5B_{MSY}$ . Results are shown in Figure 13. The spawning survey catch rates associated with  $B_{MSY}$  and  $0.5B_{MSY}$  are very similar to the specified target (9 kg/h) and limit reference points (4.5 kg/h), respectively (Figure 13 for scenario 1).



**Figure 13. Mean fishery-independent spawning survey blue endeavour prawn catch rates (black lines). The current target and limit catch rates and catch rates associated with  $B_{MSY}$  and  $0.5B_{MSY}$  have been added to the figure for comparison. Results are for model Scenario 1, assuming no discarding or annual fishing efficiency changes for annual commercial catch rates.**

In 2019, WA Fisheries undertook further modelling of blue endeavour prawn in Exmouth Gulf, consistent with that undertaken for brown tiger prawn and western king prawn in the Exmouth Gulf and Shark Bay prawn trawl fisheries. A Schaefer biomass dynamics model with an annual time step was fitted to available catch, commercial catch per unit effort (Figure 14) (DPIRD-EGPMF 2019a).



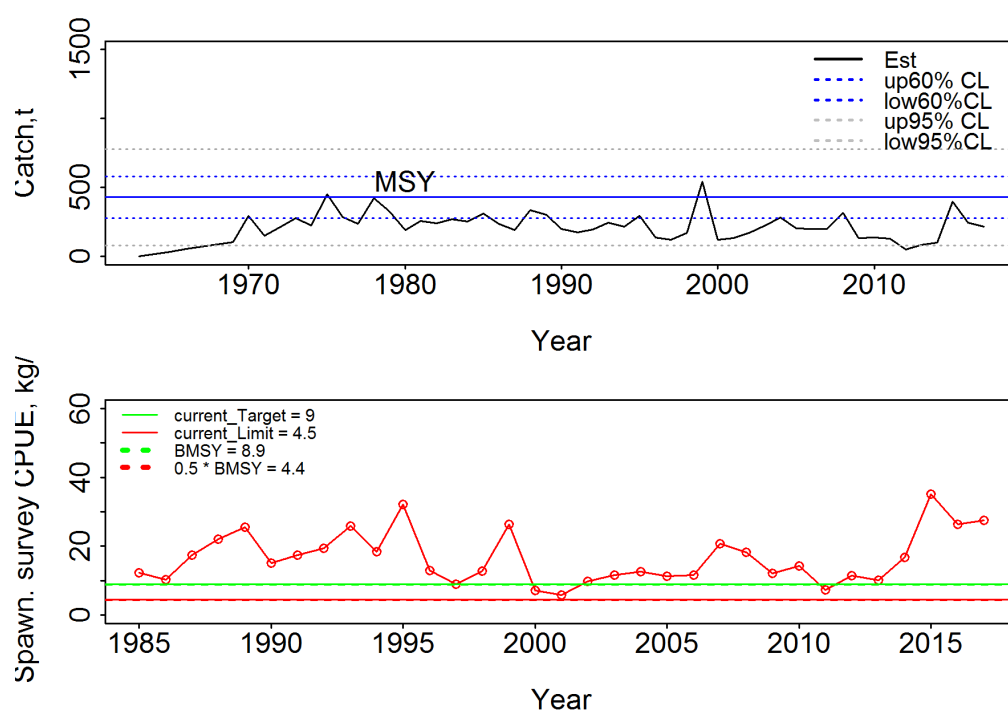
**Figure 14: Commercial annual catches of blue endeavour prawns in Exmouth Gulf (top left), unadjusted and adjusted (assumed annual 1.5% increase), annual fishing effort in 1970-1990 (top right), unadjusted and adjusted commercial catch rates (kg/h, bottom left) in 1970-1990 and spawning survey catch rates (kg/h, bottom right). Note, in all cases, fishing effort has already been modified to account for the change from twin to quad fishing gear.**

Rather than attempt to estimate  $K$  (carrying capacity) and  $r$  (intrinsic rate of increase) (which had been done in the previous assessment and requires several strong assumptions), the model was fitted specifying a range of fixed values for  $r$ . The range of values of  $r$  considered was broad, from 0.1 (low productivity) to 1.0 (high productivity). Irrespective of the value of  $r$  assumed, estimated biomass remained relatively stable over the history of the fishery, consistent with the stable catch rate trend (and understanding of the history of fishing for this species). Fitting the model and fixing  $r$  to a high value ( $r=0.8$  or  $r=1.0$ ) resulted in lower estimates of annual biomass (~2000 t) and higher values of  $F$ , annual fishing mortality (maximum  $F$  at ~0.3-0.4 / year) compared with using a low  $r$  value ( $r=0.1$ ), i.e. biomass ~10,000 t, and maximum  $F < 0.1$  / year.

The point estimates for maximum sustainable yield (MSY) were higher assuming  $r=0.8$  (MSY = 429 t  $\pm$  1SE 179) or  $r=1.0$  (MSY = 438 t  $\pm$  1SE 194) than when assuming a low value of  $r=0.1$ , associated with lower productivity (MSY = 308 t  $\pm$  1SE 163) (Figure 15). In all cases, however, the standard errors for the estimates for MSY are large.

The estimates of the spawning survey catch rates (which were relatively far more precise than the MSY estimates) are similar for all alternate  $r$  values assumed and close to the current target (9 kg/h) and limit (4.5 kg/h) reference points. At  $r=0.1$ , the estimated spawning survey catch rate corresponding to  $B_{MSY}$  was 9.6 kg/h ( $\pm$  1SE 1.9) and that at  $0.5B_{MSY}$  was 4.8 kg/h ( $\pm$  1SE 0.9). At  $r=0.8$  or  $r=1.0$ , the estimated spawning survey catch rate corresponding to  $B_{MSY}$  was 8.9 kg/h ( $\pm$  1SE 1.1) and that at  $0.5B_{MSY}$  was 4.4 kg/h ( $\pm$  1SE 0.5) (Figure 15).

Overall, the outcomes for the updated modelling are similar to those in the expedited assessment (Banks and McLoughlin, 2019). WA Fisheries conclude that the stock is currently being fished sustainably, and that the current target and limit reference points are broadly appropriate (DPIRD-EGPMF 2019a).

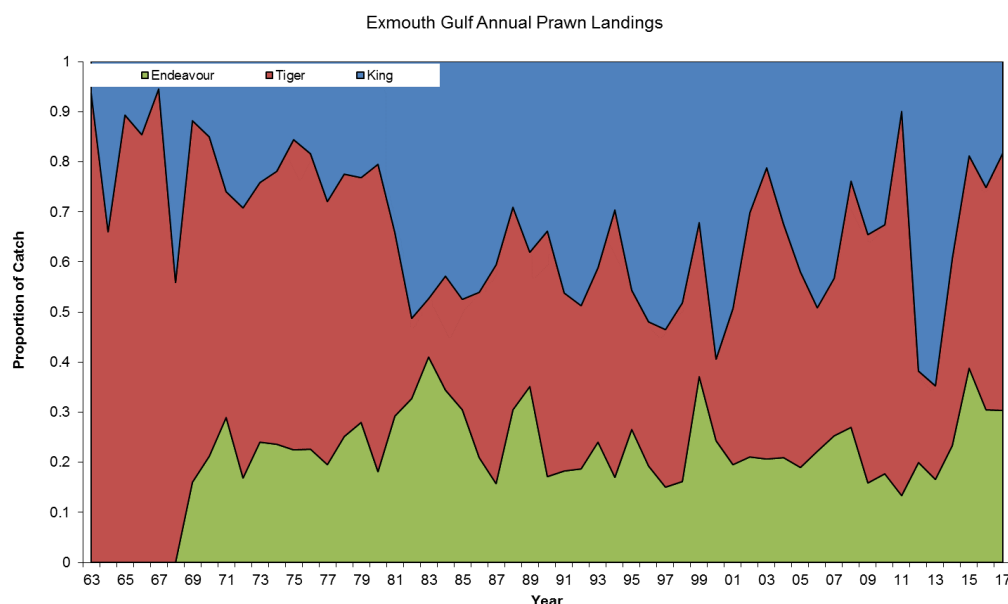


**Figure 15: Estimated maximum sustainable yield (MSY) and associated 60% and 95% confidence limits from the annual Schaefer model superimposed over the annual catch series (top) and values of the currently adopted target and limit survey catch rate reference points and estimated catch rates corresponding to stock biomass at maximum sustainable yield ( $B_{MSY}$ ) superimposed over the spawning survey catch rate series (bottom), for blue endeavour prawns. Model was fitted setting the value for intrinsic increase,  $r$ , at 0.8.**

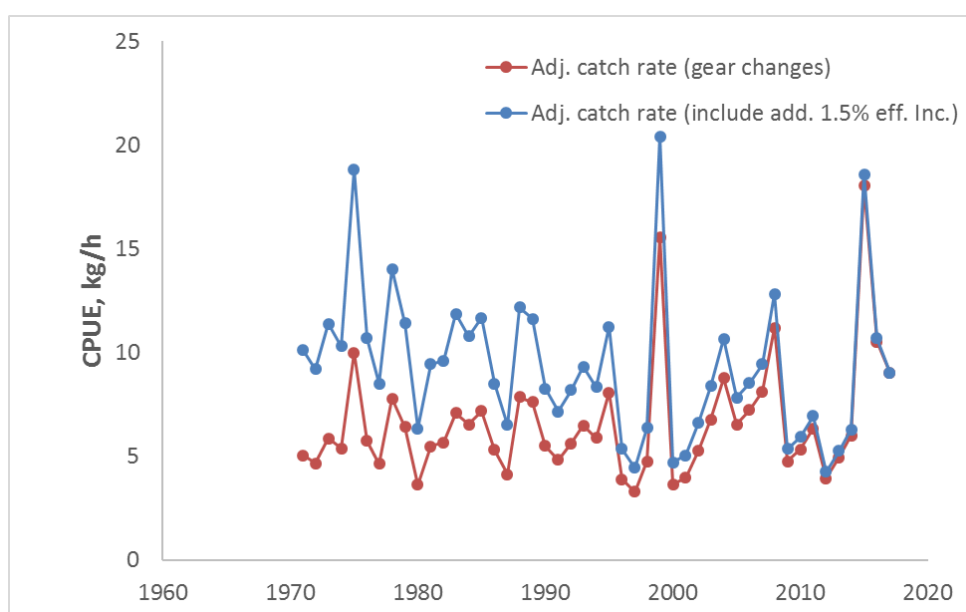
#### Additional information

DPIRD-EGPMF (2018) provides information on the lines of evidence used to examine stock status and reference points. As well as the model-based approaches discussed above, the information examined includes:

- Annual catches – in the first few years of the fishery, blue endeavour prawns were not recorded in landed catches. Since about 1970, the contribution catch of brown tiger and western king prawns to overall catch of the three key prawn species has varied over time, whereas the relative contribution made by endeavour prawns has remained relatively constant, fluctuating around 20-25% (Figure 16). In the last 3 years, the contribution made by blue endeavour prawns has been relatively high, ~30%. This lack of any marked trend in the contributions made by blue endeavour prawns to the combined catches of key target species, and recent increase to an historically high level, indicates that unacceptable stock depletion has not occurred.
- Annual fishery-dependent catch rate data, available since 1971, do not suggest an unacceptable depletion of blue endeavour prawns (Figure 17).



**Figure 16. Relative contributions of the three key prawn species (blue endeavour prawns, brown tiger prawns and western king prawns) in annual retained catches recorded for the EGPMF since the start of the fishery in the early 1960s. Note that blue endeavour prawn catches were not recorded for the first few years.**



**Figure 17. Annual commercial blue endeavour prawn catch rates (kg/h) in Exmouth Gulf since 1971 (when reliable data on retained catches for blue endeavour prawns are available) adjusted for increases in efficiency**

due to changes in fishing gear alone (twin nets to quad nets) or fishing gear and assuming an additional 1.5% annual increase, associated with improvements in technology and other factors. Note that some blue endeavour prawns are likely to have been discarded in earlier years, and thus historical catch rates in some years are likely underestimated.

- A time series of fishery-independent catch rates for blue endeavour prawns is available for 1985-2017, from multiple surveys in March/April which were aimed mainly at measuring annual recruitment levels of brown tiger prawns and western king prawns, but also measuring abundance of blue endeavour prawns. The mean catch rates do not exhibit any pronounced increasing or decreasing trend since 1985. Catch rates in 2012-2014 were very low relative to historic levels, possibly associated with environmental effects (the 2011 extreme marine heatwave) on seagrass areas, important for prawn recruitment. Catch rates have since increased and do not indicate unacceptable stock depletion.
- Similarly, a time series of fishery-independent catch rates for blue endeavour prawns is available for 1984-2017, from multiple surveys in September/October. These were aimed at mainly measuring annual spawning stock levels of brown tiger prawns and western king prawns. As blue endeavour prawns also commence spawning around this time, the surveys likely provide a useful measure of spawning stock levels for this species. The mean catch rates from these surveys do not exhibit any pronounced increasing or decreasing trend since 1985. Catch rates in last three years are well above historic ranges.
- Blue endeavour prawns are caught throughout the full area of the fishery. In years of relatively low abundance, the catch rates of blue endeavour prawns have been low throughout the fishery. Conversely, when annual abundance has been high, areas of relatively high catch rates were widespread throughout the fishery. There is no evidence of contraction of the stock that would otherwise be indicative of unacceptable stock depletion.

### 8.2.3 Summary of performance against harvest strategy indicators for 2019

An assessment against the harvest strategy annual operation performance indicators in 2019 is given in Table 8. Following an assessment against the annual operation performance indicators in the harvest strategy, no changes to the season arrangements are predicted for 2020.

**Table 8. Performance of the EGPMF in relation to Harvest Strategy reference levels**

| Species              | Reference level met                        | 2019 level                 | Control rule                      |
|----------------------|--|----------------------------|-----------------------------------|
| Tiger prawns         | Target - Mean catch rate $\geq 25$ kg/hr   | Mean catch rate 46.2 kg/hr | No change to season arrangements. |
| King prawns          | Target - Mean catch rate $\geq 25$ kg/hr   | Mean catch rate 30.4 kg/hr | No change to season arrangements. |
| Blue endeavor prawns | Target – Mean catch rate is $\geq 9$ kg/hr | Mean catch rate 28.5 kg/hr | No change to season arrangements. |

### 8.2.4 Total Allowable Catch (TAC) and catch data

**Table 9 – Catch Data (TACs not in place for the fishery) – Brown Tiger Prawn**

| TAC              | Year               | Na   | Amount | Na    |
|------------------|--------------------|------|--------|-------|
| UoA share of TAC | Year               | Na   | Amount | Na    |
| UoC share of TAC | Year               | Na   | Amount | Na    |
|                  | Year (most recent) | 2019 | Amount | 418 t |

|  |                                  |             |               |              |
|--|----------------------------------|-------------|---------------|--------------|
| <b>Total green weight catch by UoC (all operators in the fishery are within the UoC)</b> | <b>Year (second most recent)</b> | <b>2018</b> | <b>Amount</b> | <b>392 t</b> |
|--|----------------------------------|-------------|---------------|--------------|

**Table 10 – TAC and Catch Data (TACs not in place for the fishery) – Western King Prawn**

|  |                                  |             |               |              |
|--|----------------------------------|-------------|---------------|--------------|
| <b>TAC</b>   | <b>Year</b>                      | <b>Na</b>   | <b>Amount</b> | <b>Na</b>    |
| <b>UoA share of TAC</b>  | <b>Year</b>                      | <b>Na</b>   | <b>Amount</b> | <b>Na</b>    |
| <b>UoC share of TAC</b>  | <b>Year</b>                      | <b>Na</b>   | <b>Amount</b> | <b>Na</b>    |
| <b>Total green weight catch by UoC (all operators in the fishery are within the UoC)</b> | <b>Year (most recent)</b>        | <b>2019</b> | <b>Amount</b> | <b>194 t</b> |
|  | <b>Year (second most recent)</b> | <b>2018</b> | <b>Amount</b> | <b>174 t</b> |

**Table 11 – TAC and Catch Data (TACs not in place for the fishery) – Blue Endeavour Prawn**

|  |                                  |             |               |              |
|--|----------------------------------|-------------|---------------|--------------|
| <b>TAC</b>   | <b>Year</b>                      | <b>Na</b>   | <b>Amount</b> | <b>Na</b>    |
| <b>UoA share of TAC</b>  | <b>Year</b>                      | <b>Na</b>   | <b>Amount</b> | <b>Na</b>    |
| <b>UoC share of TAC</b>  | <b>Year</b>                      | <b>Na</b>   | <b>Amount</b> | <b>Na</b>    |
| <b>Total green weight catch by UoC (all operators in the fishery are within the UoC)</b> | <b>Year (most recent)</b>        | <b>2019</b> | <b>Amount</b> | <b>208 t</b> |
|  | <b>Year (second most recent)</b> | <b>2018</b> | <b>Amount</b> | <b>313 t</b> |

## 8.2.5 Principle 1 Performance Indicator scores and rationales

### Brown tiger prawn (*Penaeus esculentus*)

#### 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 |   |   |
|---------------|---|--|---|---|
| Scoring Issue |   | SG 60  | SG 80   | SG 100  |
| <b>a</b>      | Stock status relative to recruitment impairment |  |   |   |
|               | 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 certainty</b> that the stock is above the PRI. |
|               | Met?  | <b>Yes</b>   | <b>Yes</b>  | <b>Yes</b>  |
| Rationale     |   |  |   |   |

There was a collapse of the brown tiger prawn stock in the early 1980s associated with overfishing, and in 2000 associated with cyclone impacts on nursery habitats (Kangas et al. 2015). This has been important in determining stock levels at which recruitment may be impaired and underlies the limit reference point. Stock status is based on a weight of evidence from an extensive survey and monitoring program for the fishery, as well as modelling approaches which have been adopted since the original certification of the fishery. Levels of the spawning stock index between the target (10 kg/hr) and target (25 kg/hr) have generated acceptable levels of recruitment the following year over more than 20 years. The mean recruitment index (Autumn surveys) fell to lower than typical levels in 2012 and 2013 (21.5 kg/hr and 32.9 kg/hr, respectively) but remained above the limit level (10 kg/hr) and have been above the target (40 kg/hr) in recent years. The spawning stock indices (Spring surveys) have been well above the target since 2013 (44.8 kg/hr in 2017, 46.3 in 2018 and 46.2 kg/hr in 2019). The spawning stock and recruitment indices have been maintained above the limit reference levels since the 1980s. There is no evidence of a declining trend in recruitment in fishery-independent survey indices since 1983, however there are years when recruitment levels have fallen below the target which have been attributed to negative impacts on structured habitats in nurseries (cyclone and heatwave) resulting in low recruitment. In 2017, 2018 and 2019 the brown tiger prawn recruitment levels were well above the target level (see Figure 3).

Using the spring survey catch rates (in year t) as a measure of spawning stock, and the autumn survey catch rates (in year t+1) as a measure of recruitment, the data indicate that 1) relatively low recruitment can result from even relatively high spawning stock levels but that 2) recruitments resulting from spawning index levels above ~10 kg/h (i.e. limit reference point) are of a similar range (see Figure 4).

Model-based outcomes described at PI 1.1.1b support the survey findings.

The long running maintenance of the stock well above the limit provides evidence that the stock is highly likely above the point where recruitment would be impaired, thereby meeting the SG60 and SG80 requirements. In addition, confidence intervals on the survey indices suggest a high degree of certainty that the stock is above the PRI. SG100 requirements are met.

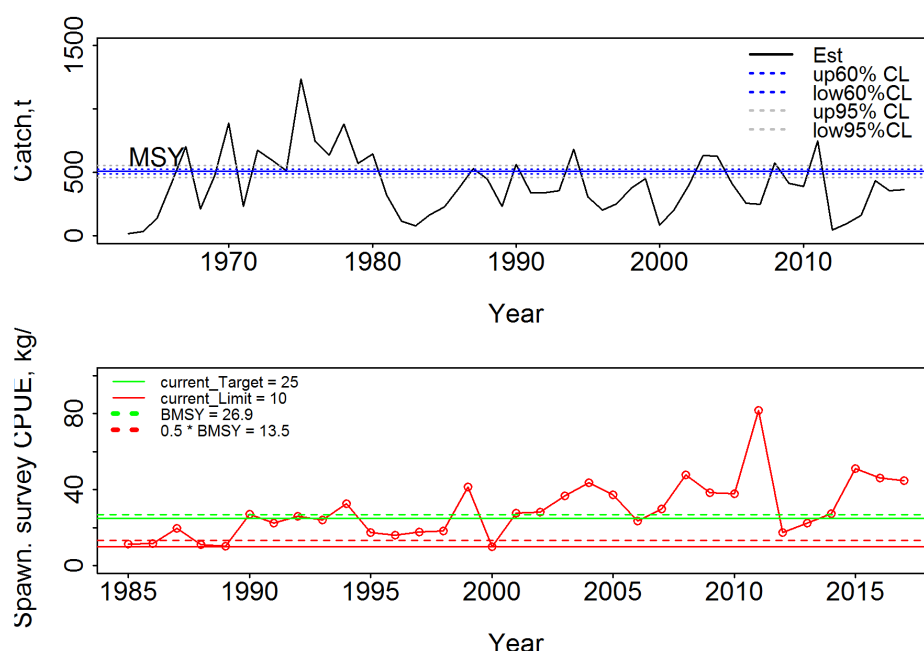
#### **b** Stock status in relation to achievement of Maximum Sustainable Yield (MSY)



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

Stock status modelling approaches undertaken for brown tiger prawn are described in Section 8.2. Two biomass dynamics models with different assumptions estimated biomass to be well above 50% of the unfished level (i.e.  $B_{MSY}$ ) and estimated that fishing mortality is very low relative to historic levels in the early 1980s. On average, catches since the mid-1980s have been below the estimated MSY (507 t). The estimated spawning survey catch rate at  $B_{MSY}$  (26.9 t) is similar to the currently-adopted target reference point (25 kg/h), and that at  $0.5B_{MSY}$  (13.6 kg/h) is slightly above the current limit reference point (10 kg/h), although the 95% confidence limits overlap.

The estimated spawning survey catch rate equivalent to biomass at maximum sustainable yield ( $B_{MSY}$ ) of 26.9 kg/h ( $\pm 1SE$  4.2 kg/h) is similar to the current spawning survey “target reference point” of 25 kg/h. The estimated spawning survey catch rate corresponding to half  $B_{MSY}$  of 13.5 kg/h ( $\pm 1SE$  2.1 kg/h) is a little higher than the spawning survey “limit reference point” of 10 kg/h (Figure 6). Note that 10 kg/h is above the lower 95% confidence limit for the estimated spawning survey catch rate corresponding to  $0.5B_{MSY}$  (i.e. if applying  $1.96SE$  to calculate the confidence intervals). Broadly, on the basis of these results, the current values of the spawning survey catch rate-based reference points are appropriate (DPIRD-EGPMF 2019a).



The long running maintenance of the stock around the target reference points since the 1990s provides evidence that the stock is fluctuating around a level consistent with MSY, thereby meeting the SG60 and SG80. The weight of evidence is that there is a high degree of certainty, meeting SG100 requirements.

The assessors note that a condition was in place for the fishery following the 2015 certification (Banks et al. 2015). This condition related to the 1.1.2 performance indicator (of the MSC FCR v1.3) and required that

the target reference point be demonstrated to be consistent with  $B_{MSY}$  or a surrogate. The condition was closed at the 3<sup>rd</sup> surveillance audit for the fishery (Banks et al. 2019).

## References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=cc2XJQ+44oupEaoPVYHkBKqG9QjAI70fGS6hlTioYjk6qw>

Banks, R., McLoughlin, K. and Zaharia, M. (2019) Exmouth Gulf Prawn Managed Fishery MSC Surveillance Report # 3. Prepared for the MG Kailis Group of Companies. MRAG Americas, Inc. April 2019. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=V6xqPnjiNh4ET6v9Sv3nPU8DK93cbZ5BQHJgXWgOs6K64PbSYcOPxXp5Gh4RnMzl d02QOmYlx8SmlEi60p>

DPIRD-EGPMF. 2019a. Brown Tiger Prawn – Exmouth Gulf Prawn Managed Fishery, February 2019. MSC certification. Audit 3 brown tiger prawn assessment. Document provided by WA Department of Primary Industries and Regional Development.

Gaughan, D.J., Molony, B. and Santoro, K. (eds). 2019. Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18: The State of the Fisheries. Department of Primary Industries and Regional Development, Western Australia. Available at : [file:///C:/Users/mihae/Dropbox/Exmouth\\_SharkBay\\_GapAnalysis/status\\_reports\\_of\\_the\\_fisheries\\_and\\_aquatic\\_resources\\_2017-18.pdf](file:///C:/Users/mihae/Dropbox/Exmouth_SharkBay_GapAnalysis/status_reports_of_the_fisheries_and_aquatic_resources_2017-18.pdf)

Haddon, M. (2019). Shark Bay trawl fisheries science review 2019. 36pp.

Kangas, M., Wilkin, S., Koefoed, I., Sanders, C. (2020). Exmouth Gulf Prawn Managed Fishery Final Season Report. DPIRD. 23pp.

### Stock status relative to reference points

|   | 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) | Spawning stock index;   | 10 kg/hr                 | 2019: mean spawning stock survey catch rate 46.2 kg/hr |
|   | Recruitment index.      | 10 kg/hr                 | 2019: mean recruitment survey catch rate 45.8 kg/hr    |
| Reference point used in scoring stock relative to MSY (SIb) | Spawning stock index;   | 25 kg/hr                 | 2019: mean spawning stock survey catch rate 46.2 kg/hr |
|   | Recruitment index.      | 40 kg/hr                 | 2019: mean recruitment survey catch rate 45.8 kg/hr    |

### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

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

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 1.1.2 – Stock rebuilding

| PI 1.1.2      |                       | Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe   |       |  |
|---------------|-----------------------|--|-------|--|
| Scoring Issue |                       | SG 60  | SG 80 | SG 100   |
| <b>a</b>      | Rebuilding timeframes |  |       |  |
|               | Guide post            | A rebuilding timeframe is specified for the stock that is the <b>shorter of 20 years or 2 times its 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 time</b> for the stock. |
|               | Met?                  | NA   |       | NA   |
| Rationale     |                       |  |       |  |

The brown tiger prawn stock is not depleted hence this performance indicator does not apply.

|           |                       |   |   |   |
|-----------|-----------------------|---|---|---|
| <b>b</b>  | Rebuilding evaluation |   |   |   |
|           | 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 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 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> . |
|           | Met?                  | NA  | NA  | NA  |
| Rationale |                       |   |   |   |

## References

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | NA  |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 1.2.1 – Harvest strategy

| PI 1.2.1      |                         | There is a robust and precautionary harvest strategy in place  |  |  |
|---------------|-------------------------|--|--|--|
| Scoring Issue |                         | SG 60  | SG 80  | SG 100   |
| <b>a</b>      | Harvest strategy design |  |  |  |
|               | 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?                    | <b>Yes</b>   | <b>Yes</b>   | <b>Yes</b>   |
| Rationale     |                         |  |  |  |

The EGPMF Harvest Strategy 2014–2019 (DPIRD 2018) provides details of the current harvest strategy for brown tiger and western king prawns in Exmouth Gulf. The strategy involves a complex suite of annual and in-season references points. The management activities encompassed by this strategy have been developed over time based on a comprehensive understanding of the biology of brown tiger and western king prawns in Exmouth Gulf, with the annual cycle of operation depending on the strength and timing of prawn recruitment. The harvest strategy involves regular monitoring of the stock through fishery-independent spawning stock and recruitment surveys, as well as extensive monitoring of the fishery with fishery-dependent data collection. Opening and closing dates are based on the survey information and directly responsive to abundance information. Low recruitment in 2012 and 2013 led to delayed opening of the fishery. Subsequently there has been a recovery of recruitment, indicating that the strategy is responsive to the state of the stock. Information presented at surveillance audits in 2018, 2019 and 2020 continues to show the harvest strategy is functioning in response to abundance data obtained from regular surveys. The strategy of the recruitment and spawning stock index limits combined with in-season monitoring is appropriate to avoiding appreciable risk of impairing reproductive capacity considering precautionary issues. The harvest strategy is designed to achieve management objectives reflected in PI 1.1.1 SG80, meeting the SG60, SG80 and SG100 levels.

|           |                             |  |   |   |
|-----------|-----------------------------|--|---|---|
| <b>b</b>  | Harvest strategy evaluation |  |   |   |
|           | 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?                        | <b>Yes</b>   | <b>Yes</b>  | <b>No</b>   |
| Rationale |                             |  |   |   |

The strategy is subject to intensive monitoring (with active feedback) and all evidence suggests it has been effective at maintaining the stock at target levels. Review of the performance of the harvest strategy at surveillance audits of the fishery indicate that it is meeting its objectives. SG60 and SG80 levels are met.

However, it has not been fully evaluated (e.g., using Management Strategy Evaluation) thus SG100 is not met.

| Harvest strategy monitoring |            |   |  |  |
|-----------------------------|------------|---|--|--|
| <b>c</b>                    | Guide post | Monitoring is in place that is expected to determine whether the harvest strategy is working. |  |  |
|                             | Met?       | <b>Yes</b>  |  |  |
| Rationale                   |            |   |  |  |

Research and monitoring of the EGPMF has been conducted since the beginning of the fisheries in the early 1960s. There is extensive monitoring to support the harvest strategy, including fishery-independent surveys, collection of catch and effort data using daily logbooks, and processor unload information, as well as other monitoring. The SG60 level is met.

| Harvest strategy review |            |  |  |  |
|-------------------------|------------|--|--|--|
| <b>d</b>                | Guide post |  |  | The harvest strategy is periodically reviewed and improved as necessary. |
|                         | Met?       |  |  | <b>Yes</b>   |
| Rationale               |            |  |  |  |

There has been ongoing review of the elements of the EGPMF Harvest Strategy 2014–2019 (DPIRD 2018). This strategy is still operational, with an update in development. Over the history of the fishery, there have been amendments in management in response to various factors. Changes have included changes in fishing gear and adjustments of areas open to fishing. The performance measures and control rules were externally reviewed by Malcolm Haddon (Marine Research Laboratory Tasmanian Aquaculture and Fisheries Institute, University of Tasmania) during a two day workshop undertaken in November 2012. There is the potential to make amendments as appropriate during the life of the current strategy. The SG100 level is met.

| Shark finning |            |   |  |  |
|---------------|------------|---|--|--|
| <b>e</b>      | 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 of certainty</b> that shark finning is not taking place. |
|               | Met?       | <b>NA</b>   | <b>NA</b>  | <b>NA</b>  |
| Rationale     |            |   |  |  |

Not applicable as the target species are not sharks.

|          |                                |
|----------|--------------------------------|
| <b>f</b> | Review of alternative measures |
|----------|--------------------------------|

|           |            |  |   |  |
|-----------|------------|--|---|--|
|           | 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?       | <b>Yes / No / NA</b>   | <b>Yes / No / NA</b>  | <b>Yes / No / NA</b>   |
| Rationale |            |  |   |  |

### Information required on this.

### References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=cc2XJQ+44oupEaoPVYHkBKqG9QjAI70fGS6hlTioYjk6qw>

Banks, R., McLoughlin, K. and Zaharia, M. (2019) Exmouth Gulf Prawn Managed Fishery MSC Surveillance Report # 3. Prepared for the MG Kailis Group of Companies. MRAG Americas, Inc. April 2019. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=V6xqPnjiNh4ET6v9Sv3nPU8DK93cbZ5BQHJgXWgOs6K64PbSYcOPxXp5Gh4RnMzl d02QOmYlx8SmlEi60p>

DPIRD-EGPMF. 2019a. Brown Tiger Prawn – Exmouth Gulf Prawn Managed Fishery, February 2019. MSC certification. Audit 3 brown tiger prawn assessment. Document provided by WA Department of Primary Industries and Regional Development.

### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |                                |
|---------------------------|--------------------------------|
| Draft scoring range       | <b>≥80</b>                     |
| Information gap indicator | <b>More information sought</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 1.2.2 – Harvest control rules and tools

| PI 1.2.2      |                             | There are well defined and effective harvest control rules (HCRs) in place   |  |   |
|---------------|-----------------------------|--|--|---|
| Scoring Issue |                             | SG 60  | SG 80  | SG 100  |
| <b>a</b>      | HCRs design and application |  |  |   |
|               | Guide post                  | <b>Generally understood</b> HCRs are in place <b>or available</b> that are <b>expected</b> to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached. | <b>Well defined HCRs are in place</b> that <b>ensure</b> that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock <b>fluctuating around</b> 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?                        | <b>Yes</b>   | <b>Yes</b>   | <b>Yes</b>  |
| Rationale     |                             |  |  |   |

There are control rules to determine the season start date for the fishery based on fishery-independent survey information. There are additional control rules based on commercial catch rate and fishery-independent information to open and close areas when catch rates fall within defined levels. The use of empirical information is appropriate to the scale and intensity of the fishery. The control rules are well-defined in the harvest strategy and are designed to limit exploitation of tiger prawns to avoid breaching limit reference points (see Table 1 of the EGPMF harvest strategy, DPIRD 2018), meeting SG60 and SG80 levels. Modelling undertaken since the 2015 certification of the fishery indicates that the HCRs are consistent with maintaining the stock at or above a level consistent with MSY. SG100 requirements are met.

|           |                                |  |   |  |
|-----------|--------------------------------|--|---|--|
| <b>b</b>  | HCRs robustness to uncertainty |  |   |  |
|           | 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?                           |  | <b>Yes</b>  | <b>No</b>  |
| Rationale |                                |  |   |  |

Uncertainty in the performance measures is reduced by employing, where possible, data from ongoing fishery-independent spawning stock and recruitment surveys using standardized sampling methods. The use of an extensive set of indicators and reference points to guide actions guards against the effects of uncertainties in information. These surveys have provided robust estimates of recruitment and spawning for brown tiger prawns. In-season monitoring and decision-making on opening and closing spatial areas based on maintaining breeding stocks of brown tiger prawns also assist in accounting for uncertainty. The SG80 level is met.



Although some uncertainties are taken into account in the harvest strategy design there are important elements where this is not adequately address, in particular, examination of the catch per unit of effort data. The current rules do not take the ecological role of the stock into account. The SG100 level is not met.

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

The tools and specified actions used in the EGPMF have been developed over a number of years. The brown tiger prawn control rules have maintained catch rates near or above the target level of 25 kg/hr being achieved since 2000, except in 2012. It is thought that environmental conditions unrelated to fishing brought about a lack of seagrass coverage in key brown tiger prawn nursery habitats in 2011/12. The control rules have been effective in reducing exploitation when survey information has indicated it appropriate. Overall, there is sufficient evidence to indicate that the harvest control rules are appropriate and effective, meeting the SG60 and SG80 levels. Although appropriate exploitation levels have been achieved since the 2010/11 warming event, additional evidence on the effectiveness of the tools is needed to meet the SG100 level.

## References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=cc2XJQ+44oupEaoPVYHkBKqG9QjAI70fGS6hTioYjk6qw>

Banks, R., McLoughlin, K. and Zaharia, M. (2019) Exmouth Gulf Prawn Managed Fishery MSC Surveillance Report # 3. Prepared for the MG Kailis Group of Companies. MRAG Americas, Inc. April 2019. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=V6xqPnjiNh4ET6v9Sv3nPU8DK93cbZ5BQHJgXWgOs6K64PbSYcOPxXp5Gh4RnMzl d02QOmYlx8SmlEi60p>

DPIRD-EGPMF. 2019a. Brown Tiger Prawn – Exmouth Gulf Prawn Managed Fishery, February 2019. MSC certification. Audit 3 brown tiger prawn assessment. Document provided by WA Department of Primary Industries and Regional Development.

## Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | <b>≥80</b>                                |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |



## PI 1.2.3 – Information and monitoring

| PI 1.2.3      |                      | Relevant information is collected to support the harvest strategy   |  |  |
|---------------|----------------------|---|--|--|
| Scoring Issue |                      | SG 60   | SG 80  | SG 100   |
| <b>a</b>      | Range of information |   |  |  |
|               | 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?                 | <b>Yes</b>  | <b>Yes</b>   | <b>No</b>  |
| Rationale     |                      |   |  |  |

Research and monitoring has been undertaken since the start of the fishery. There is extensive information on fleet composition and fishing activities. Commercial catch and effort statistics are collected using daily logbooks and are validated by processor unloads and VMS data. Fishers record the start position, start time, duration and mean depth of each trawl, as well as the catches of each retained species in each trawl, interactions with any endangered, threatened and protected species and environmental data (water temperature and moon phase). Fishery-independent surveys have been undertaken since the 1980s to determine recruitment and spawning stock levels. A number of research projects have gathered biological information over the past two decades and the distribution of seagrass and important inshore structured habitats have been investigated. Data on environmental variables (e.g. rainfall, temperature, cyclonic events) have been shown to be important drivers of prawn recruitment and are collected annually. There is extensive information for the fishery, sufficient to support the harvest strategy and meeting SG60 and SG80 requirements.

However, as indicated in Banks et al. (2015), additional analysis of catch rate data for the fishery is warranted and information overall is not comprehensive. SG100 requirements are not met.

|            |            |  |  |  |
|------------|------------|--|--|--|
| Monitoring |            |  |  |  |
| <b>b</b>   | Guide post | Stock abundance and UoA removals are monitored and <b>at least one indicator</b> is available and monitored with sufficient frequency to support the harvest control rule. | Stock abundance and UoA removals are <b>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</b> , and <b>one or more indicators</b> are available and monitored with sufficient | <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 |

|           |      |     |  |                                     |
|-----------|------|-----|--|-------------------------------------|
|           |      |     | frequency to support the harvest control rule. | and management to this uncertainty. |
|           | Met? | Yes | Yes  | No                                  |
| Rationale |      |     |  |                                     |

Fishery removals, including location, total catches and size categories, are recorded in daily logbooks. Verification suggests the data are collected with a good level of coverage and a high degree of accuracy. Recruitment and spawning stock are regularly monitored through fishery-independent surveys, providing data consistent with the control rules of the harvest strategy, meeting the SG60 and SG80 levels. However, additional analysis of uncertainty in survey catch rates and additional consideration of standardization of fishing effort is warranted to meet the SG100 level.

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

Small quantities of brown tiger prawns are landed by the Onslow Prawn Managed Fishery (OPMF), which operates in the coastal waters north of Exmouth Gulf. Catches are taken mostly from the coastline adjacent to the EGPMF boundary. All fishers in the OPMF are required to complete and submit daily logbooks, with the same processes of error checking and validation of data undertaken as for the EGPMF. Due to oil and gas exploration activities undertaken in the waters off Onslow restricting fishing activities, there has been very low fishing effort since 2010 which has resulted in only minor catches. Landings in 2017 from the OPMF were negligible and only 5 days of fishing effort was undertaken.

There is no recreational or traditional fishery for brown tiger prawns in Exmouth Gulf, or in the waters off Onslow. Thus all removals of brown tiger prawns are those reported by commercial fishers in the EGPMF and the OPMF. Overall, the information is sufficient to meet the SG80 level.

## References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at:

DPIRD-EGPMF. 2019a. Brown Tiger Prawn – Exmouth Gulf Prawn Managed Fishery, February 2019. MSC certification. Audit 3 brown tiger prawn assessment. Document provided by WA Department of Primary Industries and Regional Development.

## Draft scoring range and information gap indicator added at Announcement Comment Draft Report

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

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |



## PI 1.2.4 – Assessment of stock status

| PI 1.2.4      |  | There is an adequate assessment of the stock status |   |  |
|---------------|--|---|---|--|
| Scoring Issue |  | SG 60   | SG 80   | SG 100   |
| <b>a</b>      | Appropriateness of assessment to stock under consideration |   |   |  |
|               | 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?   |   | <b>Yes</b>  | <b>No</b>  |
| Rationale     |  |   |   |  |

The direct, empirically-based stock assessment methodology that has been adopted for brown tiger prawns in Exmouth Gulf is reflective of their biology, life history, habitats and inherent population variability. Although uncertainty in the assessment should be further explored, the assessment approach is appropriate for the harvest control rules and provides information at an appropriate timescale to enable rapid, real-time management responses within each season to protect the breeding stock and meets the SG80 level.

There has been some level of analysis to account for changes in the efficiency of commercial fishing effort over time, as well as the adoption of approaches in the fishery-independent surveys to allow comparison of estimated catch rates over time.

Since the 2015 certification of the fishery, stock assessment modelling approaches have been undertaken and their outputs added to the suite of information available to assess the fishery. Although the modelling results lend support to the appropriateness of the survey-based information used in the harvest strategy, WA Fisheries acknowledges the uncertainty in these recently developed model-based stock assessments. SG100 requirements are not met.

|           |                     |   |  |  |
|-----------|---------------------|---|--|--|
| <b>b</b>  | Assessment approach |   |  |  |
|           | 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?                | <b>Yes</b>  | <b>Yes</b>   |  |
| Rationale |                     |   |  |  |

The assessment process involves fishery-independent spawning stock and recruitment surveys in conjunction with spawning stock catch rates from the commercial fishery, directly estimating stock status indices relative to defined reference points and meets the SG60 level. The assessment approach provides information relative to appropriate reference points, hence SG80 is met.

|          |                               |  |   |  |
|----------|-------------------------------|--|---|--|
| <b>c</b> | Uncertainty in the assessment |  |   |  |
|          | Guide post                    | The assessment <b>identifies major sources</b> of uncertainty. | The assessment <b>takes uncertainty into account.</b> | The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a <b>probabilistic</b> way. |

|  |      |            |            |           |
|--|------|------------|------------|-----------|
|  | Met? | <b>Yes</b> | <b>Yes</b> | <b>No</b> |
|--|------|------------|------------|-----------|

## Rationale

The harvest strategy uses information on the target stock drawn directly from data collected from the fishery without any inferential or estimation steps. The use of an extensive set of indicators and reference points to guide actions guards against the effects of uncertainties in information and confidence intervals are available for these values. In-season monitoring and decision-making on opening and closing spatial areas based on maintaining breeding stocks of brown tiger prawns also assist in accounting for uncertainty. The SG60 and SG80 levels are met. However, uncertainty is not evaluated in a probabilistic way and SG100 is not met.

| Evaluation of assessment |            |  |  |  |
|--------------------------|------------|--|--|--|
| <b>d</b>                 | Guide post |  |  | The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored. |
|                          | Met?       |  |  | <b>No</b>  |

## Rationale

The index-based assessment approach has been robust in sustaining the stocks over a long period. Alternative approaches have been examined since the 2015 certification of the fishery, however, these modelling approaches are not yet considered rigorous. The SG100 level is not met.

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

## Rationale

Public reporting of stock status is provided in annual “State of the Fisheries” reports. The “assessment” (i.e. the collation and reporting of all data) is subject to internal review within DPIRD. There has been publication of some research related to the fishery in peer-reviewed journals and a level of external review through workshops held by DPIRD (e.g. a two day workshop undertaken in November 2012 with Malcolm Haddon, Marine Research Laboratory Tasmanian Aquaculture and Fisheries Institute, University of Tasmania). Further, Haddon (2019) provides a review of the science supporting the Western Australia Shark Bay Fisheries, including the Shark Bay Prawn trawl Fishery. Given the similarity in the harvest strategies for the EGPMF and the Shark Bay fishery, the findings of this review are also relevant to the EGPMF. Overall, the SG80 level is met. However, the level of comprehensive external peer review required of SG100 is not met.

## References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=cc2XJQ+44oupEaoPVYHkBKqG9QjAI70fGS6hlTioYjk6qwd02QOmYlx8SmlEi60p>

DPIRD-EGPMF. 2019a. Brown Tiger Prawn – Exmouth Gulf Prawn Managed Fishery, February 2019. MSC certification. Audit 3 brown tiger prawn assessment. Document provided by WA Department of Primary Industries and Regional Development.

Gaughan, D.J., Molony, B. and Santoro, K. (eds). 2019. Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18: The State of the Fisheries. Department of Primary Industries and Regional Development, Western Australia. Available at :  
file:///C:/Users/mihac/Dropbox/Exmouth\_SharkBay\_GapAnalysis/status\_reports\_of\_the\_fisheries\_and\_aquatic\_resources\_2017-18.pdf

Haddon, M. (2019). Shark Bay trawl fisheries science review 2019. 36pp.

#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

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

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

Western king prawn (*Penaeus latisulcatus*)

## 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 |   |   |
|---------------|---|--|---|---|
| Scoring Issue |   | SG 60  | SG 80   | SG 100  |
| <b>a</b>      | Stock status relative to recruitment impairment |  |   |   |
|               | 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 certainty</b> that the stock is above the PRI. |
|               | Met?  | <b>Yes</b>   | <b>Yes</b>  | <b>No</b>   |
| Rationale     |   |  |   |   |

The harvest strategy for the fishery has been based on the use of proxy indicators to assess stock status. Since the 2015 certification, this information has been supported through the development of modelling approaches discussed at PI 1.1.1b. The indicators are based on recruitment catch rate information from fishery-independent surveys and spawning stock catch rates from fishery-dependent surveys. Stock status is based on a weight of evidence from the extensive survey and monitoring program for the fishery in conjunction with an understanding of the biology and ecology of the species. Unlike brown tiger prawn, no stock recruitment relationship has been established for western king prawn.

Although fishery independent spawning stock surveys have not previously been undertaken specifically for western king prawns, the mean commercial (fishery-dependent) catch rate of western king prawns is considered to represent an appropriate index of spawning stock abundance for this species because the catch rates are derived from key western king prawn fishing grounds during the spring spawning period for this species at a time when the fleet is focusing fishing effort on western king prawns (Kangas et al. 2015). The spawning stock catch rates (Figure 7) have exceeded the limit reference point every year since the late 1990s. The spawning stock index for 2017 of 19.9 kg/hr was below the target (Figure 7). The 2018 value increased to 30.9 kg/hr and was 30.4 kg/hr in 2019.

Recruitment catch rates (Figure 8) have been above limits since 2005; 95% confidence intervals of recruitment are at or above the limit for all years but one. The western king prawn recruitment index (i.e. mean catch rate from the April fishery-independent recruitment survey in key western king prawn recruitment areas) fell below the target level in 2014. As a result of this low recruitment index in 2014, fishing on western king prawn grounds was delayed until mid-July (with additional surveys undertaken in May and June), thus reducing overall effort on this species. The recruitment index remained below the target level until 2018, during which time fishing was also delayed on key ground until catch rates were above the target. In 2018 the index was 38.2 kg/hr and in 2019 was 47.6 kg/hr.

The long running maintenance of the stock well above the adopted limit provides evidence that the stock is highly likely above the point where recruitment would be impaired. DoF 2014c points to the relatively low catchability of western king prawns due to their burrowing behaviour. In addition, the species is widely dispersed and has significant unfishable (economically) populations (DoF 2014c). The empirical evidence from the spawning stock and recruitment indices, supported by the biological evidence and recent modelling outcomes provide sufficient evidence that SG60 and SG80 requirements are met.

There were several years of low values for the recruitment index from 2014 to 2017, which although above the limit, increases uncertainty and prevents SG100 requirements being met.

**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 a <b>high degree of certainty</b> that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years. |
|           | Met?       |  | <b>Yes</b>   | <b>No</b>   |
| Rationale |            |  |  |   |

As indicated above, proxy indicators used as the basis of the harvest strategy. Stock status modelling approaches developed for western king prawn since the 2015 certification of the fishery are described in Section 8.2.

Biomass dynamics modelling indicates that the current target reference point associated with the fishery-dependent spawning stock abundance (25 kg/h) is close to the catch rate corresponding to  $B_{MSY}$  (23.1 kg/h) and the current limit (15 kg/h) is a little higher than the catch rate corresponding to  $0.5B_{MSY}$  (Figure 9) (DPIRD-EGPMF 2019b). The modelling undertaken has considered changes in commercial fishing efficiency over time and various sensitivity analyses were undertaken to explore the key uncertainties. The results from an annual biomass dynamics model fitted to the available catch and CPUE data do not indicate current unacceptable stock depletion, and suggest the spawning survey target and limit reference points are at least broadly appropriate (noting that results are considered preliminary and the analyses require a number of assumptions).

The fishery-independent and fishery-dependent indicators developed for managing the fishery provide reliable information to monitor that status of the western king prawn stock in relation to agreed reference levels. Model-based approaches developed in recent years provide support that the harvest strategy maintains the stock at a level consistent with MSY, meeting SG80 requirements. However, the modelling approaches are considered preliminary and do not provide the high degree of certainty to meet SG100 requirements.

The assessors note that a condition was in place for the fishery following the 2015 certification (Banks et al. 2015). This condition related to the 1.1.2 performance indicator (of the MSC FCR v1.3) and required that the target reference point be demonstrated to be consistent with  $B_{MSY}$  or a surrogate. The condition was closed at the 3<sup>rd</sup> surveillance audit for the fishery (Banks et al. 2019).

#### References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=cc2XJQ+44oupEaoPVYHkBKqG9QjAI70fGS6hlTioYjk6qw>

Banks, R., McLoughlin, K. and Zaharia, M. (2019) Exmouth Gulf Prawn Managed Fishery MSC Surveillance Report # 3. Prepared for the MG Kailis Group of Companies. MRAG Americas, Inc. April 2019. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=V6xqPnjiNh4ET6v9Sv3nPU8DK93cbZ5BQHJgXWgOs6K64PbSYcOPxXp5Gh4RnMzl d02QOmYlx8SmlEi60p>

DPIRD-EGPMF. 2019a. Brown Tiger Prawn – Exmouth Gulf Prawn Managed Fishery, February 2019. MSC certification. Audit 3 brown tiger prawn assessment. Document provided by WA Department of Primary Industries and Regional Development.

Kangas, M., Wilkin, S., Koefoed, I., Sanders, C. (2020). Exmouth Gulf Prawn Managed Fishery Final Season Report. DPIRD. 23pp.

#### Stock status relative to reference points

|  | 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) | Spawning stock index;<br>Recruitment index. | 25 kg/hr<br>30 kg/hr and 50% larger than 21/30 grade | 2019: mean spawning stock catch rate 30.4 kg/hr<br>2019: mean recruitment survey catch rate 47.6 kg/hr |
| Reference point used in scoring stock relative to MSY (SIb) | Spawning stock index;<br>Recruitment index. | 15 kg/hr<br>15 kg/hr                                 | 2019: mean spawning stock catch rate 30.4 kg/hr<br>2019: mean recruitment survey catch rate 47.6 kg/hr |

#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

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

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 1.1.2 – Stock rebuilding

| PI 1.1.2      |                       | Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe   |       |  |
|---------------|-----------------------|--|-------|--|
| Scoring Issue |                       | SG 60  | SG 80 | SG 100   |
| <b>a</b>      | Rebuilding timeframes |  |       |  |
|               | Guide post            | A rebuilding timeframe is specified for the stock that is the <b>shorter of 20 years or 2 times its 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 time</b> for the stock. |
|               | Met?                  | <b>NA</b>  |       | <b>NA</b>  |
| Rationale     |                       |  |       |  |

The western king prawn stock is not depleted hence this performance indicator does not apply.

|                       |            |   |   |   |
|-----------------------|------------|---|---|---|
| Rebuilding evaluation |            |   |   |   |
| <b>b</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 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 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> . |
|                       | Met?       | <b>NA</b>   | <b>NA</b>   | <b>NA</b>   |
| Rationale             |            |   |   |   |

## References

List any references here, including hyperlinks to publicly-available documents.

[Draft scoring range and information gap indicator added at Announcement Comment Draft Report](#)

|                           |   |
|---------------------------|---|
| Draft scoring range       | <b>NA</b>                                 |
| Information gap indicator | <b>Information sufficient to score PI</b> |

[Overall Performance Indicator scores added from Client and Peer Review Draft Report](#)

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 1.2.1 – Harvest strategy

| PI 1.2.1      |                         | There is a robust and precautionary harvest strategy in place  |  |  |
|---------------|-------------------------|--|--|--|
| Scoring Issue |                         | SG 60  | SG 80  | SG 100   |
| <b>a</b>      | Harvest strategy design |  |  |  |
|               | 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?                    | <b>Yes</b>   | <b>Yes</b>   | <b>Yes</b>   |
| Rationale     |                         |  |  |  |

The EGPMF Harvest Strategy 2014–2019 (DPIRD 2018) provides details of the current harvest strategy for brown tiger and western king prawns in Exmouth Gulf. The strategy involves a complex suite of annual and in-season references points. The management activities encompassed by this strategy have been developed over time based on a comprehensive understanding of the biology of brown tiger and western king prawns in Exmouth Gulf, with the annual cycle of operation depending on the strength and timing of prawn recruitment. The harvest strategy involves regular monitoring of the stock through fishery-independent spawning stock and recruitment surveys, as well as extensive monitoring of the fishery with fishery-dependent data collection. Opening and closing dates are based on the survey information and directly responsive to abundance information. Information presented at surveillance audits in 2018 and 2019 continues to show the harvest strategy is functioning in response to abundance data obtained from regular surveys. The strategy of the recruitment and spawning stock index limits combined with in-season monitoring is appropriate to avoiding appreciable risk of impairing reproductive capacity. The harvest strategy is designed to achieve management objectives reflected in PI 1.1.1 SG80, meeting the SG60, SG80 and SG100 levels.

|                             |            |  |   |   |
|-----------------------------|------------|--|---|---|
| Harvest strategy evaluation |            |  |   |   |
| <b>b</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?       | <b>Yes</b>   | <b>Yes</b>  | <b>No</b>   |
| Rationale                   |            |  |   |   |

The strategy is subject to intensive monitoring (with active feedback) and all evidence suggests it has been effective at maintaining the stock at target levels. Review of the performance of the harvest strategy at surveillance audits of the fishery indicate that it is meeting its objectives. SG60 and SG80 levels are met.

However, it has not been fully evaluated (e.g., using Management Strategy Evaluation) thus SG100 is not met.

| Harvest strategy monitoring |            |   |  |  |
|-----------------------------|------------|---|--|--|
| <b>c</b>                    | Guide post | Monitoring is in place that is expected to determine whether the harvest strategy is working. |  |  |
|                             | Met?       | <b>Yes</b>  |  |  |
| Rationale                   |            |   |  |  |

Research and monitoring of the EGPMF has been conducted since the beginning of the fisheries in the early 1960s. There is extensive monitoring to support the harvest strategy, including fishery-independent surveys, collection of catch and effort data using daily logbooks, and processor unload information, as well as other monitoring. The SG60 level is met.

| Harvest strategy review |            |  |  |  |
|-------------------------|------------|--|--|--|
| <b>d</b>                | Guide post |  |  | The harvest strategy is periodically reviewed and improved as necessary. |
|                         | Met?       |  |  | <b>Yes</b>   |
| Rationale               |            |  |  |  |

There has been ongoing review of the elements of the EGPMF Harvest Strategy 2014–2019 (DPIRD 2018). This strategy is still operational, with an update in development. Over the history of the fishery, there have been amendments in management in response to various factors. Changes have included changes in fishing gear and adjustments of areas open to fishing. The performance measures and control rules were externally reviewed by Malcolm Haddon (Marine Research Laboratory Tasmanian Aquaculture and Fisheries Institute, University of Tasmania) during a two day workshop undertaken in November 2012. There is the potential to make amendments as appropriate during the life of the current strategy. The SG100 level is met.

| Shark finning |            |   |  |  |
|---------------|------------|---|--|--|
| <b>e</b>      | 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 of certainty</b> that shark finning is not taking place. |
|               | Met?       | <b>NA</b>   | <b>NA</b>  | <b>NA</b>  |
| Rationale     |            |   |  |  |

Not applicable as the target species are not sharks.

|          |                                |
|----------|--------------------------------|
| <b>f</b> | Review of alternative measures |
|----------|--------------------------------|

|           |            |  |   |  |
|-----------|------------|--|---|--|
|           | 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?       | <b>Yes / No / NA</b>   | <b>Yes / No / NA</b>  | <b>Yes / No / NA</b>   |
| Rationale |            |  |   |  |

### Information required on this.

### References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at:

Banks, R. and McLoughlin, K. (2019). Exmouth Gulf Prawn Managed Fishery, Blue endeavour prawn (*Metapenaeus endeavouri*), Expedited Principle 1 Scope Extension Assessment, Final Report and Determination. January 2019.  
<https://fisheries.msc.org/en/fisheries/exmouth-gulf-prawns/@assessments>

DPIRD (2018). Exmouth Gulf Prawn Managed Fishery Harvest Strategy 2014 - 2019. Department of Fisheries, WA. Available at: [https://www.fish.wa.gov.au/Documents/management\\_papers/fmp265.pdf](https://www.fish.wa.gov.au/Documents/management_papers/fmp265.pdf)

DPIRD-EGPMF. 2019b. Western King Prawn – Exmouth Gulf Prawn Managed Fishery, February 2019. MSC certification. Audit 3 western king prawn assessment. Document provided by WA Department of Primary Industries and Regional Development.

### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |                                |
|---------------------------|--------------------------------|
| Draft scoring range       | <b>≥80</b>                     |
| Information gap indicator | <b>More information sought</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 1.2.2 – Harvest control rules and tools

| PI 1.2.2      |                             | There are well defined and effective harvest control rules (HCRs) in place   |  |   |
|---------------|-----------------------------|--|--|---|
| Scoring Issue |                             | SG 60  | SG 80  | SG 100  |
| <b>a</b>      | HCRs design and application |  |  |   |
|               | Guide post                  | <b>Generally understood</b> HCRs are in place <b>or available</b> that are <b>expected</b> to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached. | <b>Well defined HCRs are in place</b> that <b>ensure</b> that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock <b>fluctuating around</b> 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?                        | <b>Yes</b>   | <b>Yes</b>   | <b>Yes</b>  |
| Rationale     |                             |  |  |   |

There are control rules to determine the season start date for the fishery based on fishery-independent survey information. There are additional control rules based on commercial catch rate information to open and close areas when catch rates fall within defined levels. The use of empirical information is appropriate to the scale and intensity of the fishery. The control rules are well-defined in the harvest strategy and are designed to limit exploitation of western king prawns to avoid breaching limit reference points (see Table 1 of the EGPMF harvest strategy, DPIRD 2018), meeting SG60 and SG80 levels. The HCRs are expected to keep the stock at or above a target level consistent with MSY. SG100 is met.

|           |                                |  |   |  |
|-----------|--------------------------------|--|---|--|
| <b>b</b>  | HCRs robustness to uncertainty |  |   |  |
|           | 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?                           |  | <b>Yes</b>  | <b>No</b>  |
| Rationale |                                |  |   |  |

Uncertainty in the performance measures is reduced by employing, where possible, data from ongoing fishery-independent recruitment surveys using standardized sampling methods. The use of an extensive set of indicators and reference points to guide actions guards against the effects of uncertainties in information. These surveys have provided robust estimates of recruitment for western king prawns. In-season monitoring and decision-making on opening and closing spatial areas based on maintaining breeding stocks of western king prawns also assist in accounting for uncertainty. The SG80 level is met.

Although some uncertainties are taken into account in the harvest strategy design there are important elements where this is not adequately address, in particular, examination of the catch per unit of effort data. The current rules do not take the ecological role of the stock into account. The SG100 level is not met.

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

The tools and specified actions used in the EGPMF have been developed over a number of years. Since 2000, the western king prawn control rules have led to the objective of maintaining catch rates near or above the target level of 25 kg/hr being achieved in the commercial fishery in all years. The control rules have been effective in reducing exploitation when survey information has indicated it appropriate. Reduced abundance of western king prawns following the marine heatwave (landings in Exmouth Gulf in 2011 and 2012 were the lowest since the early 1970s at 97 t and 157 t, respectively), led to management action to provide increased protection to the species in Exmouth Gulf, including substantially-delayed season opening dates. This reduces the length of the fishing season and enables increased time for growth and spawning of this species prior to opening of the fishery. Overall, there is sufficient evidence to indicate that the harvest control rules are appropriate and effective, meeting the SG60 and SG80 levels. However the recent lower levels of recruitment suggest additional evidence is needed to meet the SG100 level.

## References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=cc2XJQ+44oupEaoPVYHkqG9QjAI70fGS6hlTioYjk6qwd02QOmYlx8SmlEi60p>

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## Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | <b>≥80</b>                                |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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



|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 1.2.3 – Information and monitoring

| PI 1.2.3      |                      | Relevant information is collected to support the harvest strategy   |  |  |
|---------------|----------------------|---|--|--|
| Scoring Issue |                      | SG 60   | SG 80  | SG 100   |
| <b>a</b>      | Range of information |   |  |  |
|               | 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?                 | <b>Yes</b>  | <b>Yes</b>   | <b>No</b>  |
| Rationale     |                      |   |  |  |

Research and monitoring has been undertaken since the start of the fishery. There is extensive information on fleet composition and fishing activities. Commercial catch and effort statistics are collected using daily logbooks and are validated by processor unloads and VMS data. Fishers record the start position, start time, duration and mean depth of each trawl, as well as the catches of each retained species in each trawl, interactions with any endangered, threatened and protected species and environmental data (water temperature and moon phase). Fishery-independent surveys have been undertaken since the 1980s to determine recruitment and spawning stock levels. A number of research projects have gathered biological information over the past two decades and the distribution of seagrass and important inshore structured habitats have been investigated. Data on environmental variables (e.g. rainfall, temperature, cyclonic events) have been shown to be important drivers of prawn recruitment and are collected annually. There is extensive information for the fishery, sufficient to support the harvest strategy and meeting SG60 and SG80 requirements.

However, as indicated in Banks et al. (2015), additional analysis of catch rate data for the fishery is warranted and information overall is not comprehensive. SG100 requirements are not met.

|            |            |  |  |  |
|------------|------------|--|--|--|
| Monitoring |            |  |  |  |
| <b>b</b>   | Guide post | Stock abundance and UoA removals are monitored and <b>at least one indicator</b> is available and monitored with sufficient frequency to support the harvest control rule. | Stock abundance and UoA removals are <b>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</b> , and <b>one or more indicators</b> are available and monitored with sufficient | <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 |

|           |      |     |  |                                     |
|-----------|------|-----|--|-------------------------------------|
|           |      |     | frequency to support the harvest control rule. | and management to this uncertainty. |
|           | Met? | Yes | Yes  | No                                  |
| Rationale |      |     |  |                                     |

Fishery removals, including location, total catches and size categories, are recorded in daily logbooks. Verification suggests the data are collected with a good level of coverage and a high degree of accuracy. Recruitment and spawning stock are regularly monitored through fishery-independent surveys, providing data consistent with the control rules of the harvest strategy, meeting the SG60 and SG80 levels. However, additional analysis of uncertainty in survey catch rates and additional consideration of standardization of fishing effort is warranted to meet the SG100 level.

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

Small quantities of western king prawns are landed by the OPMF, which operates in the coastal waters north of Exmouth Gulf. Catches are taken mostly from the coastline adjacent to the EGPMF boundary. All fishers in the OPMF are required to complete and submit daily logbooks, with the same processes of error checking and validation of data undertaken as for the EGPMF. Due to oil and gas exploration activities undertaken in the waters off Onslow restricting fishing activities, there has been very low fishing effort since 2010 which has resulted in only minor catches. Landings in 2017 from the OPMF were negligible and only 5 days of fishing effort was undertaken.

There is no recreational or traditional fishery for brown tiger prawns in Exmouth Gulf, or in the waters off Onslow. Thus all removals of brown tiger prawns are those reported by commercial fishers in the EGPMF and the OPMF. Overall, the information is sufficient to meet the SG80 level.

## References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at:

DPIRD-EGPMF. 2019b. Western King Prawn – Exmouth Gulf Prawn Managed Fishery, February 2019. MSC certification. Audit 3 western king prawn assessment. Document provided by WA Department of Primary Industries and Regional Development.

## Draft scoring range and information gap indicator added at Announcement Comment Draft Report

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

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
|-------------------------------------|--|

| Condition number (if relevant) |  |
|--------------------------------|--|
|--------------------------------|--|

## PI 1.2.4 – Assessment of stock status

| PI 1.2.4      |  | There is an adequate assessment of the stock status |   |  |
|---------------|--|---|---|--|
| Scoring Issue |  | SG 60   | SG 80   | SG 100   |
| <b>a</b>      | Appropriateness of assessment to stock under consideration |   |   |  |
|               | 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?   |   | <b>Yes</b>  | <b>No</b>  |
| Rationale     |  |   |   |  |

The direct, empirically-based stock assessment methodology that has been adopted for western king prawns in Exmouth Gulf is reflective of their biology, life history, habitats and inherent population variability. Although uncertainty in the assessment should be further explored, the assessment approach is appropriate for the harvest control rules and provides information at an appropriate timescale to enable rapid, real-time management responses within each season to protect the breeding stock and meets the SG80 level. Small quantities of brown tiger prawns are landed by the Onslow Prawn Managed Fishery (OPMF), which operates in the coastal waters north of Exmouth Gulf. Catches are taken mostly from the coastline adjacent to the EGPMF boundary. All fishers in the OPMF are required to complete and submit daily logbooks, with the same processes of error checking and validation of data undertaken as for the EGPMF. Due to oil and gas exploration activities undertaken in the waters off Onslow restricting fishing activities, there has been very low fishing effort since 2010 which has resulted in only minor catches. Landings in 2017 from the OPMF were negligible and only 5 days of fishing effort was undertaken.

There is no recreational or traditional fishery for brown tiger prawns in Exmouth Gulf, or in the waters off Onslow. Thus all removals of brown tiger prawns are those reported by commercial fishers in the EGPMF and the OPMF. Overall, the information is sufficient to meet the SG80 level.

There has been some level of analysis to account for changes in the efficiency of commercial fishing effort over time, as well as the adoption of approaches in the fishery-independent surveys to allow comparison of estimated catch rates over time.

Since the 2015 certification of the fishery, stock assessment modelling approaches have been undertaken and their outputs added to the suite of information available to assess the fishery. Although the modelling results lend support to the appropriateness of the survey-based information used in the harvest strategy, WA Fisheries acknowledges the uncertainty in these recently developed model-based stock assessments. SG100 requirements are not met.

|                     |            |   |  |  |
|---------------------|------------|---|--|--|
| Assessment approach |            |   |  |  |
| <b>b</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?       | <b>Yes</b>  | <b>Yes</b>   |  |
| Rationale           |            |   |  |  |

The assessment process involves fishery-independent spawning stock and recruitment surveys in conjunction with spawning stock catch rates from the commercial fishery, directly estimating stock status indices relative to defined reference points and meets the SG60 level. The assessment approach provides information relative to appropriate reference points, hence SG80 is met.

| Uncertainty in the assessment |            |  |   |  |
|-------------------------------|------------|--|---|--|
| <b>c</b>                      | Guide post | The assessment <b>identifies major sources of</b> uncertainty. | The assessment <b>takes uncertainty into account.</b> | The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a <b>probabilistic</b> way. |
|                               | Met?       | <b>Yes</b>   | <b>Yes</b>  | <b>No</b>  |
| Rationale                     |            |  |   |  |

The harvest strategy uses information on the target stock drawn directly from data collected from the fishery without any inferential or estimation steps. The use of an extensive set of indicators and reference points to guide actions guards against the effects of uncertainties in information. In-season monitoring and decision-making on opening and closing spatial areas based on maintaining breeding stocks of brown tiger prawns also assists in accounting for uncertainty. The SG60 and SG80 levels are met, however, uncertainty is not evaluated in a probabilistic way and SG100 is not met.

| Evaluation of assessment |            |  |  |  |
|--------------------------|------------|--|--|--|
| <b>d</b>                 | Guide post |  |  | The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored. |
|                          | Met?       |  |  | <b>No</b>  |
| Rationale                |            |  |  |  |

The index-based assessment approach has been robust in sustaining the stocks over a long period. Alternative approaches have been examined since the 2015 certification of the fishery, however, these modelling approaches are not yet considered rigorous. The SG100 level is not met.

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

Public reporting of stock status is provided in annual “State of the Fisheries” reports. The “assessment” (i.e. the collation and reporting of all data) is subject to internal review within DPIRD. There has been publication of some research related to the fishery in peer-reviewed journals and a level of external review through workshops held by DPIRD (e.g. a two day workshop undertaken in November 2012 with Malcolm Haddon, Marine Research Laboratory Tasmanian Aquaculture and Fisheries Institute, University of Tasmania). Further, Haddon (2019) provides a review of the science supporting the Western Australia Shark

Bay Fisheries, including the Shark Bay Prawn trawl Fishery. Given the similarity in the harvest strategies for the EGPMF and the Shark Bay fishery, the findings of this review are also relevant to the EGPMF. Overall, the SG80 level is met. However, the level of comprehensive external peer review required of SG100 is not met.

## References

Banks, R., K. Mcloughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=cc2XJQ+44oupEaoPVYHkBKqG9QjAI70fGS6hlTioYjk6qwd02QOmYlx8SmlEi60p>

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Gaughan, D.J., Molony, B. and Santoro, K. (eds). 2019. Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18: The State of the Fisheries. Department of Primary Industries and Regional Development, Western Australia. Available at : [file:///C:/Users/mihac/Dropbox/Exmouth\\_SharkBay\\_GapAnalysis/status\\_reports\\_of\\_the\\_fisheries\\_and\\_aquatic\\_resources\\_2017-18.pdf](file:///C:/Users/mihac/Dropbox/Exmouth_SharkBay_GapAnalysis/status_reports_of_the_fisheries_and_aquatic_resources_2017-18.pdf)

Haddon, M. (2019). Shark Bay trawl fisheries science review 2019. 36pp.

## Draft scoring range and information gap indicator added at Announcement Comment Draft Report

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

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

Blue endeavour prawn (*Metapenaeus endeavouri*)

## 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 |   |   |
|---------------|---|--|---|---|
| Scoring Issue |   | SG 60  | SG 80   | SG 100  |
| <b>a</b>      | Stock status relative to recruitment impairment |  |   |   |
|               | 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 certainty</b> that the stock is above the PRI. |
|               | Met?  | <b>Yes</b>   | <b>Yes</b>  | <b>Yes</b>  |
| Rationale     |   |  |   |   |

Blue endeavour prawns are typically smaller than brown tiger and western king prawns, hence are less vulnerable to the fishing gear. A significant portion of the blue endeavour prawn breeding biomass is protected by the brown tiger prawn spawning closures. Additional protection is afforded to blue endeavour prawns by their distribution for much of the year in permanently closed inshore nursery areas. The introduction and extension of moon closures in the fishery has also increased protection of this species, which is known to have higher catchability during full moon periods (Kangas et al. 2006).

In addition to these aspects of blue endeavour prawn biology and distribution which reduce the impact of the fishery on the stock, DPIRD has provided the assessors with a number of lines of evidence on the status of the stock, summarized in Section 8.2 of this report. This evidence includes:

Empirical data from the commercial fishery:

Briefly, the relatively stable catch levels and catch composition of blue endeavour prawn in the total catch, and the reduction in fishing effort over time, suggests that the stock has not been impacted heavily by the EGPMF (see Table 1 and Figure 6).

Fishery-independent survey data

Reference points for the fishery have been developed from the times series of fishery-independent surveys (at standardised sites across the key fishing grounds).

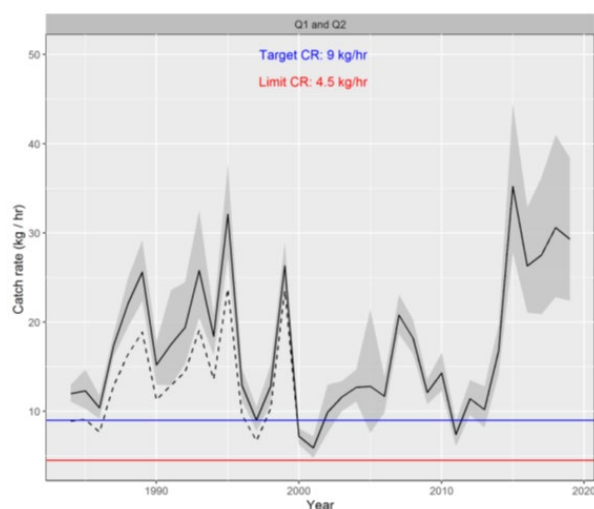
Multiple fishery-independent surveys undertaken in March/April each year provide recruitment information for brown tiger and western king prawns, as described in Banks et al. (2015). These surveys also provide recruitment indices for blue endeavour prawns. Fishery-independent survey recruitment indices for blue endeavour prawn since 1985 can be seen in Figure 10. Unlike brown tiger prawns and western king prawns, which tend to be abundant in different areas of the fishery, blue endeavour prawns are more widespread. As the full suite of survey sites essentially cover the full fishery area, the mean blue endeavour catch rates from these surveys are considered to provide a reliable measure of population abundance. The timing of recruitment of blue endeavour prawns likely differs from the two other species (with substantial recruitment later in the year), and thus the autumn survey catch rates measure only part of the blue endeavour prawn recruitment (DPIRD-EGPMF 2018).

The mean fishery-independent survey catch rates for surveys conducted in March/April do not exhibit any pronounced increasing or decreasing trend since 1985. Catch rates in 2012-2014 were low relative to historic levels, possibly associated with environmental effects (2011 extreme marine heatwave) on seagrass areas, important for prawn recruitment. Catch rates have since improved.

Similar to that described above, a time series of fishery-independent catch rates for blue endeavour prawns is available for 1984-2017, from multiple surveys in August/September/October (Figure 10). These were aimed at mainly measuring annual spawning stock levels of brown tiger prawns and western king prawns, but also



measure abundance of blue endeavour prawns. As blue endeavour prawns also commence spawning around this time, the surveys likely provide a useful measure of spawning stock levels for this species.



### Spring surveys

Fishery-independent mean survey catch rates and 95% confidence intervals of endeavour prawns in Exmouth Gulf recorded for surveys conducted in Autumn (March/April; 1985-2019) in the fishing grounds P2, Q1 and Q2, and in Spring (August-October; 1984-2019) in fishing grounds Q1 and Q2.

The mean fishery-independent survey catch rates for surveys conducted in September/October do not exhibit any pronounced increasing or decreasing trend since 1985. Catch rates in last four years are well above historic ranges.

### Model-based approaches

Since the certification of brown tiger and western king prawn, DPIRD has been developing model-based stock-assessment approaches for the three major prawn species. These approaches are summarized in Section xx of this report and DPIRD-EGPMF (2018).

A Catch-MSY model has been run for blue endeavour prawns in Exmouth Gulf. The approach is a “data-poor” stock assessment method that can be used to estimate biomass and fishing mortality trends based on a catch history and inputs relating to the assumed productivity of the stock. Although reliable abundance indices for this species exist from fishery independent surveys, they lack “contrast” making it difficult to obtain reliable outcomes with many of the fisheries models typically used (although this has now been achieved, see below). The Catch-MSY method makes some strong assumptions and biomass estimates typically exhibit large uncertainty (DPIRD-EGPMF 2018). The model produces estimates of MSY,  $K$  (maximum population size),  $r$  (intrinsic population growth rate), and annual biomass and harvest rates. Several scenarios were examined with a range of assumptions in relation to the early catch history of blue endeavour prawns and  $r$ . The results of the four scenarios examined suggest the blue endeavour prawn stock in Exmouth gulf is not currently overfished, with median predicted biomass an increasing since 2010 (Figure 11 and Figure 12). Values for estimated MSY ranged from 236 to 292 tonnes across the scenarios, greater than the mean catch of 212 tonnes since 1985.

DPIRD-EGPMF (2018) acknowledges the high level of uncertainty and assumptions required in this approach, however, the outputs provide no indication of current overfishing or unacceptable stock depletion.

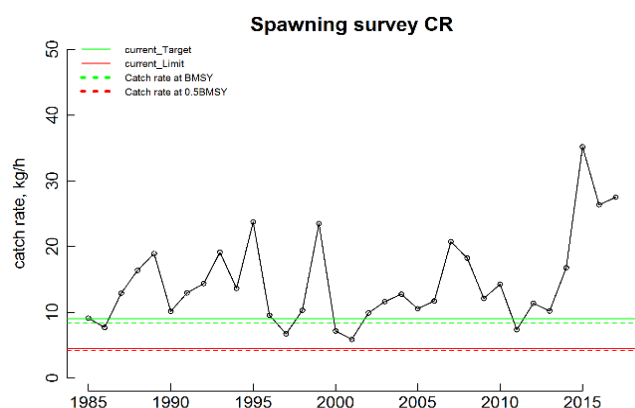
DPIRD has also implemented a preliminary biomass-dynamics model for blue endeavour prawns in the EGPMF for 1) estimating current stock status and 2) examining how the current target (9 kg/h) and limit (4.5 kg/h) reference points associated with the Spring fishery-independent spawning surveys compare with the catch rates, at this time, corresponding to  $B_{MSY}$  and  $0.5B_{MSY}$ .

The available fishery-dependent and fishery-independent catch rate indices for blue endeavour prawns in Exmouth Gulf show very little contrast, making it very difficult to fit a model to these data without additional information. DPIRD’s approach incorporates the swept area biomass estimates calculated from the fishery independent Autumn recruitment surveys (1985-2017), allowing the model to “scale” to these levels of biomass. The model is also fitted to commercial catch rate data and the spawning survey catch rate data, and annual recruitment deviations are estimated to account for the substantial annual recruitment variation evident in the data.

Scenarios examined suggest that current spawning biomass levels are relatively high (> 40% unfished). Regardless of scenario, the target and limit reference points associated with the spawning surveys are similar

to the catch rates corresponding to  $B_{MSY}$  and  $0.5B_{MSY}$ , suggest these reference points are appropriate for this species.

The spawning survey catch rates associated with  $B_{MSY}$  and  $0.5B_{MSY}$  are very similar to the specified target (9 kg/h) and limit reference points (4.5 kg/h), respectively. The values do not vary greatly among scenarios (DPIRD-EGPMF 2018).



Mean fishery-independent spawning survey blue endeavour prawn catch rates (black lines). The current target and limit catch rates and catch rates associated with  $B_{MSY}$  and  $0.5B_{MSY}$  have been added to the figure for comparison. Results are for model Scenario 1, assuming no discarding or annual fishing efficiency changes for annual commercial catch rates.

Again, DPIRD-EGPMF (2018) acknowledges that results from this modelling approach are preliminary and further refinement and testing is required. Overall, the range of information available provides a weight of evidence that it is highly likely that the blue endeavour prawn stock is highly likely to be above the point of recruitment impairment. In addition, the stock has been well above its target reference point in recent years.

The weight of evidence is that stock is highly likely above the point where recruitment would be impaired, thereby meeting the SG60 and SG80 requirements. Further, although there is a high level of uncertainty in the modelling approaches being developed, the results of these approaches, combined with aspects of the biology and distribution of the species, as well as the extensive survey data, suggest that there is a high degree of certainty that the stock is above the point where recruitment would be impaired, meeting SG100.

| Stock status in relation to achievement of Maximum Sustainable Yield (MSY) |            |  |   |
|--|------------|--|---|
| <b>b</b>   | Guide post | The stock is at or fluctuating around a level consistent with MSY. | There is a <b>high degree of certainty</b> that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years. |
|  | Met?       | <b>Yes</b>   | <b>Yes</b>  |
| Rationale  |            |  |   |

The blue endeavour spawning stock index last dropped below the target level in 2011 and has been well above in recent years (see Figure above). The long running maintenance of the stock around and above the target reference level points provides a high degree of certainty that the stock is fluctuating around the targets, thereby meeting the SG100 level.

## References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at:

<https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=cc2XJQ+44oupEaoPVYHkBKqG9QjAI70fGS6hlTioYjk6qwd02QOmYlx8SmlEi60p>

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DPIRD-EGPMF 2018. Blue Endeavour Prawn – Exmouth Gulf Prawn Managed Fishery, September 2018. Background document on blue endeavour assessment provided by WA Department of Primary Industries and Regional Development.

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Kangas, M., McCrea, J., Fletcher, W., Sporer, E. & Weir, V. (2006). Exmouth Gulf Prawn Fishery. ESD Report No. 1. Department of Fisheries, Western Australia, 128 pp.

#### Stock status relative to reference points

|   | 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) | Spawning stock index    | 4.5 kg/hr                | 2017: mean spawning stock survey catch rate 28.5 kg/hr |
| Reference point used in scoring stock relative to MSY (SIb) | Spawning stock index    | 9 kg/hr                  | 2017: mean spawning stock survey catch rate 28.5 kg/hr |

#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |  |
|---------------------------|--|
| Draft scoring range       | ≥80  |
| Information gap indicator | More information sought / Information sufficient to score PI |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 1.1.2 – Stock rebuilding

| PI 1.1.2      |                       | Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe   |       |  |
|---------------|-----------------------|--|-------|--|
| Scoring Issue |                       | SG 60  | SG 80 | SG 100   |
| <b>a</b>      | Rebuilding timeframes |  |       |  |
|               | Guide post            | A rebuilding timeframe is specified for the stock that is the <b>shorter of 20 years or 2 times its 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 time</b> for the stock. |
|               | Met?                  | NA   |       | NA   |
| Rationale     |                       |  |       |  |

The blue endeavour prawn stock is not depleted hence this performance indicator does not apply.

|                       |            |   |   |   |
|-----------------------|------------|---|---|---|
| Rebuilding evaluation |            |   |   |   |
| <b>b</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 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 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> . |
|                       | Met?       | NA  | NA  | NA  |
| Rationale             |            |   |   |   |

## References

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |                                    |
|---------------------------|------------------------------------|
| Draft scoring range       | NA                                 |
| Information gap indicator | Information sufficient to score PI |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
|-------------------------------------|--|

|                                |  |
|--------------------------------|--|
| Condition number (if relevant) |  |
|--------------------------------|--|

## PI 1.2.1 – Harvest strategy

| PI 1.2.1      |                         | There is a robust and precautionary harvest strategy in place  |  |  |
|---------------|-------------------------|--|--|--|
| Scoring Issue |                         | SG 60  | SG 80  | SG 100   |
| <b>a</b>      | Harvest strategy design |  |  |  |
|               | 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?                    | <b>Yes</b>   | <b>Yes</b>   | <b>No</b>  |
| Rationale     |                         |  |  |  |

The EGPMF Harvest Strategy 2014–2019 (DPIRD 2018) provides details of the current harvest strategy for the fishery. The management activities encompassed by this strategy have been developed over time based on a comprehensive understanding of the biology of the target prawn species, with the annual cycle of operation depending on the strength and timing of prawn recruitment. The harvest strategy involves regular monitoring of the stock through fishery-independent spawning stock and recruitment surveys, as well as extensive monitoring of the fishery with fishery-dependent data collection. There is a complex suite of annual and in-season reference points. Opening and closing dates are based on the survey information and directly responsive to abundance information. The long term trajectory of the spawning stock index for blue endeavour prawn indicates that the harvest strategy is responsive to the state of the stock (i.e. including the measures in place for brown tiger prawn and western king prawn as well as those for blue endeavour prawn). SG60 and SG80 requirements are met. The measures of the harvest strategy are predominantly aimed at brown tiger prawn and western king prawn, hence are not designed to achieve stock management objectives reflected PI 1.1.1 SG80. SG100 is not met.

|           |                             |  |   |   |
|-----------|-----------------------------|--|---|---|
| <b>b</b>  | Harvest strategy evaluation |  |   |   |
|           | 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?                        | <b>Yes</b>   | <b>Yes</b>  | <b>No</b>   |
| Rationale |                             |  |   |   |

The strategy has only recently been implemented in relation to blue endeavour prawn. Historical data provides evidence that the approaches in the strategy have been successful in achieving its objectives. There is ongoing intensive monitoring (with active feedback) to enable future evaluation of the strategy to ensure

that it continues to maintain the stock at sustainable levels. SG60 and SG80 levels are met. However, it has not been fully evaluated (e.g. using Management Strategy Evaluation) thus SG100 is not met.

| Harvest strategy monitoring |            |   |  |  |
|-----------------------------|------------|---|--|--|
| <b>c</b>                    | Guide post | Monitoring is in place that is expected to determine whether the harvest strategy is working. |  |  |
|                             | Met?       | <b>Yes</b>  |  |  |
| Rationale                   |            |   |  |  |

Research and monitoring of the EGPMF has been conducted since the beginning of the fisheries in the early 1960s. There is extensive monitoring to support the harvest strategy, including fishery-independent surveys, collection of catch and effort data using daily logbooks, and processor unload information, as well as other monitoring. The SG60 level is met.

| Harvest strategy review |            |  |  |  |
|-------------------------|------------|--|--|--|
| <b>d</b>                | Guide post |  |  | The harvest strategy is periodically reviewed and improved as necessary. |
|                         | Met?       |  |  | <b>Yes</b>   |
| Rationale               |            |  |  |  |

There has been ongoing review of the elements of the EGPMF harvest strategy. Over time, there have been amendments in management in response to various factors. Changes have included changes in fishing gear and adjustments of areas open to fishing.

The EGPMF Harvest Strategy 2014–2019 (DPIRD 2018) indicates the strategy will be fully reviewed at the end of the current five-year period. There is also the potential to make amendments as appropriate during the life of the current strategy, as evidenced by the 2018 changes to introduce measures for blue endeavour prawn. The SG100 level is met.

| Shark finning |            |   |  |  |
|---------------|------------|---|--|--|
| <b>e</b>      | 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 of certainty</b> that shark finning is not taking place. |
|               | Met?       | <b>NA</b>   | <b>NA</b>  | <b>NA</b>  |
| Rationale     |            |   |  |  |

Not applicable as the target species are not sharks.

| Review of alternative measures |            |   |   |  |
|--------------------------------|------------|---|---|--|
|                                | Guide post | There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related | There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of | There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of |

|           |      |  |   |   |
|-----------|------|--|---|---|
|           |      | mortality of unwanted catch of the target stock. | unwanted catch of the target stock and they are implemented as appropriate. | unwanted catch of the target stock, and they are implemented, as appropriate. |
|           | Met? | <b>Yes / No / NA</b>                             | <b>Yes / No / NA</b>  | <b>Yes / No / NA</b>  |
| Rationale |      |  |   |   |

Information required on this.

## References

Banks, R., McLoughlin, K. and Zaharia, M. (2019) Exmouth Gulf Prawn Managed Fishery MSC Surveillance Report # 3. Prepared for the MG Kailis Group of Companies. MRAG Americas, Inc. April 2019. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=V6xqPnjiNh4ET6v9Sv3nPU8DK93cbZ5BQHJgXWgOs6K64PbSYcOPxXp5Gh4RnMzl>

DPIRD (2018). Exmouth Gulf Prawn Managed Fishery Harvest Strategy 2014 - 2019. Department of Fisheries, WA. Available at: [https://www.fish.wa.gov.au/Documents/management\\_papers/fmp265.pdf](https://www.fish.wa.gov.au/Documents/management_papers/fmp265.pdf)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |                                |
|---------------------------|--------------------------------|
| Draft scoring range       | <b>≥80</b>                     |
| Information gap indicator | <b>More information sought</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |



## PI 1.2.2 – Harvest control rules and tools

| PI 1.2.2      |                             | There are well defined and effective harvest control rules (HCRs) in place   |  |   |
|---------------|-----------------------------|--|--|---|
| Scoring Issue |                             | SG 60  | SG 80  | SG 100  |
| <b>a</b>      | HCRs design and application |  |  |   |
|               | Guide post                  | <b>Generally understood</b> HCRs are in place <b>or available</b> that are <b>expected</b> to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached. | <b>Well defined HCRs are in place</b> that <b>ensure</b> that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock <b>fluctuating around</b> 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?                        | <b>Yes</b>   | <b>Yes</b>   | <b>No</b>   |
| Rationale     |                             |  |  |   |

There are control rules to determine the season start date for the fishery based on fishery-independent survey information (deigned for brown tiger and western king prawn). Since the original certification of the fishery harvest control rules have been introduced to the harvest strategy for blue endeavour prawn (DPIRD 2018). These rules are based on fishery-independent information to prompt actions when catch rates fall within defined levels. The use of empirical information is appropriate to the scale and intensity of the fishery. The control rules are well-defined in the harvest strategy and are designed to limit exploitation of blue endeavour prawns to avoid breaching limit reference points, meeting SG60 and SG80 levels. The expedited assessment of blue endeavour prawn included a recommendation to examine the feasibility of adopting threshold reference levels (i.e. rules determining what actions take place when the spawning survey catch rates are between the target and the limit levels). This is being examined as part of the review of the EGPMF harvest strategy (Banks and McLoughlin, 2019). SG100 is not met.

|           |                                |  |   |  |
|-----------|--------------------------------|--|---|--|
| <b>b</b>  | HCRs robustness to uncertainty |  |   |  |
|           | 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?                           |  | <b>Yes</b>  | <b>No</b>  |
| Rationale |                                |  |   |  |

Uncertainty in the performance measures is reduced by employing, where possible, data from ongoing fishery-independent spawning stock and recruitment surveys using standardized sampling methods. The use of an extensive set of indicators and reference points to guide actions guards against the effects of uncertainties in information. These surveys have provided robust estimates of recruitment and spawning for

blue endeavour prawns. In-season monitoring and decision-making on opening and closing spatial areas based on maintaining breeding stocks also assist in accounting for uncertainty. The SG80 level is met.

HCRs for blue endeavour prawns were added to the harvest strategy relatively recently. Further examination of the uncertainties is required in their implementation in coming years. The current rules do not take the ecological role of the stock into account. SG100 requirements are not met.

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

The suite of tools and specified actions used in the EGPMF have been developed over a number of years, predominantly for brown tiger and western king prawns. The tools adopted for blue endeavour prawn are based on a time series of data. The blue endeavour prawn stock has been at appropriate levels over the time period with the measures that have been in place. The addition of measures in the update of the harvest strategy should strengthen the previous measures if required.

Overall, there is sufficient evidence to indicate that the harvest control rules are appropriate and effective, meeting the SG60 and SG80 levels. However, further information is required to provide clear evidence that the tools are effective. SG100 requirements are not met.

#### References

Banks, R., McLoughlin, K. and Zaharia, M. (2019) Exmouth Gulf Prawn Managed Fishery MSC Surveillance Report # 3. Prepared for the MG Kailis Group of Companies. MRAG Americas, Inc. April 2019. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=V6xqPnjiNh4ET6v9Sv3nPU8DK93cbZ5BQHJgXWgOs6K64PbSYcOPxXp5Gh4RnMzl>

DPIRD (2018). Exmouth Gulf Prawn Managed Fishery Harvest Strategy 2014 - 2019. Department of Fisheries, WA. Available at: [https://www.fish.wa.gov.au/Documents/management\\_papers/fmp265.pdf](https://www.fish.wa.gov.au/Documents/management_papers/fmp265.pdf)

DPIRD-EGPMF 2018. Blue Endeavour Prawn – Exmouth Gulf Prawn Managed Fishery, September 2018. Background document on blue endeavour assessment provided by WA Department of Primary Industries and Regional Development.

#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | <b>≥80</b>                                |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 1.2.3 – Information and monitoring

| PI 1.2.3      |                      | Relevant information is collected to support the harvest strategy  |   |   |
|---------------|----------------------|--|---|---|
| Scoring Issue |                      | SG 60  | SG 80   | SG 100  |
| <b>a</b>      | Range of information |  |   |   |
|               | Guide post           | Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy. | Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy. | A comprehensive range 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     |                      |  |   |   |

Research and monitoring has been undertaken since the start of the fishery. There is extensive information on fleet composition and fishing activities. Commercial catch and effort statistics are collected using daily logbooks and are validated by processor unloads and VMS data. Fishers record the start position, start time, duration and mean depth of each trawl, as well as the catches of each retained species in each trawl, interactions with any endangered, threatened and protected species and environmental data (water temperature and moon phase). Fishery-independent surveys have been undertaken since the 1980s to determine recruitment and spawning stock levels. A number of research projects have gathered biological information over the past two decades and the distribution of seagrass and important inshore structured habitats have been investigated. Data on environmental variables (e.g. rainfall, temperature, cyclonic events) have been shown to be important drivers of prawn recruitment and are collected annually. There is extensive information for the fishery, sufficient to support the harvest strategy and meeting SG60 and SG80 requirements.

|            |            |  |   |  |
|------------|------------|--|---|--|
| Monitoring |            |  |   |  |
| <b>b</b>   | Guide post | Stock abundance and UoA removals are monitored and <b>at least one indicator</b> is available and monitored with sufficient frequency to support the harvest control rule. | Stock abundance and UoA removals are <b>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</b> , and <b>one or more 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 | No |
| Rationale |      |     |     |    |

Fishery removals, including location, total catches and size categories, are recorded in daily logbooks. Verification suggests the data are collected with a good level of coverage and a high degree of accuracy. Recruitment and spawning stock are regularly monitored through fishery-independent surveys, providing data consistent with the control rules of the harvest strategy, meeting the SG60 and SG80 levels. Uncertainty is examined with the provision of confidence intervals on the reference level indices. Further development of the harvest control rules to include threshold levels would potentially result in SG100 requirements being met.

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

Small quantities of blue endeavour prawns are landed by the Onslow Prawn Managed Fishery (OPMF), which operates in the coastal waters north of Exmouth Gulf. All fishers in the OPMF are required to complete and submit daily logbooks, with the same processes of error checking and validation of data undertaken as for the EGPMF. Due to oil and gas exploration activities undertaken in the waters off Onslow restricting fishing activities, there has been very low fishing effort since 2010 which has resulted in only minor catches (total landings in 2017 were negligible with 5 days of fishing effort undertaken by one vessel).

There is no recreational or traditional fishery for blue endeavour prawns in Exmouth Gulf, or in the waters off Onslow. Thus all removals of blue endeavour prawns are those reported by commercial fishers in the EGPMF and the OPMF. Overall, the information is sufficient to meet the SG80 level.

#### References

Banks, R., McLoughlin, K. and Zaharia, M. (2019) Exmouth Gulf Prawn Managed Fishery MSC Surveillance Report # 3. Prepared for the MG Kailis Group of Companies. MRAG Americas, Inc. April 2019. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=V6xqPnjiNh4ET6v9Sv3nPU8DK93cbZ5BQHJgXWgOs6K64PbSYcOPxXp5Gh4RnMzl>

DPIRD-EGPMF 2018. Blue Endeavour Prawn – Exmouth Gulf Prawn Managed Fishery, September 2018. Background document on blue endeavour assessment provided by WA Department of Primary Industries and Regional Development.

#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

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

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 1.2.4 – Assessment of stock status

| PI 1.2.4      |  | There is an adequate assessment of the stock status |   |  |
|---------------|--|---|---|--|
| Scoring Issue |  | SG 60   | SG 80   | SG 100   |
| <b>a</b>      | Appropriateness of assessment to stock under consideration |   |   |  |
|               | 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?   |   | <b>Yes</b>  | <b>No</b>  |
| Rationale     |  |   |   |  |

The direct, empirically-based stock assessment methodology that has been adopted for prawn stocks in Exmouth Gulf is reflective of their biology, life history, habitats and inherent population variability. The assessment approach is appropriate for the harvest control rules and provides information at an appropriate timescale to enable rapid, real-time management responses within each season to protect the breeding stock and meets the SG80 level. Model-based assessment approaches are being developed and outputs are preliminary. Further development of these approaches are likely to strengthen confidence in the findings for this scoring issue.

|           |                     |   |  |  |
|-----------|---------------------|---|--|--|
| <b>b</b>  | Assessment approach |   |  |  |
|           | 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?                | <b>Yes</b>  | <b>Yes</b>   |  |
| Rationale |                     |   |  |  |

The assessment process involves fishery-independent spawning stock and recruitment surveys in conjunction with spawning stock catch rates from the commercial fishery, directly estimating stock status indices relative to defined reference points and meets the SG60 level. The assessment approach provides information relative to appropriate reference points, hence SG80 is met.

|           |                               |  |   |  |
|-----------|-------------------------------|--|---|--|
| <b>c</b>  | Uncertainty in the assessment |  |   |  |
|           | Guide post                    | The assessment <b>identifies major sources of</b> uncertainty. | The assessment <b>takes uncertainty into account.</b> | The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a <b>probabilistic</b> way. |
|           | Met?                          | <b>Yes</b>   | <b>Yes</b>  | <b>No</b>  |
| Rationale |                               |  |   |  |

The harvest strategy uses information on the target stock drawn directly from data collected from the fishery without any inferential or estimation steps. The use of the adopted indicators and reference points to guide actions guards against the effects of uncertainties in information. In-season monitoring and decision-making

on opening and closing spatial areas based on maintaining breeding stocks of blue endeavour prawns also assist in accounting for uncertainty. Confidence intervals have been provided for the survey-based indicators. The SG60 and SG80 levels are met. However, uncertainty is not evaluated in a probabilistic way and SG100 is not met.

| Evaluation of assessment |            |  |  |
|--------------------------|------------|--|--|
| <b>d</b>                 | Guide post |  | The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored. |
|                          | Met?       |  | <b>No</b>  |
| Rationale                |            |  |  |

The management approach has been robust in sustaining the stocks over a long period and the assessment is directly based on empirical data from the fishery which is appropriate for the stock. Model-based assessment methods are being developed. However, there has not been rigorous exploration of alternative approaches. The SG100 level is not met.

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

Public reporting of stock status is provided in annual “State of the Fisheries” reports. The “assessment” (i.e. the collation and reporting of all data) is subject to internal review within DPIRD. There has been publication of some research related to the fishery in peer-reviewed journals and a level of external review through workshops held by DPIRD (e.g. a two day workshop undertaken in November 2012 with Malcolm Haddon, Marine Research Laboratory Tasmanian Aquaculture and Fisheries Institute, University of Tasmania). Further, Haddon (2019) provides a review of the science supporting the Western Australia Shark Bay Fisheries, including the Shark Bay Prawn trawl Fishery. Given the similarity in the harvest strategies for the EGPMF and the Shark Bay fishery, the findings of this review are also relevant to the EGPMF. Overall, the SG80 level is met. However, the level of comprehensive external peer review required of SG100 is not met.

|            |
|------------|
| References |
|------------|

DPIRD-EGPMF 2018. Blue Endeavour Prawn – Exmouth Gulf Prawn Managed Fishery, September 2018. Background document on blue endeavour assessment provided by WA Department of Primary Industries and Regional Development.

DPIRD-EGPMF. 2019c. Blue Endeavour Prawn – Exmouth Gulf Prawn Managed Fishery, February 2019. MSC certification. Audit 3 blue endeavour prawn assessment update. Document provided by WA Department of Primary Industries and Regional Development.

Gaughan, D.J., Molony, B. and Santoro, K. (eds). 2019. Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18: The State of the Fisheries. Department of Primary Industries and Regional Development, Western Australia. Available at :

file:///C:/Users/mihae/Dropbox/Exmouth\_SharkBay\_GapAnalysis/status\_reports\_of\_the\_fisheries\_and\_aquatic\_resources\_2017-18.pdf

Haddon, M. (2019). Shark Bay trawl fisheries science review 2019. 36pp.

**Draft scoring range and information gap indicator added at Announcement Comment Draft Report**

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

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## 8.3 Principle 2

### 8.3.1 Principle 2 background

Exmouth Gulf is an inverse estuary with an area of ~4000 km<sup>2</sup> tropical gulf in the Gascoyne Coast Bioregion of WA, at the transition between the tropical waters of the northern coast and the temperate waters of the southwest. The Gulf is open to the north and enclosed by the Cape Range and large sand beaches to the west, and a narrow band of mangroves bordering extensive salt flats to the east and south (Stoklosa, 2019).

The Leeuwin current affects the inshore and offshore waters of Exmouth Gulf, particularly during strong winter flows, introducing elevated water temperatures, low levels of dissolved nutrients and particle concentrations which inhibit the vegetation growth. Consequently, fisheries production relies on nutrient sources from benthic habitats in nearshore waters, rather than from oceanic ecosystems (Stoklosa, 2019).

Fine scale habitat information for Exmouth Gulf is available mainly for shallow inshore areas within the nursery grounds with attention to seagrass species that are found in very low abundance. There are known to be small areas of coral reefs, primarily at the northern end of the Gulf (Bundegi Reef, Muiron Islands), and at the southern end (Point Lefroy to Roberts Island). Filter feeder communities have also been identified. Despite relative low abundance of vegetation Exmouth Gulf is considered a highly productive ecosystem, with macroalgae, phytoplankton and salt-flat cyanobacteria the main primary producers. Cyanobacterial mats that live in the hyper-saline waters of the reverse estuary have an important role in Gulf's primary production due to their capacity of nitrogen fixation during tidal inundation (Adame et al. 2012).

Exmouth Gulf supports an important commercial prawn fishery, the EGPMF, as well as a small beach seine fishery, recreational fisheries, nature-based tourism and aquaculture. It also supports abundant populations of marine protected species such as dugong, and turtles as well as critically endangered sea snake species and endangered sawfish.

Most ecosystem impacts from EGPMF fishing activities are likely to be due to the removal of the target species, brown tiger and western king prawns, as these are the species with the highest proportions in the catch (see catch composition in Banks and McLoughlin, 2018). Prawns fishing mortality rate in Exmouth Gulf is relatively low compared to the natural seasonal variability of prawn populations as a consequence of environmental conditions, such as water temperature, currents and natural events, e.g., cyclones (Kangas et al. 2006 in Banks et al. 2015). Retained non-target (byproduct) species are taken in relatively small quantities (Banks et al. 2019) and generally have large distribution ranges (Kangas et al. 2007).

Over the long history of the fishery, the EGPMF has been engaged in developing and adopting alternative measures to reduce mortality of non-target species in the catch, with significant achievements, moving from bycatch to prawn ratios of 20:1 in the mid-seventies (Banks et al. 2015) to 0.8:1 in recent years, according to recent catch composition surveys (Banks and McLoughlin, 2018). Catch composition is shown in Table 12.

Most Endangered, Threatened and Protected (ETP) species interactions are with sea snakes (95%), with most individuals being returned to water alive (Banks et al. 2015, Banks and McLoughlin, 2018, Banks et al. 2019). Since the initial MSC certification of the fishery, species identification, reporting and handling of sea snakes have been improved. The fishery also interacts with sawfish, turtles and syngnathids. Reductions in ETP interactions have been achieved through the use of bycatch reduction devices (Kangas & Thomson 2004), although the increase in reported interactions in recent years is the result of an increase in awareness and education of both crew and skippers with improved and more consistent reporting (Kangas et al. 2020).

Recent habitat mapping work shows that commonly encountered habitat is flat, soft sediment dominated, with no or sparse biota (Banks et al. 2019). Quantitative independent studies undertaken in Exmouth Gulf suggest that these types of sand-silt habitats are resilient to fishing (Pitcher et al. 2017). Currently, there are no habitats that can classify as vulnerable marine ecosystems (VMEs) in Exmouth Gulf.

The effects of climate change on coastal ecosystems of Western Australia have become evident after an extreme marine heat wave in 2011, with significant loss of seagrass and declines in some commercial



invertebrate stocks, especially in Shark Bay but also in Exmouth Gulf (Caputi et al. 2019). The effects of climate change and factors influencing the recovery of marine invertebrate stocks, including target and primary species in EGPMF, have been the focus of research since the heat wave event occurred (Caputi et al. 2019). Management strategies for target and non-target commercial species of invertebrates is based on pre-recruitment surveys (Caputi et al. 2016) allowing harvest strategy to be adapted to environmental changes.

The EGPMF is managed according to an ecologically-based fisheries management (EBFM) framework, with specific objectives established for each component of the ecosystem: target species, non-target retained species (byproduct), non-retained species (bycatch), habitat, and ecosystem overall.

To be noted that there is no distinction among the three UoAs impacts on P2 components because all target species are caught together, thus the assessment refers to EGPMF overall and P2 scores are the same for all three UoAs.

**Table 12. EGPMF catch composition in % contribution by weight – data from fishery independent surveys 2014-2017: target species in bold blue, other retained species in light blue.**

| Common name                | Species/Family name   | % of total  |
|----------------------------|---|-------------|
| <b>Brown tiger prawns</b>  | <b><i>Penaeus esculentus</i></b>                                      | <b>34.6</b> |
| <b>Endeavour prawns</b>    | <b><i>Metapenaeus endeavouri</i></b>                                  | <b>11.1</b> |
| <b>Western king prawns</b> | <b><i>Penaeus latisculcatus</i></b>                                   | <b>8.5</b>  |
| Whiting                    | <i>Sillago</i> spp.   | 3.1         |
| Coral prawns               | <i>Metapenaeopsis</i> spp.  | 1.1         |
| Cuttlefish                 | <i>Sepia</i> spp.   | 0.7         |
| Blue swimmer crabs         | <i>Portunus armatus</i>   | 0.5         |
| Mantis shrimp              | Squillaidae   | 0.2         |
| Banana prawns              | <i>Penaeus merguensis</i>   | 0.1         |
| Squid                      | Mostly <i>Photololigo edulis</i>                                      | 0.1         |
| Octopus                    | <i>Octopus</i> sp.  | <0.1        |
| Bugs                       | <i>Thenus orientalis</i>  | <0.1        |
| Lizardfish                 | Mostly <i>Saurida undosquamis</i>                                     | 4.6         |
| Threadfin bream            | Mostly <i>Nemipterus peronei</i> and <i>Scolopsis taeniopterus</i>    | 4.6         |
| Minor crabs                | Mostly <i>Portunus</i> spp.   | 4.2         |
| Goatfish                   | <i>Upeneus</i> spp.   | 4.1         |
| Trumpeter                  | <i>Pelates</i> spp.   | 4.0         |
| Flounder                   | Bothidae  | 2.5         |
| Flathead                   | Platycephalidae   | 2.5         |
| Ponyfish                   | Mostly <i>Leiognathus leuciscus</i>                                   | 2.2         |
| Other finfish*             |   | 1.6         |
| Dragonets                  | Callionymidae   | 1.1         |
| Toadfish                   | Mainly <i>Torquigener whitleyi</i> and <i>Lagocephalus sceleratus</i> | 0.9         |
| Trevallies                 | Carangidae  | 0.9         |
| Leatherjackets             | Mostly <i>Paramonacanthus choirocephalus</i>                          | 0.9         |
| Roach                      | Mostly <i>Gerres subfasciatus</i>                                     | 0.6         |
| Other invertebrates*       |   | 0.5         |
| Emperors                   | <i>Lethrinus</i> spp.   | 0.4         |
| Red-barred grubfish        | <i>Parapercis nebulosa</i>  | 0.4         |
| Tuskfish                   | Mostly <i>Choerodon cephalotes</i>                                    | 0.4         |
| Minor prawns               | Penaeidae   | 0.4         |
| Fusiliers                  | Mostly <i>Pterocaesio digramma</i>                                    | 0.4         |
| Catfish                    | Mostly <i>Plotosus lineatus</i>                                       | 0.4         |
| Cardinalfish               | Mostly <i>Jaydia poecilopterus</i>                                    | 0.4         |
| Blotched javelinfish       | <i>Pomadasys maculatus</i>  | 0.4         |
| Gulf damsel                | <i>Pristotis obtusirostris</i>  | 0.4         |
| Scorpionfish               | Scorpaenidae  | 0.3         |
| Herrings, sardines         | Clupeidae   | 0.3         |
| Echinoderms                |   | 0.3         |
| White-spotted spinefoot    | <i>Siganus canaliculatus</i>  | 0.2         |
| Little jewfish             | <i>Johnius borneensis</i>   | 0.2         |
| Rays                       | Mostly <i>Gymnura australis</i>                                       | 0.2         |

### 8.3.2 Primary Species Outcome (PI 2.1.1)

**Primary species** are defined as species that are not covered under P1, and where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit or target reference points. In cases where a species would be classified as primary due to the management measures of one jurisdiction but not another that overlaps with the UoA, that species needs be considered as primary (MSC, 2018a, p.27).

A species is considered “main” if:

- the catch by the UoA comprises 5% or more by weight of the total catch of all species by the UoA (SA3.4.2.1, MSC, 2018a, p. 33) or
- the species is classified as 'Less resilient' and the catch of the species by the UoA comprises 2% or more by weight of the total catch of all species by the UoA (SA3.4.2.2, MSC, 2018a, p.33)

A species is 'Less resilient' if:

- The productivity of the species indicates that it is intrinsically of low resilience, for instance, if determined by the productivity part of a PSA that it has a score equivalent to low or medium productivity; or
- Even if its intrinsic resilience is high, the existing knowledge of the species indicates that its resilience has been lowered due to anthropogenic or natural changes to its life-history (SA3.4.2.2a, MSC, 2018a, p33).

Based on *Status reports of the fisheries and aquatic resources of Western Australia 2012/13 to 2017/18* ([www.fish.wa.gov.au](http://www.fish.wa.gov.au)), first MSC certification assessment (Banks et al. 2015) and bycatch survey sampling from 2015-17 (Banks et al. 2019), no species that meet the definition of "main" primary species could be identified in the EGPMF catch.

The only other commercial fishery in Exmouth Gulf is a small beach seine fishery managed by the DPIRD (Exmouth Gulf Beach Seine and Mesh Net Managed Fishery) targeting mainly whiting, sea mullet, tailor and western yellowfin bream. The beach seine fishery is managed within the Shark Bay Beach Seine and Mesh Net Fishery (<https://www.wafic.org.au/fishery/inner-shark-bay-scalefish-fishery/>). Other fisheries ranges may overlap with EGPMF, although their fishing effort is not likely to overlap with Exmouth Gulf. This will be clarified at the site visit.

A full list of species from the recent bycatch surveys conducted in the EGPMF will be required in order to identify any minor primary species managed in overlapping fisheries, otherwise minor primary species will not be scored.

### **8.3.3 Primary Species Management (PI 2.1.2)**

A strategy for main primary species is not required because there are no main primary species in the catch. Any minor primary species that will eventually be identified, would be managed according to reference points in the beach seine fishery. No finfish species are regularly retained in the EGPMF. Management measures for any minor primary species in EGPMF are those directed to reduce unwanted catch (presented in the Secondary Species Management section).

### **8.3.4 Primary Species Information (PI 2.1.3)**

When assessing the Information Performance Indicator (PI), both, availability and adequacy of information are assessed.

#### **Availability of Information**

Quantitative information on total catch composition is available from bycatch surveys conducted in 2015-2017 period. Findings from these surveys are summarised in the second MSC annual audit of the fishery (Banks and McLoughlin, 2018). This information, together with the latest status of fisheries report (Gaughan et al. 2018) were used to identify any primary species in the EGPMF catch (species with management tools in place – limit or target reference points- in the UoA or in overlapping fisheries).

The available information indicates that all non-target species in the EGPMF catch have percentage contributions less than 5% and all species > 2% are not vulnerable, thus there are no main primary species. Some species managed in Exmouth Gulf beach seine fishery might be caught by the EGPMF (e.g. whiting, sea mullet), although these do not feature among the fifty most abundant species with contributions up to 0.2% in the catch (list provided to the CAB).

## **Adequacy of Information**

In assessing the adequacy of information, the following need to be considered:

- The precision of the estimates (qualitative or quantitative);
- The extent to which the data are verifiable (on their own or in combination with other data sources);
- Potential bias in estimates and data collection methods;
- Comprehensiveness of data; and
- The continuity of data collection. (SA3.6.3.2, MSC, 2018a, p.37)

The information sources are recent and historical independent surveys of catch composition undertaken by scientific observers appointed by DPIRD and, and VMS monitoring and DPIRD published reports on fisheries status (see Banks and McLoughlin, 2018, Kangas et al. 2007). These can be considered lower bias, higher verifiability (see Column A in Table 13). The available information is adequate to show that no species present in EGPMF catch classify as “main” primary.

In addition, fishers’ logbooks provide information on the retained catch, which might be relevant to minor primary species. Interviews with fishers and management staff will be conducted at the site visit.

**Table 13. Examples of data collection methods according to their level of verifiability**

| Column A (higher level of verifiability, lower bias)            | Column B (lower level of verifiability, higher bias)                    |
|---|---|
| Observer programmes   | Standardised logbooks   |
| Electronic monitoring of location/position (e.g., VMS, AIS)     | Interviews with fishers   |
| Other technologies to monitor impact/compliance (e.g., cameras) | Enforced mandatory retention of all catch with full dockside monitoring |
| Independent research projects or programmes                     | Information obtained from co-management and community based management. |

Source: MSC, 2018b, p72

Only a list of 50 most abundant species in the catch from recent bycatch surveys was available at this stage of the assessment. It is possible that some species such as whiting that are targeted by the beach seine fishery are caught in lower quantities. These species might classify as minor primary. **A full list of species found in the bycatch survey samples needs to be provided at the time of the site visit if minor primary species outcome is to be scored, otherwise the information will not be adequate to assess the impact on minor primary species at SG100.**

The MSC guidance specifies that, when considering species for designation as ‘main’, temporal trend in catches needs to also be considered and a precautionary approach needs to be used to determine whether species shall count as ‘main’. This should include taking into account the variability of the catch composition over the last five years or fishing seasons (MSC, 2018b, p.57), information which is not available for the UoA. The MSC guidance also clarifies that, depending on data availability, teams may choose a different length of the time series, but a rationale should be provided in all cases of the method chosen (MSC, 2018b, p.57).

For EGPMF, survey catch data provided to CAB was sampled in 2016 at the start and the end of the season, in 2015 at the end of the season and in 2017 at the beginning of the season. Average catches of the most abundant species over the three-year period were considered representative of the annual catch, but do not allow an assessment of interannual catch variability. Nevertheless, data from these surveys, combined with historical data showing no main bycatch (Banks et al. 2015), constitute adequate quantitative information to determine with high degree of certainty that there are no ‘main’ primary species in the EGPMF’s catch.

There is a commitment for regular quantitative data collection through bycatch surveys every three years (DOF, 2014a). These will ensure the continuity and the comprehensiveness of data collection.

Information is adequate to assess that there are no main primary species.

### **8.3.5 Secondary Species Outcome (PI 2.2.1)**

The MSC defines **secondary species** as species that are in the scope of MSC standard (fish and shellfish species) and that are not managed according to reference points. In other regions, secondary species include some out-of- scope species that are not ETPs (endangered, threatened, protected), although in Australia, all out-of-scope species, in general, constitute ETPs.

The MSC specifies that:

*“Secondary species could in some cases be landed intentionally to be used either as bait or as food for the crew or for other uses, but may also, in some cases, represent incidental catches that are undesired but somewhat unavoidable in the fishery. Given the often-unmanaged status of these species, it is unlikely that reference points for their biomass or fishing mortality to be in place, as well as a general lack of data availability is to be expected” (MSC, 2018b, p.46).*

### **Main Secondary Species**

The same definitions of “main” and “less resilient” species apply as for primary species.

Quantitative information on catch composition was available from 2015-17 bycatch surveys (summary results available in the second annual surveillance to the MSC certification report, Banks and McLoughlin, 2018). No species reached the cut-off of 5% average percentage contribution individually. No species with average contributions over 2% could be considered less resilient. This information is consistent with historical data (Kangas et al. 2007) and adequate to demonstrate that no secondary species are main.

In consequence, no secondary species can be considered ‘main’.

### **Minor Secondary Species**

All species in the catch that are not target, primary or ETP species are minor secondary. According to a comprehensive biodiversity survey from 2003-04 (Kangas et al. 2007) and the new bycatch surveys, there are many minor secondary species. When scoring the Outcome PI for secondary species, there are no requirements at scoring guides 60 and 80 for minor species, but only at SG100.

As information to assess the status of each minor secondary species against their biologically based limits is not available, these species will not be assessed at SG100.

### **8.3.6 Secondary Species Management (PI 2.2.2)**

The MSC requires that at least ‘measures’ are in place for a score of 60, a ‘partial strategy’ for a score of 80 and a ‘strategy’ for a score of 100. At SG60 and SG80, the requirements refer only to “main” species.

**Measures** are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere.

A **partial strategy** represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically.

A **strategy** represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome, and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification of fishing practices in the light of the identification of unacceptable impacts. (MSC, 2018a, p.29).

The third objective of the EGPMF Harvest Strategy 2014-2019 aims to ensure fishery impacts do not result in serious or irreversible harm to bycatch species populations (all secondary species). Performance indicators specified for this objective include: 1. Periodic Risk Assessments expected to not generate high risk level for bycatch component of the ecosystem; 2. Annual management arrangements in place, 3. Extent of area trawled annually to be less than 50% of total allowable fishing area; 4. Extent of use and type of BRDs used (approved BRDs should be used 100% of the time). If any of these performance indicators are not achieved at their target levels, a review of the risk levels will be completed and appropriate management strategies to reduce the risk will be investigated and may be initiated (DPIRD, 2018). Performance indicators are evaluated annually with the occasion of ERA updates and the results are published in status of fisheries and resources reports on DPIRD website (e.g. Gaughan et al. 2019). **This harvest strategy is now due for an update although the 2015-2019 Strategy is still in force until it is replaced.**

To achieve the management objective for bycatch component, specific and non-specific measures are in place.

### **Specific measures for secondary species**

The strategy to manage secondary species is laid out in the EGPMF Bycatch Action Plan. This includes the application of bycatch reduction devices (grids/turtle excluder devices - TEDs and fish excluder devices – FEDs) as measures specifically designed for secondary species management. The BAP specifies provision of support for further BRD development and testing of effectiveness for reducing bycatch (DOF, 2014a).

The EGPMF has been proactive in participating in BRD development projects and best practice workshops (e.g. <http://www.frdc.com.au/Archived-Reports/FRDC%20Projects/2016-057-DLD.pdf>). **Any information about the effectiveness and implementation of new BRD devices and gear modifications should be provided at or before the site visit.**

### **Non-specific measures**

All EGPMF vessels use hopper systems. The use of hoppers increases the chance of post-capture survival for discarded species through keeping the catch in a wet well and prompt removal. The hopper is described as a tank on the deck, filled with sea water, into which each catch is spilled at the end of a trawl. The catch is removed from the bottom of the hopper by way of a sorting conveyor that moves past the crew. This allows the crew to remove target species and byproduct, with bycatch being returned to the sea via a discard chute, usually within 1 minute of being removed from the hopper. (Lawrence and Rose, 2004).

The input controls that are in place, are likely to benefit all secondary species stocks by limiting fishing effort, even if these measures were not specifically designed to manage this component of the ecosystem.

Overall effort in the fishery is constrained by a cap on the number of licences / vessels (limited entry), limits on fishing gear (headrope capacity), restrictions on the number of available fishing days each year (seasonal closure) and restricted trawl hours (mainly night-time trawling). Monthly moon closures of at least four days around each full moon and significant permanent and temporary closed areas throughout the fishery also reduce the effective fishing effort.

### **Monitoring and ecological risk assessment**

Fishing activity is monitored using the Vessel Monitoring System (VMS) (DPIRD, 2020). This allows knowledge of the time and location of the gear impact on secondary species, and also verifying compliance with closures.

There is a commitment for regular quantitative data collection through bycatch surveys every three years (DOF, 2014a). These allow identifying secondary species and monitoring mortalities as percentage of total catch, in other words, monitoring the risk to secondary species.

Regular ecological risk assessments (ERA) are undertaken (DOF, 2014a). ERAs are undertaken by DPIRD as part of its EBFM framework and the outputs inform the development of harvest strategies. The latest ERA workshop took place in September 2019. No secondary species or groups were considered to be at medium or high risk from the fishery (Stoklosa, 2019).

Monitoring and ecological risk assessments allow modification of fishing practices in the light of the identification of unacceptable impact.

**Overall, there is a strategy to manage minor secondary species.**

### **Management Strategy Evaluation**

Based on previous research, bycatch to prawn ratio in EGPMF was 2-5:1 (DOF, 2014a). The recent survey results have shown a bycatch to prawn ratio of 0.8:1 (Banks and McLoughlin, 2018). This represents a significant reduction and an objective basis of confidence that the strategy works.

To be noted that previous ratios considered bycatch as the discarded catch. The most recent ratio was derived as all non-target catch to target prawn catch based on survey data provided by DPIRD. As some of the non-target species are retained in low quantities, the discarded to prawn catch ratio will be slightly lower than 0.8:1.

### **Review of alternative measures to minimise mortality of unwanted catch**

“Unwanted catch” represents the part of the catch designated as “bycatch” in the management plan of the fishery and also species that are prohibited to be retained in that fishery. Unwanted catch may also include

the part of the catch that has been thrown away or slipped where the components of that catch may not survive after release (MSC, 2018b, p 49).

The MSC guidance defines “Alternative measures” as alternative fishing gear and/or practices that have been shown to minimise the rate of incidental mortality of the species or species type to the lowest achievable levels (MSC, 2018b, p 35).

When assessing this scoring issue, CABs are expected to review evidence to determine whether the client (UoA) has undertaken a review of the potential effectiveness and practicality of alternative measures to minimise mortality of unwanted catch of main species, in order to achieve a conditional pass and evidence that such reviews occur at least every five years, for an unconditional pass. This evidence could be, for example, a summary document listing information and measures reviewed along with an analysis of the measures and their appropriateness for the UoA, or the minutes of a meeting which has considered alternative measures (MSC, 2018b, p 64).

There are no main secondary species in EGPMF catch, thus this scoring issue does not need to be scored at SG60 and SG80. Biennial reviews for all secondary species are required at SG100.

The EGPMF has been engaged over the long history of the fishery, in developing and adopting alternative measures to reduce mortality of secondary species in the catch, with significant achievements (bycatch to prawn ratios of 20:1 in the mid-seventies (Banks et al. 2015) to 0.8:1 in recent years).

There has been a review of the potential effectiveness and practicality of alternative measures to minimise EGPMF-related mortality of unwanted catch of secondary species during BRD trials and implementation before 2005, and continuous improvement since.

Internal reviews of alternative measures take place, although this process does not occur according to a regular schedule and there are no written records about the outcome of such reviews (George Kailis, pers com, December 2019).

### **8.3.7 Secondary Species Information (PI 2.2.3)**

#### **Availability of Information**

The BAP (DOF, 2014a) states that the current monitoring and information system includes:

- fishery-dependent data collection consisting in daily logbooks and VMS (vessel monitoring system)
- fishery-independent surveys
- research

Recent quantitative information on total catch composition is available from bycatch surveys conducted in 2014-2017 period. These surveys were conducted on board of commercial prawn trawl vessels with the Department of Fisheries (now DPIRD) staff on board. The surveys were undertaken to satisfy a condition of the initial MSC certification of the fishery. The condition required the fishery to collect information on the nature and the amount of bycatch that was adequate to determine the risk posed by the fishery and the effectiveness of the management strategy. The results of the surveys are summarised in the second annual audit of the fishery when the condition was closed (Banks and McLoughlin, 2018). This information, as well as the comprehensive biodiversity study from 2004, were used to identify main and minor secondary species in the EGPMF catch.

Among research studies relevant to secondary species in EGPMF, a study of the effectiveness of bycatch reduction devices in trawl nets was completed in 2003 (Kangas & Thomson 2004) and a comprehensive biodiversity survey, comparing faunal assemblages in trawled and untrawled areas within Exmouth Gulf, was completed in 2004 (Kangas et al. 2007).

Another source of information on the risk EGPMF poses to secondary species consists in regular ERAs undertaken by DPRD with stakeholder participation as part of its EBFM framework. ERA outputs inform the development of harvest strategies. The latest ERA workshop took place in September 2019 and no secondary species or groups were considered to be at medium or high risk from the fishery (Stoklosa, 2019). DPIRD internal ERAs are undertaken annually and the results are published in the fisheries status reports (e.g. Gaughan et al. 2019). ERA methodology for the risk assessment of the EGPMF is based on the global

standard for risk assessment and risk management (AS/NZS ISO 31000), which has been adopted for use in a fisheries context (Fletcher et al. 2002, Fletcher 2005; 2015 in Stoklosa, 2019).

### **Adequacy of Information**

In assessing the adequacy of information, the following need to be considered:

- The precision of the estimates (qualitative or quantitative);
- The extent to which the data are verifiable (on their own or in combination with other data sources);
- Potential bias in estimates and data collection methods;
- Comprehensiveness of data; and
- The continuity of data collection. (SA3.6.3.2, MSC, 2018a, p.37)

The information sources are recent and historical independent surveys of catch composition undertaken by scientific observers appointed by DPIRD and, and VMS monitoring and DPIRD published reports on fisheries status (see Banks and McLoughlin, 2018, Kangas et al. 2007). These can be considered lower bias, higher verifiability (see Column A in Table 13). The available information is adequate to show that no species present in EGPMF catch classify as “main” primary.

In addition, fishers’ logbooks provide information on the retained catch, which might be relevant to minor secondary species. Interviews with fishers and management staff will be conducted at the site visit to confirm that there are no “main” secondary species.

The MSC guidance specifies that, when considering species for designation as ‘main’, temporal trend in catches needs to also be considered and a precautionary approach needs to be used to determine whether species shall count as ‘main’. This should include taking into account the variability of the catch composition over the last five years or fishing seasons (MSC, 2018b, p.57), information that is not available for the UoA. The MSC guidance also clarifies that, depending on data availability, teams may choose a different length of the time series, but a rationale should be provided in all cases of the method chosen (MSC, 2018b, p.57).

For EGPMF, survey catch data provided to CAB was sampled in 2016 at the start and the end of the season, in 2015 at the end of the season and in 2017 at the beginning of the season. Average catches of the most abundant species over the three-year period were considered representative of the annual catch, but do not allow an assessment of interannual catch variability. Nevertheless, data from these surveys, combined with historical data showing no main bycatch (Banks et al. 2015), constitute adequate quantitative information to determine with high degree of certainty that there are no ‘main’ secondary species in the EGPMF’s catch.

There is a commitment for regular quantitative data collection through bycatch surveys every three years (DOF, 2014a). These will ensure the continuity and the comprehensiveness of data collection.

Information is adequate to assess the impact and to support a **strategy** to manage **all** secondary species.

### **8.3.9 Endangered, Threatened, Protected Species (ETPs) Outcome (PI 2.3.1)**

ETP species are species that are recognised by national ETP legislation or listed in the binding international agreements such as Appendix 1 of the Convention on International Trade in Endangered Species (CITES), or binding agreements concluded under the Convention on Migratory Species (CMS). The requirements of the EPBC Act includes all the other binding agreements’ requirements, thus compliance with this act reflects also compliance with other national or international legislation. The EGPMF has been accredited under the EPBC Act Part 13 since 2003, with the export approval extended to 20 August 2025 (DEE, 2015).

The EGPMF interacts with sea snakes, seahorses, pipefish, sawfish and turtles (Table 14).



**Table 14. Exmouth Gulf Prawn Managed Fishery ETP species interactions.**

| Species/Group         | 2015* | 2016* | 2017* | 2018** | 2019*** |
|-----------------------|-------|-------|-------|--------|---------|
| <b>Marine Turtles</b> |       |       |       |        |         |
| alive                 | 16    | 16    | 35    | 20     | 20      |
| dead                  |       |       |       |        |         |
| unknown               |       |       |       |        |         |
| <b>Sea snakes</b>     |       |       |       |        |         |
| alive                 | 481   | 1,262 | 1,436 | 1,167  | 944     |
| dead                  | 71    | 267   | 115   | 81     | 50      |
| unknown               |       |       |       |        |         |
| <b>Syngnathids</b>    |       |       |       |        |         |
| alive                 |       | 13    | 37    | 3      | 5       |
| dead                  |       | 11    | 34    | 1      | 1       |
| unknown               |       |       |       |        |         |
| <b>Sawfish</b>        |       |       |       |        |         |
| alive                 |       | 11    | 3     | 4      | 13      |
| dead                  |       | 9     | 10    | 5      |         |
| unknown               | 6     |       |       | 1      |         |

\*Banks et al. (2019)

\*\*DPIRD (2020)

\*\*\*Kangas et al. 2020

## **Direct Effects**

### **Sea snakes**

About 95% of the interactions by number of individuals are with sea snakes. As a condition to the first MSC certification assessment, the fishery had to provide sufficient information to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species and to provide relevant information sufficient to determine whether the fishery may be a threat to the protection and recovery of the ETP species, in particular sea snake species.

A Crew Member Observer Program has been developed, educational workshops on species identification and ETP species best practice handling were provided by experts from research institutions, and printed materials were produced and disseminated (including a protected species guide). Independent researchers and experts were involved in training programs for skippers and crew in safe handling and emergency procedures. Photography was used as tool for species identification by the crew member observers, with photographs of specimens difficult to identify forwarded to experts. Scientific observers on commercial trawls independently validated the identification and quantification of interactions with sea snakes (Banks et al. 2019). Fishery-independent, multi-institutional surveys have been conducted and incorporated into an AIMS/NESP project on sea snake species habitat occupancy (Udyawer et al. 2016, Udyawer and Heupel, 2017).

Compared to sea snake surveys from 2014-2015 (Udyawer et al. 2016), which will be discussed later, the most abundant species in the sea snake catch identified by CMOP in 2018 were different, with a higher percentage of Dubois sea snake in recent data, although this might be due to the small sample used in earlier surveys (15 trawls).

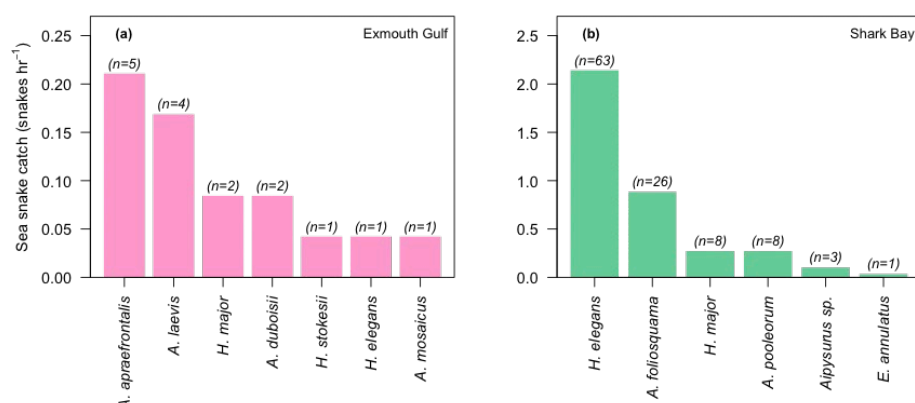
**Table 15. Sea snake catch composition identified by earlier DPIRD surveys (Udyawer et al. 2016) and recent CMOP reports**

| Seasnake species                                | DPIRD (2014-15) | CMOP (2018)   |
|---|-----------------|---------------|
| Short-nosed ( <i>Aipysurus apraefrontalis</i> ) | 31%             | 25%           |
| Dubois sea snake ( <i>A. duboisii</i> )         | 12%             | 40%           |
| Olive sea snake ( <i>Aipysurus laevis</i> )     | 25%             | Not specified |

|  |              |               |
|--|--------------|---------------|
| Olive headed ( <i>Hydrophis major</i> )                                    | 12%          | Not specified |
| Stoke's sea snake ( <i>Astrotia</i> ( <i>Hydrophis</i> ) <i>stokesii</i> ) | 6%           | Not specified |
| Mosaic sea snake ( <i>A. mosaicus</i> )                                    | Not reported | Not specified |
| Spotted sea snake ( <i>H. ocellatus</i> )                                  | 6%           | Not specified |
| Elegant snake ( <i>H. elegans</i> )  | 6%           | Not specified |

Udyawer et al. 2016 conducted preliminary analyses on data from scientific demersal trawl surveys undertaken by the WA Department of Fisheries (DOF, now DPIRD) within Exmouth Gulf (August and October 2014; March – May and September-October 2015) and Shark Bay (August and November 2014; February – June, August and November 2015; February – May 2016). Surveys consisted of a total of 15 trawls within Exmouth Gulf that ranged from 60 – 150 min (total effort 23.7 hrs) and 80 short trawls within Shark Bay, ranging from 20 – 30 min (total effort 29.4 hrs). Sea snakes captured in these surveys were photographed and identified to species level and live snakes were released in healthy condition. Trawl survey data provided critical information on the range extension of two critically endangered species found within the North West Marine Region (NWMR) (*A. apraefrontalis* and *A. foliosquama*) (Udyawer et al. 2016).

Catch composition from both bays indicated that sea snakes were caught in low numbers within Exmouth Gulf (16 sea snakes) as compared to Shark Bay (109 sea snakes); nevertheless, critically endangered species were encountered in both coastal habitats (Figure 18). Logistic regression showed that sea snakes in general had high rates of pre-release survival regardless of trawl duration, indicating that overall, snakes encountered in these surveys could be robust to short to moderate durations of trawls (Udyawer et al. 2016).



**Figure 18. Catch rate and species composition of sea snakes in trawl surveys within (a) Exmouth Gulf and (b) Shark Bay. Numbers of each species is represented within parentheses above each bar.**

Short-nosed sea snake (*Aipysurus apraefrontalis*) is listed as critically endangered (CR) on the IUCN Red List (Lukoschek et al. 2010) and Australia's EPBC Act (Environmental Protection and Biodiversity Act, 1999) due to its restricted distributions and documented population declines (DEE, 2019a). It is also listed as CR in WA (Biodiversity Conservation Act 2016). Scattered specimens were found on the NW coast of Australia but were treated as vagrants in the IUCN Red List and EPBC Act assessments, on the assumption that breeding populations of the species were restricted to Ashmore and Hibernia (or any other Timor reefs) (Sanders et al. 2015).

Short-nosed sea snake has disappeared from Ashmore reef, but it was found in Exmouth Gulf and offshore from Roebourne and Broome. Genetic studies have shown that the snakes found belonged to separate breeding population (Sanders et al. 2015). The authors of a new AIMS/NESP study, using maximum entropy models, have identified Exmouth Gulf as one of the preferred habitats for short-nosed sea snake, along with Ashmore Reef complex (Udyawer and Heupel, 2017).

The criteria for the species being listed as CR on both, IUCN and EPBC lists, are debatable, according to D'Anastasi et al. (2016), because the range can no longer be considered restricted to Ashmore and Hibernia Reefs, from where they disappeared between 1998 and 2002. As the species is caught in prawn trawls, it is

vulnerable to being taken as bycatch. However, the species disappearance from Ashmore reef could not be attributed to trawling and remains unexplained (D'Anastasi et al. 2016).

Of the sea snakes caught, 82% of the individuals were returned to water alive in 2016 and 93% in 2017. According to data reported for 2019, 95% of the sea snakes caught were returned to water alive. This might be the result of better handling due to the education programs provided to the skippers and crew members.

As most snakes are returned to water alive, direct effects of the UoA are **highly likely** to not **hinder recovery** of sea snake species in general and of short-nose sea snake in particular.

While most sea snakes are returned to water alive, short and long-term post-capture survival is unknown. Estimates of maximum sustainable yield are needed to assess how fisheries interactions may affect population structure and identify particular species or life-stages that may be vulnerable to current fishing efforts (Udyawer et al. 2016). There is no **high degree of confidence** that there are no **significant detrimental direct effects** of the UoA on sea snake species.

## Marine Turtles

EGPMF successfully reduced its interactions with turtles by introducing mandatory grids in 2002/2003. The effectiveness of these TEDs was shown to be 95-100% (Kangas and Thomson, 2004) in reducing turtle bycatch. All interactions reported in the last five years resulted in the turtles being returned to sea alive.

Turtles are now mostly caught in try gear, which do not have grids. Due to the smaller size of these nets and very short duration of exploratory trawls and the turtles are usually returned alive.

Green turtles are the most abundant turtles in Exmouth Gulf and have a large distributional range outside of the Gulf (Kangas et al. 2006). Adult green turtles are herbivorous and are likely to forage in the shallow seagrass and macroalgal beds. Despite their high abundance in the Gulf, very few green turtles interactions have been reported throughout the history of the fishery (Kangas et al. 2015).

Loggerhead turtles are less common than green turtles in Exmouth Gulf and have a wider distribution outside the Gulf (Kangas et al. 2006). Loggerheads prefer to forage over open substrate, such as the mud / shell substrate that dominates the trawl grounds in the Gulf. It has been suggested that loggerheads may be susceptible to reflex asphyxiation rather than drowning during extended periods of submersion (i.e. in the trawl net). However, there have been very few reported interactions with loggerhead turtles over the history of the fishery. All captured turtles have been returned to the water alive (Kangas et al. 2015).

Hawksbill turtles are relatively uncommon within Exmouth Gulf and there have been no reported interactions with hawksbill turtles over the history of the fishery (Kangas et al. 2015).

Exmouth Gulf is the southern limit of the flatback turtle's distributional range, and they are relatively uncommon within the Gulf. Given their preferred diet and foraging behaviour, they may occur on the trawl grounds. There have been few reported interactions with flatback turtles over the history of the fishery, with all turtles were returned to the water alive (Kangas et al. 2015).

Turtle bycatch mitigation in EGPMF has been addressed with the introduction of the mandatory use of grids in 2002/03. These grids have shown to be effective in the fishery with a 95 – 100 % reduction in turtle bycatch (Kangas and Thomson, 2004). In 2019, out of the 20 turtle interactions, seven were identified as green turtles, while the rest were reported as unidentified.

Direct effects of the UoAs are **highly likely** to not **hinder recovery** of marine turtle species, given the fact that all are returned to water alive and in good conditions. However, short and long-term post-capture survival is not known. There is no **high degree of certainty** that there are no significant detrimental direct effects due to the UoAs.

## Seahorses, Seadragons and Pipefish (Syngnathids and Solenostomids)

Various species of syngnathids are found within Exmouth Gulf, along seagrass beds and detached algal communities (Kangas et al. 2006). Although all members of the Syngnathidae and Solenostomidae families are listed marine species under the EPBC Act, no species is currently EPBC listed as threatened. In shallower waters, pipefish and seahorses are a dominant group of fish and are important predators of benthic organisms. (Kangas et al. 2015).

Species found during the biodiversity survey (Kangas et al. 2007), and likely to interact with EGPMF, are: Western spiny seahorse (*Hippocampus angustus*) (IUCN -Least Concern (LC), Pollom, 2017a), *Flat-faced*

seahorse (*Hippocampus planifrons*) (IUCN – LC, Pollom, 2017b), Winged seahorse (*Hippocampus alatus*) (IUCN – not evaluated, <https://www.fishbase.se/summary/59702>), Zebra seahorse (*Hippocampus zebra*) (IUCN – data deficient (DD), Pollom, 2017c), Gray's (Mud) pipefish (*Halicampus grayi*) (IUCN – LC, Kuo and Pollom, 2016), and Short-tailed pipefish (*Trachyrhamphus bicoarctatus*) (IUCN – LC, Pollom, 2016). Current species composition of syngnathid catch is not known. Other species than those mentioned above, which might be listed as endangered on the IUCN Red List, could be caught in small numbers.

Direct effects of the UoAs are **highly likely** to not **hinder recovery** of syngnathid and solenostomid species. While most individuals are returned to water alive, short and long-term post-capture survival is not known. There is no **high degree of certainty** that there are no significant detrimental direct effects due to the UoAs.

## Sawfish

Exmouth Gulf is situated at the southern end of the primary distribution range of sawfish species (Table 16), EGPMF's interactions with sawfish being relatively high compared to SBPMF.

**Table 16. Sawfish species that may occur within the EGPMF fishing area and their conservation status.**

| Species Name        | Latin Name                    | EPBC Act                   | IUCN Red List               | WA  |
|---------------------|-------------------------------|----------------------------|-----------------------------|---|
| Narrow sawfish      | <i>Anoxypristis cuspidata</i> | Migratory (DEE, 2019b)     | EN (D'Anastasi et al. 2013) | -   |
| Green sawfish       | <i>Pristis zijsron</i>        | Migratory, VU (DEE, 2019c) | CR (Simpfendorfer, 2013)    | VU (Biodiversity Act, 2016, DEE, 2019c)       |
| Large-tooth sawfish | <i>Pristis pristis</i>        | Migratory, VU (DEE, 2019d) | CR (Kyne et al. 2013a)      | P3 Priority Flora and Fauna List (DEE, 2019d) |
| Dwarf sawfish       | <i>P. calvata</i>             | Migratory, VU (DEE, 2019e) | EN (Kyne et al. 2013b)      | P1 Priority Flora and Fauna List (DEE, 2019e) |

Narrow sawfish is the most commonly caught species in Australian fisheries, including in Western Australia (D'Anastasi et al. 2013). Even though this species is more productive than other sawfish species, declines of between 50% and 70% over three generation lengths (~18 years) are suspected. These declines have primarily been attributed to ongoing capture in commercial net and trawl fisheries, with the Narrow Sawfish being particularly susceptible given it has poor post-release survival (D'Anastasi et al. 2013). The low-opening nets used in prawn trawling in WA (Banks et al. 2015) might prevent larger sawfish to enter the net, although their saw can entangle in the net from outside. BRDs are compulsory in EGPMF and these are likely to work in allowing some sawfish that are caught in the net to escape. For example, the use of TEDs in the NPF has resulted in a 73% reduction in the capture of the Narrow Sawfish (*Anoxypristis cuspidata*) (Brewer *et al.* 2006).

Since 2016, there has been a significant improvement in reporting of the status of the ETP individuals upon returning them to sea (i.e. dead or alive). Before 2014, the status was unknown for all sawfish interactions, while in recent year, nearly a half of these are reported as returned alive. Species identification of sawfish has also been integrated into the CMOP and crew education programs (Banks et al. 2019) and it is expected that sawfish mortalities will be reported to species level in the near future. All sawfish that interacted with the EGPMF in 2019 were reported as returned to water alive. The level of sawfish mortality in this fishery is very low compared to sawfish mortalities in other fisheries (e.g. NPF) and direct effects from EGPMF are **highly likely** to not hinder recovery of the species. However, interactions and mortalities are not reported to species level and it is not clear if the individuals released alive will survive or if some belong to critically endangered species. There is no **high degree of confidence** that there are no **significant detrimental direct effects** of the UoA on sawfish species.

## Indirect Effects

The MSC vocabulary does not clearly define "indirect effects" to ETP populations, although these can be interpreted as effects other than derived from direct contact with fishing gear or fishing activities. Indirect effects can occur as entanglements in lost gear, behaviour modification of predators that feed on discards (e.g. dolphins and birds, not the case for EGPMF – very low amount of discards), trophic effects (e.g. the fishery acting as a competitor for the ETP's preferred food species), population structure effects (e.g. selective catch of certain sizes and life stages of a species), habitat degradation etc.

Some indirect effects to ETPs have been considered with the occasion of ERAs, the Department of Environment assessments and the initial MSC assessment, and the fishery was not considered to have significant detrimental indirect effects. Some indirect effects have not been considered, in special, the effects of multiple capture on reproductive capacity of sea snakes (Udyawer et al. 2016). **Any new information on how possible indirect effects are assessed and monitored should be provided at the site visit.**

### 8.3.10 ETPs Management (PI 2.3.2)

In addition to the definitions of ‘measures’ ‘partial strategy’ and ‘strategy’, defined under Secondary Species Management PI section, a ‘comprehensive strategy’ is applicable to the ETPs Management at the SG100.

A “**comprehensive strategy**” (applicable only for ETP component) is a complete and tested strategy made up of linked monitoring, analyses, and management measures and responses. (MSC, 2018a, p.29-30)

The fourth management objective of the EGPMF Harvest Strategy 2014-2019 is to ensure fishery impacts do not result in serious or irreversible harm to ETP species populations. Performance indicators specified for this objective are: 1. Periodic Ecological Risk Assessments expected to not generate high risk levels for the ETP component; 2. Annual amount of interactions and return status (reported in daily logbooks) will not increase significantly; 3. Annual management arrangements are in place; 4. Extent of area trawled annually expected to remain <50% of total allowable fishing area; 5. Extent of use and type of BRDs in use (approved BRDs expected to be used 100% of the time) (DPIRD, 2018).

The strategy for the management of ETP species consists in measures to reduce capture, such as BRDs, measures to increase survival such as hoppers (for syngnathids), best practice handling, monitoring and reporting, and analyses. The strategy is under development and in a stage of accumulating knowledge and building capacity. The information is not yet sufficient to measure trends reliably and design response strategies (mainly because of mortality reporting uncertainty in earlier years) thus, the strategy is not yet comprehensive.

#### **Specific Measures**

##### ***BRDs***

The use of TEDs has been introduced primarily to allow turtles and other large animals escape. In 2005, the EGPMF successfully gained certification from the United States Department of State for their BRD compliancy and the use of turtle exclusion devices (TEDs), allowing licensees to export prawns to the US market. In order to meet this exemption, the fishery was required to demonstrate that local legislation that required fishers to use TEDs that meet US standards is in force and that the WA Government effectively monitors compliance and enforces penalties for violations (Banks et al. 2015). However, at the 2016 assessment, the industry declined to implement the operational changes required because they were determined to have been prohibitive to future gear innovations (Patrick Cavalli, pers comm 24 February 2020). MG Kailis has engaged an independent advisor, Dr John Wakeford, to provide advice on ongoing improvements relating to bycatch and TEP interactions (George Kailis, email communication, 24 February 2020).

BRD research has shown mixed results concerning sea snake catch reduction. TEDs reduced sea snake catch by 42% in Shark Bay but there was no significant difference in Exmouth Gulf at the time of the research (Kangas and Thomson, 2004). Also, in the NPF, TEDs were shown to reduce the catch of narrow sawfish by 73% (Brewer et al. 2006). **Any new evidence of ETP interactions reductions from trials and implementation of new devices should be provided.**

##### ***Best practice handling***

Experts from several institutions were engaged in education programs for skippers and the crew in best practice handling of ETP species (Banks et al. 2019). The higher percentage of ETP individuals returned to water alive in 2019 might be a result of better handling due to these education programs.

#### **Non-specific measures**

##### ***Gear***

EGPMF vessels use low-opening demersal otter trawl nets in quad-rigged formation. The otter boards restrict the vertical opening of the net, allowing large animals like dolphins to swim over the net. (Banks et al. 2015).

##### ***Hoppers***

The use of hoppers is likely to increase the chance of survival of syngnathids during on-deck sorting.

### ***Permanent and seasonal closures***

About 30% of Exmouth Gulf is closed to trawling (Banks et al. 2019). Fishing is allowed only at night and permanent and seasonal closures are in place which offer protection and refuge to ETP species. The fishery operates adjacent to Ningaloo Marine Park and World Heritage Area which might offer protection to migratory ETP species.

**The ETP strategy** in EGPMF is still under development. It has management measures, linked monitoring, there have been some analyses and independent research on sea snake (the most abundant ETP group in the catch), however, it has not been fully tested yet and there are no set responses.

### **Monitoring and ecological risk assessment**

Accurate reporting of interactions with ETPs is a requirement for the fishery in order to gain Australian Department of Environment (now DEE) accreditation that the fishery operates within the Guidelines for the Ecologically Sustainable Management of Fisheries.

The Department of Fisheries (now DPIRD) has signed an MOU with Australian Department of Environment regarding reporting of protected and listed species interactions with WA state fisheries which requires publication of annual statistics to fishery and gear level (where not prohibited by confidentiality requirements) (DEE and DPIRD, 2017). Interaction reports are published in the annual reports of the status of fisheries and the aquatic resources of Western Australia, produced by the DPIRD and available on the department's website ([www.fish.wa.gov.au](http://www.fish.wa.gov.au)).

### ***Crew Member Observer Program (CMOP)***

A CMOP has been implemented primarily to collect data on ETP interactions, in particular on sea snakes and sawfish (number and species identification) (Banks et al. 2019)

### ***Ecological Risk Assessments***

Regular ecological risk assessments (ERA) are undertaken (DOF, 2014a). ERAs are undertaken by DPIRD as part of its EBFM framework and the outputs inform the development of harvest strategies. The latest ERA workshop took place in September 2019. All ETP species that interact with the EGPMF were considered to be at low or negligible risk from the fishery, with the exception of sawfish species which were assessed as medium risk (Stoklosa, 2019). Medium risk for sawfish resulted from the uncertainty of the post-capture survival and the potential for public concern although the fishery complies with the national recovery plan for sawfish species and no additional corrective actions were considered necessary (Stoklosa, 2019).

### **Management Strategy Evaluation**

The available evidence shows that the introduction of TEDs reduced the sea snake catch in prawn fisheries, although with mixed results for EGPMF (Kangas and Thomson, 2004). A monitoring and reporting system has been implemented and now information is being collected in order to support the development of a comprehensive strategy in the near future (Banks et al. 2019) There is an objective basis of confidence that the strategy will work based on information directly about the fishery and the species involved.

### **Management Strategy is Successfully Implemented and Achieving Its Objective**

Reporting of the number of ETP interactions has improved in the recent years, as shown by a higher number of interactions being reported, especially for sea snakes and syngnathids. **Other evidence of successful implementation should be provided before or at the site visit, such as compliance with the use of TEDs, compliance with best practice handling, compliance with reporting of ETPs in logbooks, verifiability of logbook reporting (e.g. evidence from observer programs compared to logbook reporting of interactions, observer coverage for CMOP and for independent observers, if any).**

### **Review of alternative measures to minimize mortality of ETP species**

The same definitions apply as presented in Secondary Species section.

There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species with the occasion of the BRD trials in the EGPMF before their mandatory use in the fishery. The use of TEDs was found to reduce the catch of sea snakes by 42% in Shark Bay but

not in Exmouth Gulf (Kangas and Thompson, 2004). Better handling due to education programs implemented in the fishery, also increased ETP species survival after interactions.

Internal reviews of such alternative measures take place, although not according to a set schedule and no written reports are available (George Kailis, pers com, December 2019). **This information will be verified at the site visit through interviews with persons responsible for reviews. For an ununconditional pass, it should be demonstrated that regular reviews (at least every five years) take place. A condition that such reviews are undertaken every five years and recorded as meeting minutes or as other type of written reports, will be issued otherwise.**

### 8.3.11 ETPs Information (PI 2.3.3)

#### Information Availability and Adequacy to Assess the Impact

The availability and adequacy of information on the UoA's related mortality and impact on ETP species has improved considerably with the fishery meeting Condition 4 of the initial MSC certification. In order to meet this condition, the fishery had to ensure that sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species and that information is sufficient to determine whether the fishery may be a threat to the protection and recovery of the ETP species. This condition was closed at the second surveillance audit (Banks and McLoughlin, 2018). Currently, some quantitative information is available and adequate to assess the UoA related mortality and the impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species, as it was presented in the ETP Outcome PI section.

ETP interactions are not reported at species level, although species specific information, especially for snakes, is collected through the CMOP. **It is not clear if any species level information is collected for sawfish, and syngnathids and this should be clarified before or at the site visit.**

#### Information Adequacy to Support a Strategy

A monitoring program for ETPs, the CMOP, has been implemented and data continue to be collected. Even though currently there is insufficient information to measure trends, data collected will allow this in the near future.

The Department is also engaged as co-investigator on a FRDC project: "Design and implementation of an Australian National Bycatch Report system" and the Department's consolidated protected and listed species bycatch database was in final validation at the time of the third MSC surveillance audit (Banks et al. 2019). The collection of information in a database will make it available for research and support analyses of trends and the development of the strategy. **An update on this project should be provided at the site visit.**

The system of information collection is adequate to measure trends and support a **strategy** to manage impacts on ETP species. Information is not yet adequate to support a **comprehensive strategy** to manage impacts, minimize mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives, mainly because species specific information is limited, there is no information on short-term and long-term post-capture survival of the animals returned to water alive, and information on indirect effects is limited. **Any new information on ETP impacts and management should be provided at the site visit.**

### 8.3.12 Habitat Outcome (PI 2.4.1)

The MSC standard requires that fisheries do not cause serious or irreversible harm to the structure and function of the habitat.

Serious or irreversible harm to "structure or function" of the habitat means changes caused by the UoA that fundamentally alter the capacity of the habitat to maintain its structure and function (MSC, 2018a, 30).

The MSC's definition of "**serious or irreversible harm**" for habitat is similar to the FAO Guidelines' definition of "significant adverse impacts". A key consideration in both definitions is the concept of reversibility or recoverability. Both definitions consider the time frame required for a habitat to recover. Damage requiring 5-20 years (or more) from which to recover should be considered "serious or irreversible" or "significantly adverse", consistent with FAO (2009 in MSC, 2018b, p.83). The MSC defines "recovery" as recovering to at least 80% of the level to which the habitat would eventually recover in the absence of all fishing, considering the existing environmental and anthropomorphic conditions – a hypothetical climax state under existing

conditions. This is often referred to in the text as an “unimpacted” level. The MSC has nominated the 80% level as a reasonable point at which to expect most of the habitat’s structure and function (including abundance and biological diversity) to have been restored, taking into consideration the likely logistic population growth of habitat-forming organisms (MSC, 2018b, p.83)

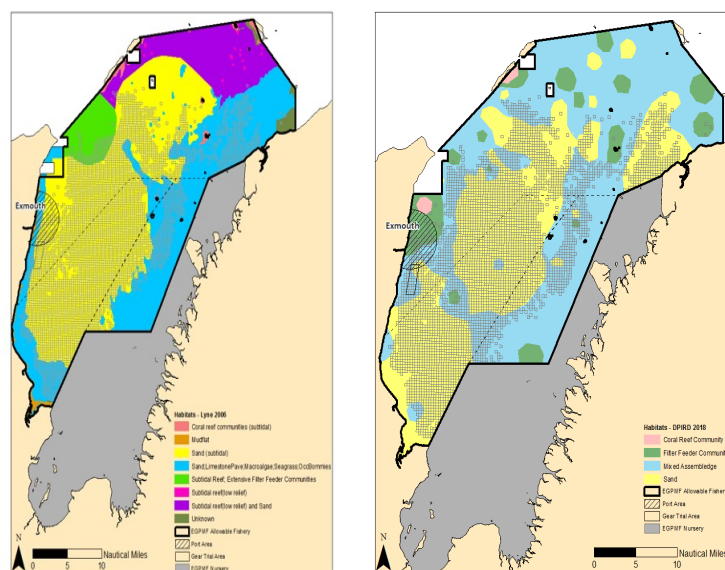
‘Main’ habitats are the commonly encountered ones and Vulnerable Marine Ecosystems (VMEs), while all other habitats classify as ‘minor’.

### **Commonly Encountered Habitat**

A commonly encountered habitat is defined as a habitat that regularly comes into contact with a gear used by the fishery under assessment, considering the spatial (geographical) overlap of fishing effort with the habitat’s range within the management area(s) covered by the governance body(s) relevant to that fishery (MSC, 2018a, p.51).

Habitat mapping work that has recently been completed in response to Condition 6 of the initial MSC certification, shows that the commonly encountered habitat is flat, soft sediment dominated, with no or sparse biota (Figure 19). Quantitative independent studies undertaken by CSIRO on trawl impact on benthic habitats in Exmouth Gulf suggest that these types of sand-silt habitats are resilient to fishing (Pitcher et al. 2017).

Trawl footprint (Figure 19) has been estimated and it shows that a small area of the EGPMF being trawled every year (approximately 22%), while about 21% of the Gulf is permanently closed (Banks et al. 2019, Pitcher et al. 2018). Information on trawl footprint estimates has been detailed in the 3<sup>rd</sup> MSC surveillance report (Banks et al. 2019). New bycatch surveys (Banks et al. 2019) have also shown that the biodiversity supported by this habitat did not change significantly since the 2002/03 comprehensive biodiversity survey (Kangas et al. 2007), suggesting the structure and function of this habitat were not significantly altered.



**Figure 19. Fishery Interaction with Lyne et al. (2006) (Left) and MG Kailis/DPIRD 2018 (Right) maps. Source: Banks et al. 2019**

Under a recent project (Pitcher et al. 2018), the impact of Australian trawl fisheries on benthic habitats has been assessed with consideration of existing spatial management. The project aimed to quantify the overlap of mapped seabed assemblages with trawl footprints, and with areas of spatial management that exclude trawling, by building on previously collated data and assemblage mapping as well as data for Commonwealth and state demersal trawling effort, fishery closures and marine reserves. This report showed that the majority of habitats that overlap with Australian trawl fisheries are minimally exposed to trawl effort or adequately protected by existing spatial closures. Pitcher et al. (2018) have estimated the Relative Benthic Status (RBS) of the predicted assemblages as a measure of the habitat status. RBS provides an estimate of the long-term equilibrium status of the benthos with current trawling effort, relative to that with no trawling. This measure allows an assessment of habitat status against sustainability standards that could mean that >80% of each habitat should be in >80% status (Pitcher et al. 2018). This index could be used as quantitative information

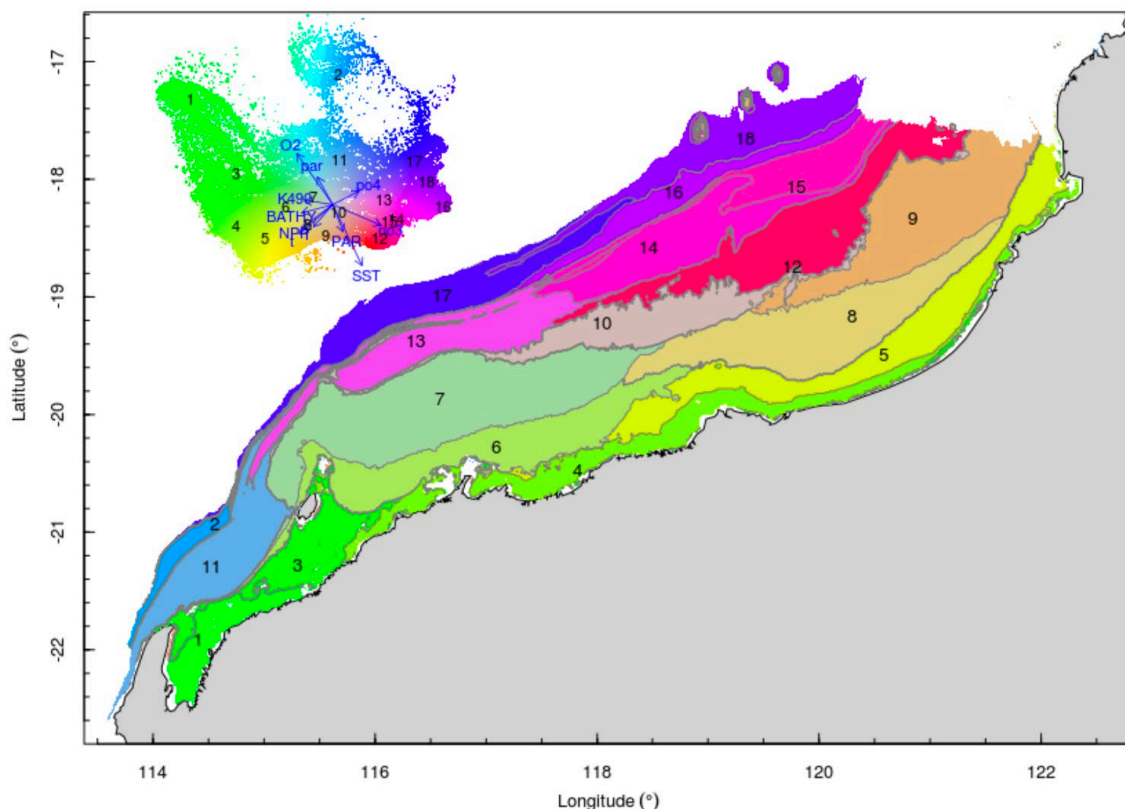


in probabilistic terms that meet MSC requirements of “likely” (60% confidence) “highly likely” (70% confidence) and “high degree of certainty” (80% confidence) (Table SA9, MSC, 2018a, p. 31).

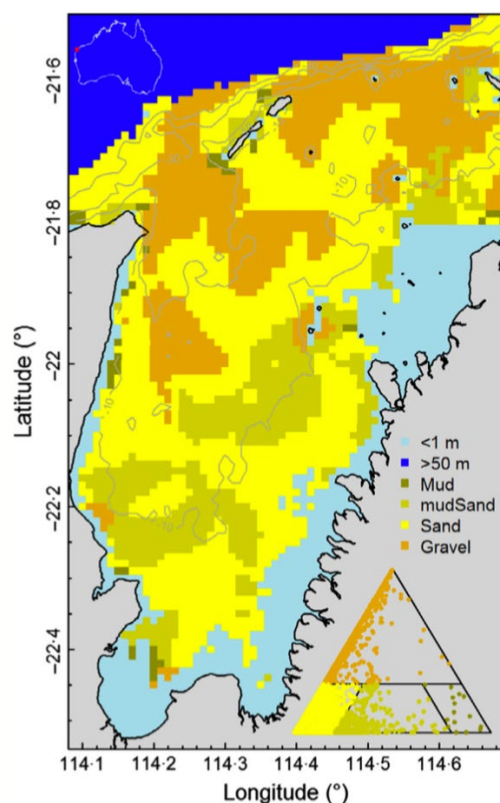
The estimated RBS index for the broad scale habitat that is encountered by EGPMF (assemblage 1 in Figure 20) was 0.918, i.e. there was 91.8% probability that the trawled habitats’ status is above 80% of their unimpacted level (Pitcher et al. 2018). To be noted that only a part of that assemblage is in Exmouth Gulf. The work done in Exmouth Gulf for this project was undertaken at a finer scale, as a case study, showing how such quantitative risk assessment method can be successfully applied in data-limited fisheries, where comprehensive habitat mapping is not available for entire extent of the fishery (Pitcher et al. 2017).

Pitcher et al. (2017), using Exmouth Gulf as a case study, have found that the status of trawled habitats and their RBS value depend on impact rate (depletion per trawl), recovery rate and exposure to trawling. In the prawn-trawl fishery region, gravel habitat was most sensitive, and though less exposed than sand or muddy-sand, was most affected overall (regional RBS = 91% relative to un-trawled RBS = 100%). Muddy-sand was less sensitive, and though relatively most exposed, was less affected overall (RBS = 95%). Sand was most heavily trawled but least sensitive and least affected overall (RBS = 98%). The predicted distribution of mud – sand – gravel sediments is shown in Figure 21. Region-wide, >94% of habitat area had >80% RBS because most trawling and impacts were confined to small areas (Pitcher et al. 2017). These values are evidence that the commonly encountered habitat has not been reduced to a level lower than 80% of its unimpacted level.

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.



**Figure 20. Northwest shelf region #6: map of assemblage patterns and compositional similarity, including Exmouth Gulf (assemblage 1) Source: Pitcher et al. 2018.**



**Figure 21. Map of sedimentary habitats in Exmouth Gulf, between 1 and 50 m depth (contours: 10 m intervals). Inset: ternary (triangle) plot showing classification of mud, sand and gravel grain-size fractions (0–1) to habitats. Source: Pitcher et al. 2017**

### **Vulnerable Marine Ecosystem Habitat (VMEs)**

The MSC requirement for VMEs is that VMEs should not be reduced to a state below 80% of the unimpacted level.

VMEs have one or more of the following characteristics, as defined in paragraph 42 of the FAO Guidelines:

- Uniqueness or rarity – an area or ecosystem that is unique or that contains rare species whose loss could not be compensated for by similar areas or ecosystems
- Functional significance of the habitat – discrete areas or habitats that are necessary for survival, function, spawning/reproduction, or recovery of fish stocks; for particular life- history stages (e.g., nursery grounds, rearing areas); or for ETP species
- Fragility – an ecosystem that is highly susceptible to degradation by anthropogenic activities
- Life-history traits of component species that make recovery difficult – ecosystems that are characterised by populations or assemblages of species that are slow growing, are slow maturing, have low or unpredictable recruitment, and/or are long lived
- Structural complexity – an ecosystem that is characterised by complex physical structures created by significant concentrations of biotic and abiotic features (MSC, 2018b, p.82)

Habitats with the above characteristics classify as VMEs if they are protected specifically because of these characteristics.

The MSC's intent is that, even though the FAO Guidelines were written for deep-sea fisheries, the Guidelines' VME characteristics also apply to non-deep-sea fisheries. Further, when the FAO Guidelines are applied in shallow, inshore waters, the definition of VME could include other species groups and communities (e.g., seagrass beds, complex kelp- dominated habitats, biogenic reefs) (MSC, 2018b, p.83).

EGPMF's grounds are situated adjacent to the Ningaloo World Heritage Area, with a small overlap of the trawl grounds and the general use zone of the Ningaloo Marine Park, where sustainable commercial fishing

is allowed. Muiron Islands Marine Management Areas are also situated north of EGPMF trawling grounds. Muiron Islands Marine Management Areas include marine conservation areas (equivalent with sanctuary zones, where trawling is not permitted) and multiple use areas. EGPMF fishing grounds slightly overlap with multiple use areas. These marine conservation areas were established to conserve marine habitats in general, although habitats that would classify as VME could not be identified in these areas. Within the Ningaloo Marine Park, there are sanctuary and special purpose zones with the role to protect vulnerable filter feeder habitats, although these are not inside Exmouth Gulf (DEC/DOF, 2009).

**No VMEs could be identified in Exmouth Gulf and this scoring issue does not need to be scored.**

### **Minor Habitats**

There is minimal interaction with other habitats. This has been detailed in the third surveillance report in Banks et al. (2019).

According to the new habitat map (MG Kailis/DPIRD, 2018 in Banks et al. 2019) minor habitats are:

- Coral reef
- Filter feeder habitat
- Mixed assemblage (macro algae, seagrass, anemones, ascidians, bryozoans, soft coral) (Table 17).

**Filter feeder habitat** can be considered the most sensitive habitat and potential VME if its structure and function will be proven to have VME characteristics. The participants at the 2019 ERA workshop considered that this habitat type was at a medium risk from the fishery's operational activities (Stoklosa, 2019). However, at this stage there are no rules and regulations for the protection of filter feeder habitat that overlaps with the EGPMF and it cannot be assessed as VME. In any case, the overlap with the footprint is less than 20%, which is consistent with the MSC standard that requires VME to not be reduced to less than 80%. The overlap in 2018 was about 6% of the habitat range, mostly trawled at low intensity, less than 2% being trawled at medium intensity. The 2018 overlapping area is less than the 2012-16 cumulative overlap (see Table 17). In addition, extensive filter feed habitat occur within the Ningaloo Marine Park, while the role of the filter feeder patches in Exmouth Gulf may not be as significant. Kangas et al. (2015) state that some areas of high biodiversity such as sponge gardens can be found within trawlable areas but these may not be permanent structures given the high natural environmental disturbance regime (e.g. storm surges, tides, flooding and cyclones).

**Table 17 Intensity level of 2018 and 2012-16 trawl footprint within each habitat type (%) (DPIRD 2018).**

| Intensity         | Coral Reef 2018 | Coral Reef 2012-16 | Filter Feeder 2018 | Filter Feeder 2012-16 | Mixed Assemblage 2018 | Mixed Assemblage 2012-16 | Sand 2018    | Sand 2012-16 | Total 2018   |
|-------------------|-----------------|--------------------|--------------------|-----------------------|-----------------------|--------------------------|--------------|--------------|--------------|
| <b>NONE (0)</b>   | 100.0           | 99.9               | 93.8               | 91.9                  | 78.1                  | 74.7                     | 29.5         | 27.8         | 58.1         |
| <b>1 (1 - 5)</b>  | 0.0             | 0.1                | 4.4                | 6.6                   | 11.0                  | 13.6                     | 21.7         | 18.2         | 15.2         |
| <b>2 (6 - 50)</b> | 0.0             | 0.0                | 1.8                | 1.4                   | 10.9                  | 10.6                     | 45.6         | 43.6         | 25.4         |
| <b>3 (&gt;50)</b> | 0.0             | 0.0                | 0.0                | 0.1                   | 0.0                   | 1.1                      | 3.2          | 10.3         | 1.4          |
| <b>TOTAL</b>      | <b>100.0</b>    | <b>100.0</b>       | <b>100.0</b>       | <b>100.0</b>          | <b>100.0</b>          | <b>100.0</b>             | <b>100.0</b> | <b>100.0</b> | <b>100.0</b> |

Source: DPIRD (2020)

**Mixed assemblage habitat**, as identified in the new habitat map, had an overlap with the trawl footprint slightly higher than 20%. In 2018, however, the overlap of the mixed assemblage habitat was lower than the 2012-2016 cumulative overlap (22% vs 24%) of the habitat range, with no high intensity trawling, and half of the overlapping area being trawled at low intensity.

Macroalgal beds are a significant feature of Exmouth Gulf and are considered responsible for the comparatively high levels of productivity despite an apparent lack of nutrient input. Macroalgal beds are predominantly located in the southern reaches and on the periphery of the Gulf in the shallow subtidal and

low intertidal limestone pavement regions. The majority of these areas, as well as large areas of seagrass beds, are protected from trawling in the permanent nursery closure (Kangas et al. 2015).

Experiments in the NPF have indicated that sessile or slow-moving taxa recover from the effects of intensive trawling within 6 – 12 months (Haywood et al. 2005), and it is likely that benthic habitats in Exmouth Gulf would recover in a similar time frame.

### 8.3.13 Habitat Management (PI 2.4.2)

DPIRD together with the Department of Biodiversity Conservation and Attractions (DBCA) manage and conserve the aquatic habitats of Western Australia, including Exmouth Gulf. There is a strategy in place to manage all MSC UoAs and non-MSC fisheries impacts on habitats. This consists in marine reserves managed by DBCA, with zones with specific protection objectives, including several zones for habitat protection such as Mandu Special Purpose Zone for benthic protection. Trawling is not allowed in any marine park zones, except for in general use zones.

All commercial fisheries and recreational fisheries are managed by DPIRD. The Department of Fisheries has established a comprehensive set of spatial management closures within the Gascoyne region that are equivalent to a number of IUCN categories for marine protected areas. Extensive trawl closures, including inside Exmouth Gulf regions, provide protection to sensitive benthic habitat such as coral reef, sand flats and seagrass beds (Gaughan et al. 2019).

The fifth objective of the EGPMF Harvest Strategy 2014-2019 is to ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function. Performance indicators specified for this objective are: 1. Extent of area trawled annually expected to remain <50% of total allowable fishing area; 2. Periodic Ecological Risk Assessments expected to not generate high risk levels for the habitat component 3. Annual management arrangements in place (DOF, 2014a).

For EGPMF the main measure that is specifically designed for habitat management is measuring and controlling trawl footprint. Fishing activities (location and intensity) are monitored by the Department via a Vessel Monitoring System (VMS), with all licenced fishing boats operating in the EGPMF required to have an operational Automatic Location Communicator (DPIRD, 2018). VMS data is used to estimate annual and multiannual footprint and footprint overlap with different habitat types.

Ongoing video assessment and predictive mapping of habitats has also implemented (Banks et al. 2019). **More information about the level of implementation of this measure and data collected in this way will be sought at the site visit.**

There is a **strategy** in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.

### **Management Strategy Evaluation**

Sensitive habitats from Exmouth Gulf have been mapped and their ranges are known. These are protected in marine park zones and do not overlap or there is small overlap with trawl footprint (i.e. filter feeder habitat, coral reefs, algal mats, seagrass meadows). For commonly encountered habitat, which could not be mapped using traditional methods, estimating the RBS index (see Outcome PI) allows an assessment of habitat status in rapport to its unimpacted levels, when detailed information is missing. RBS values obtained are evidence that the commonly encountered habitat has not been reduced to a level lower than 80% of its unimpacted level. This, together with the results from the analysis of the recent bycatch survey that show that abundance and species composition of the catch were similar to historical data, suggest the structure and function of the habitat were not affected. The RBS study and bycatch surveys can be considered testing that support high confidence that the strategy will work.

### **Management Strategy is Successfully Implemented and Achieving its Objective**

To ensure compliance with the specified closures, fishing activities (location and intensity) are monitored by the Department via a Vessel Monitoring System (VMS) (DPIRD, 2018). Using VMS data, trawl footprint can be estimated and monitored as well as the level of overlap with each habitat type (Banks et al. 2019). Trawl footprint did not increase over the years and there is no or very low overlap of the trawl footprint and sensitive habitats. This is clear quantitative evidence that the strategy is implemented successfully. The high RBS

indexes that were found in independent research (Pitcher et al, 2017, 2018) suggest that the strategy is achieving its objective.

### **Cumulative Impacts from Fisheries on VMEs**

Currently there are no requirements or measures from other fisheries to protect VMEs. No VMEs could be identified in Exmouth Gulf. The scoring issue concerning cumulative impacts does not need to be scored.

#### **8.3.14 Habitat Information (PI 2.4.3)**

Information on benthic habitats in Exmouth Gulf is available from Lyne (2006) and a validation map realised in 2018 by MG Kailis and DPIRD. The method used for the 2018 map is detailed in Banks et al. 2019. As a summary, both maps have shown a dominance of sand habitat, with some filter feeder habitat, coral reefs and mixed assemblages. The validation survey showed a good correlation with Lyne map (Banks et al. 2019). However, the authors consider that, given the increased number of training sites used, it is likely that the 2018 map provides a more accurate estimate of the spatial distribution of benthic habitats within the EGPMF.

*The EGPMF interacts with only a small proportion of the total area of Exmouth Gulf and the EGPMF management area. The spatial extent of fishing (referred to as the trawl footprint) is monitored annually for the EGPMF by combining the fishery-dependent logbook data and vessel monitoring system (VMS) data. This data set provides a fine scale spatial resolution (500 m x 500 m grid cells) of fishing effort based on the start and end of fishing from the logbook data and the spatial information provided in the VMS data. An entire grid cell is considered to be fished if a single VMS detection occurred within it, acknowledging that this method will overestimate the area trawled as a single pass of the trawl gear cannot cover the entire area of the 500 m x 500 m cell. For a five-year period (2012-2016) this method of effort calculation showed that the EGPMF interacted with ~42% (1174 km<sup>2</sup>) of the total allowable fishing area (2790 km<sup>2</sup>) and ~29% of Exmouth Gulf (Figure 19) (DPIRD, 2020).*

*Effort was categorised into level of fishing intensity; 0-None, 1-Low (1-5 passes/year), 2-Moderate (6-50 passes/year), 3-High (>50 passes/year). When overlaying this data over the most recent habitat map for EGPMF, the majority of fishing is shown to occur on the sand habitats. Owing to the predominantly mud and sand habitats of the trawl grounds, the trawl gear is considered to have relatively little physical impact. This is supported by published assessments of the communities of Exmouth Gulf (Kangas et al. 2015, Pitcher et al. 2017; Mazor et al. 2017). Although EGPMF has one of the higher trawl footprints (when compared to other trawl fisheries in the Australian EEZ in relation to the spatial size of the allowable fishery), the protection provided by the permanent closures in this region is high, offsetting perceived higher exposure (Mazor et al. 2017). (DPIRD, 2020).*

The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats. Fishing activities (location and intensity) are monitored by the Department via a Vessel Monitoring System (VMS), with all licenced fishing boats operating in the EGPMF required to possess an operational Automatic Location Communicator (DPIRD, 2018). For each trawl shot the logbook data includes a start location (latitude and longitude), date, time and duration of the trawl. The VMS collects consistent spatial information at regular and comparable time intervals between vessels, including vessel call signs, location (latitude and longitude), date, time, speed and bearing and is securely stored by DPIRD. The combined data set increased the accuracy of the trawl footprint (Banks et al. 2019).

Footprint data was used also in Pitcher project which aimed to estimate a national level of impact from trawl fisheries on benthic habitats (Pitcher et al. 2018). Physical impact of the gear on EGPMF commonly encountered habitat has been quantified in this project as less than 20%, with a high degree of certainty (i.e. there is less than 20% chance that the habitat's structure and function has been reduced to a level lower than 90%, as shown by the RBS indices higher than 0.90). Physical impact on all other habitats have been quantified through trawl footprint overlap which is less than 20% of each habitat's range. All physical impacts of the gear on all habitats have been quantified fully.

VMS data continues to be collected and stored in the DPIRD's database to increase footprint estimate accuracy. Validation sites continue to be video monitored for changes (Banks et al. 2019).

### 8.3.15 Ecosystem Outcome (PI 2.5.1)

Fisheries should not cause serious or irreversible harm to the structure or function of the ecosystem where they are undertaking their fishing activities.

Serious or irreversible harm to “structure or function” means changes caused by the UoA that fundamentally alter the capacity of the ecosystem to maintain its structure and function (MSC, 2018a, p. 30).

For the ecosystem component, this is the reduction of key features most crucial to maintaining the integrity of its structure and functions and ensuring that ecosystem resilience and productivity are not adversely impacted. This includes, but not limited to, permanent changes in the biological diversity of the ecological community and the ecosystem’s capacity to deliver ecosystem services (MSC, 2018a, p. 30)

An ecosystem modelling study was not undertaken for Exmouth Gulf and it is not required, considering the small scale of the fishery. Ecosystem modelling studies have been undertaken for larger areas where prawn trawling occurs, such as Spencer Gulf (Gillanders et al. 2015) and the Gulf of Carpentaria (Bustamante et al. 2010). The results of these studies suggested that the effects of prawn trawling at the current level of fishing did not disrupt key elements underlying ecosystem structure and function and cannot be distinguished from other sources of variation.

Exmouth Gulf is an inverse estuary with an area of ~4000 km<sup>2</sup> tropical gulf in the Gascoyne Coast Bioregion of WA, at the transition between the tropical waters of the northern coast and the temperate waters of the southwest. The Gulf is open to the north and enclosed by the Cape Range and large sand beaches to the west, and a narrow band of mangroves bordering extensive salt flats to the east and south (Stoklosa, 2019). Exmouth Gulf supports an important commercial fishery, EGPMF, as well as a small beach seine fishery, nature-based tourism and recreational fisheries, and represents an important habitat for protected species such as dugong, sea snakes, sawfish and turtles. In addition, Exmouth supports some aquaculture sites (Gaughan et al. 2019).

Important ecosystem elements in Exmouth Gulf are the cyanobacterial mats with important role in the ecosystem’s productivity, limited areas of seagrass habitat and macroalgae which offer nursing and feeding grounds as well as refuge for species of commercial importance and ETPs, as well as the filter feeder communities. These key habitats are nearly fully protected in permanently closed areas and physically separated from trawling grounds (Gaughan et al. 2019). Cyanobacterial mats that live in the hyper-saline water of the reverse estuary have an important role in Gulf’s primary production due to their capacity of nitrogen fixation during tidal inundation (Adame et al. 2012).

Most ecosystem impacts from fishing activities in the EGPMF are likely to be due to the removal of the target species, brown tiger and western king prawns, as these are the species with the highest proportion in the catch (see catch composition in Banks and McLoughlin, 2018). Fishing mortality rate of prawns in Exmouth Gulf is relatively low compared to the natural seasonal variability of prawn populations as a consequence of environmental conditions, such as water temperature, currents and natural events, e.g., cyclones (Kangas et al. 2006 in Banks et al. 2015). Other retained (non-target) species are taken in relatively small quantities (Banks et al, 2019) and generally have large distribution ranges (Kangas et al. 2007).

The biodiversity of Exmouth Gulf in relation to prawn fishing activities has been studied as part of an FRDC-funded project by Kangas et al. (2007). Results indicate that latitudinal effects appear to exert a stronger influence on community structure than the effects of trawling, although for fish it was shown that the fishing impacts were detectable with moderate to high trawl intensities and that low trawl effort sites had the highest abundance (Kangas et al. 2007).

The new bycatch survey data has been compared to historical biodiversity data and, while some differences were found, these there were expected, considering the gap of over a decade between surveys. The bycatch samples were extremely diverse, with the most abundant fish and invertebrate species being the same in the new data as in the historical data: top 50 species contributed ca. 95% of bycatch; of the top 50 contributing species 34 were the same in both old and new datasets, these representing 75% of the total catch (Banks and McLoughlin, 2018).

The recent ERA assessed the main risks of impacts of the fishery on the ecosystem, such as:

- Trophic interactions due to removal of retained species;
- Trophic interactions due to discarding bycatch;

- Risks of translocation of pests and disease;
- Risks of ghost fishing;
- Risks to broader environment such as fuel discharge and turbidity (Stoklosa, 2019).

The ERA workshop participants considered that all these risks were low or negligible (Stoklosa, 2019).

The longevity of the fishery of over five decades (DPIRD, 2018) and the accreditation of operating within the Guidelines for the Ecologically Sustainable Management of Fisheries (the Department of the Environment accreditation) are also evidence to support that the fishery is operating sustainably.

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.

### 8.3.16 Ecosystem Management (PI 2.5.2)

EGPMF Harvest Strategy consists of a plan in place which contains measures to address all main impacts of the EGPMF on the ecosystem (DOF, 2014a), and measures are in place for each component: target, retained species/primary, bycatch/secondary, ETPs, and habitats. The plan includes management objectives, performance indicators, reference levels and control rules.

The sixth objective of the EGPMF Harvest Strategy 2014-2019 is to ensure the effects of fishing do not result in serious or irreversible harm to ecosystem processes. Performance indicators specified for this objective are: 1. Periodic risk assessments, 2. Annual management arrangements in place, 3. Extent of area trawled annually, 4. Annual catch of all retained species. If fisheries' impacts on ecosystem components are all maintained at acceptable levels, no management action is required. If more than one component is not at acceptable levels, a review of the risk levels will be completed. If most of the components are at unacceptable levels due to fishing, and the ecosystem now has an unacceptable risk levels, Appropriate management strategies to reduce the risk will be investigated and may be initiated (DPIRD, 2018).

There is some objective basis for confidence that the measures/ partial strategy will work, based on empirical testing - practical experience, and based on bycatch and habitat research. The information is directly about the fishery under assessment and the ecosystem involved.

There is evidence for effective implementation in the form of lowering of overall bycatch, increased reporting, VMS monitoring of temporal and spatial closures, estimation of the trawl footprint and the overlap of the footprint and each habitat type.

### 8.3.17 Ecosystem Information (PI 2.5.3)

For an unconditional pass, the MSC standard requires that information is adequate to **broadly understand** the key elements of the ecosystem. The MSC defines **broadly understood** as follows: "there is a general knowledge of the component's status, the UoA's impact on the component, the component's distribution or the key elements of the component. This general knowledge can be acquired from diverse sources that are relevant to the component and UoA but does not have to be locally derived information" (MSC, 2018a. p.29). Note that the components of the ecosystem consist in the target, primary, secondary, and ETP species and habitats. Each of these components can include certain key elements with essential roles in the ecosystem (e.g. tiger prawn might be a key element, having an important trophic role as prey and predator as is the case in the Northern Prawn Fishery's ecosystem (Bustamante et al. 2010)).

Quantitative information is available and continue to be collected on each component of the ecosystem (catch landings, catch composition - from bycatch surveys, ETP interactions and mortalities, habitat mapping and trawl footprint estimates. Information on target and byproduct species life history and stock status is also collected. Stock assessments are available for target species (Kangas et al. 2017 in Banks et al. 2019). Peer reviewed published research studies are available on trawl impact on benthic habitats (Pitcher et al.2017, 2018). Publicly available research and other assessments reports also constitute information sources. Reports of the latter type are available on trawl impacts on Exmouth Gulf Biodiversity (Kangas et al. 2007), BRD trials results (Kangas and Thomson, 2004), the MSC report series (Kangas et al. 2015), MSC surveillance reports, the Department of Environment Assessment reports (e.g. DEE, 2015), and others.

The effects of climate change on the coastal ecosystems of Western Australia have become clear after an extreme marine heat wave in 2011, with significant loss of seagrass and declines in some commercial invertebrate stocks. Stock declines were due to a combination of factors including high fishing pressure in

previous years and environmental change. The effects of climate change and factors influencing the recovery of marine invertebrate stocks, including target and primary species in EGPMF, have been the focus of research since. A number of peer reviewed journal articles have been published on this subject. A summary of this research is presented in Caputi et al. (2019).

Information is adequate to **broadly understand** the key elements of the ecosystem.

### **EGPMF's Impacts Investigated in the Context of Climate Change**

When investigating main interactions between the fishery under assessment and the ecosystem elements, the MSC recommends that at SG 100, focus should be on the “main interactions between the UoA and the ecosystem elements” and

- the UoAs should be capable of adapting management to environmental changes as well as managing the effect of the UoA on the ecosystem.
- monitoring the effects of environmental change on the natural productivity of the UoAs should be considered best practice and should include recognition of the increasing importance of climate change (MSC, 2018a, p.61)

Caputi et al. (2016) illustrates that fisheries management under extreme temperature events requires an early identification of temperature hotspots, early detection of abundance changes (preferably using pre-recruit surveys), and flexible harvest strategies which allow a quick response to minimize the effect of heavy fishing on poor recruitment to enable protection of the spawning stock. This has required researchers, managers, and industry to adapt to fish stocks affected by extreme environmental events that may become more frequent due to climate change. Caputi's methodology has been adopted and is used for early detection of low recruitment and decision making in the management of invertebrate stocks. This suggests that the EGPMF is capable of adapting management to environmental changes as well as managing the effect of the UoA on the ecosystem, i.e. lower TACC or stop fishing to allow stock to recover. Through pre-recruitment surveys, the effect of the environmental change on natural productivity of the UoA is monitored and the increasing importance of climate change is well recognised.

**Table 18.** Scoring elements

| Component     | Scoring elements                                       | Designation | Data-deficient |
|---------------|--|-------------|----------------|
| P1            | Brown tiger prawn ( <i>Penaeus esculentus</i> )        | Target      | No             |
| P1            | Western king prawn ( <i>P. latisulcatus</i> )          | Target      | No             |
| P1            | Blue endeavour prawn ( <i>Metapenaeus endeavouri</i> ) | Target      | No             |
| P2, Secondary | Brushtooth lizardfish ( <i>Saurida undosquamis</i> )   | Minor       | Yes            |
| P2, Secondary | Notched threadfin bream ( <i>Nemipterus peronii</i> )  | Minor       | Yes            |
| P2, Secondary | Asymmetric goatfish ( <i>Upeneus asymmetricus</i> )    | Minor       | Yes            |
| P2, Secondary | Largescale terapon ( <i>Terapon theraps</i> )          | Minor       | Yes            |
| P2, Secondary | Japanese flathead ( <i>Inegocia japonica</i> )         | Minor       | Yes            |



|               |   |       |     |
|---------------|---|-------|-----|
| P2, Secondary | Whipfin ponyfish ( <i>Equulites (Leiognathus) leuciscus</i> )     | Minor | Yes |
| P2, Secondary | Trumpeter whiting ( <i>Sillago burrus</i> )                       | Minor | Yes |
| P2, Secondary | Large-tooth flounder ( <i>Pseudorhombus arsius</i> )              | Minor | Yes |
| P2, Secondary | Four-lined terapon ( <i>Pelates quadrilineatus</i> )              | Minor | Yes |
| P2, Secondary | Freckled goatfish ( <i>Upeneus tragula</i> )                      | Minor | Yes |
| P2, Secondary | Lattice monocle bream ( <i>Scolopsis taeniopterus</i> )           | Minor | Yes |
| P2, Secondary | Bay whiting ( <i>Sillago ingenuua</i> )                           | Minor | Yes |
| P2, Secondary | Pig-faced leatherjacket ( <i>Paramonacanthus choirocephalus</i> ) | Minor | Yes |
| P2, Secondary | Ochre-banded goatfish ( <i>Upeneus sundaicus</i> )                | Minor | Yes |
| P2, Secondary | Grass emperor ( <i>Lethrinus laticaudis</i> )                     | Minor | Yes |
| P2, Secondary | Western butterfish ( <i>Pentapodus vitta</i> )                    | Minor | Yes |
| P2, Secondary | Sulphur goatfish ( <i>Upeneus sulphureus</i> )                    | Minor | Yes |
| P2, Secondary | Yellowstripe scad ( <i>Selaroides leptolepis</i> )                | Minor | Yes |
| P2, Secondary | Barred sandperch ( <i>Parapercis nebulosa</i> )                   | Minor | Yes |
| P2, Secondary | Common silverbelly ( <i>Gerres subfasciatus</i> )                 | Minor | Yes |
| P2, Secondary | Saddle grunt ( <i>Pomadasys maculatus</i> )                       | Minor | Yes |
| P2, Secondary | Blunt-nose lizardfish ( <i>Trachinocephalus myops</i> )           | Minor | Yes |
| P2, Secondary | Whiteley's toadfish ( <i>Torquigener whiteleyi</i> )              | Minor | Yes |
| P2, Secondary | Gulf damselfish ( <i>Pristotis obtusirostris</i> )                | Minor | Yes |
| P2, Secondary | Purple tuskfish ( <i>Choerodon cephalotes</i> )                   | Minor | Yes |
| P2, Secondary | Double-lined fusilier ( <i>Pterocaesio digramma</i> )             | Minor | Yes |
| P2, Secondary | Striped eel catfish ( <i>Plotosus lineatus</i> )                  | Minor | Yes |

|               |  |       |     |
|---------------|--|-------|-----|
| P2, Secondary | Smalltooth flounder<br>( <i>Pseudorhombus jenynsii</i> )                   | Minor | Yes |
| P2, Secondary | Pearlyfin cardinalfish<br>( <i>Jaydia poecilopterus</i> )                  | Minor | Yes |
| P2, Secondary | Silver-cheeked toadfish<br>( <i>Lagocephalus sceleratus</i> )              | Minor | Yes |
| P2, Secondary | Goodlad's stinkfish<br>( <i>Callionymus goodladi</i> )                     | Minor | Yes |
| P2, Secondary | Gross's stinkfish<br>( <i>Callionymus grossi</i> )                         | Minor | Yes |
| P2, Secondary | Rusty-spotted toadfish<br>( <i>Torquigener pallimaculatus</i> )            | Minor | Yes |
| P2, Secondary | Multifilament dragonet<br>( <i>Repomucenus sublaevis</i> )                 | Minor | Yes |
| P2, Secondary | Northern sand flathead<br>( <i>Platycephalus endrachtensis</i> )           | Minor | Yes |
| P2, Secondary | Largescale flounder<br>( <i>Engyprosopon grandisquama</i> )                | Minor | Yes |
| P2, Secondary | Sharpnose hammer croacker<br>( <i>Johnius borneensis</i> )                 | Minor | Yes |
| P2, Secondary | Western striped grunter<br>( <i>Pelates octolineatus</i> )                 | Minor | Yes |
| P2, Secondary | Whitespotted spinefoot<br>( <i>Siganus canaliculatus</i> )                 | Minor | Yes |
| P2, Secondary | Blue swimmer crab<br>( <i>Portunus armatus</i> )                           | Minor | Yes |
| P2, Secondary | Crab ( <i>Portunus rubromarginatus</i> )                                   | Minor | Yes |
| P2, Secondary | Crab ( <i>Portunus rugosus</i> )   | Minor | Yes |
| P2, Secondary | Two spined arm swimming crab<br>( <i>Charybdis anisodon</i> )              | Minor | Yes |
| P2, Secondary | Bluetoothed crab ( <i>Charybdis truncata</i> )                             | Minor | Yes |
| P2, Secondary | Indo-Pacific swimming crab<br>( <i>Charybdis helleri</i> )                 | Minor | Yes |
| P2, Secondary | Banana prawn ( <i>Penaeus merguensis</i> )                                 | Minor | Yes |
| P2, Secondary | Stout velvet shrimp (coral prawn)<br>( <i>Metapenaeopsis crassissima</i> ) | Minor | Yes |
| P2, Secondary | Blue endeavour prawn<br>( <i>Metapenaeus endeavouri</i> )                  | Minor | Yes |

|               |   |       |     |
|---------------|---|-------|-----|
| P2, Secondary | Slipper lobster (bug)<br>( <i>Thenus australiensis</i> )                | Minor | Yes |
| P2, Secondary | Mantis shrimp   | Minor | Yes |
| P2, Secondary | Saucer scallop ( <i>Ylistrum</i><br>( <i>Amusium</i> ) <i>balloti</i> ) | Minor | Yes |
| P2, Secondary | Cuttlefish  | Minor | Yes |
| P2, Secondary | Squid   | Minor | Yes |
| P2, ETP       | Western spiny seahorse<br>( <i>Hippocampus angustus</i> )               | Main  | No  |
| P2, ETP       | Flat-faced seahorse<br>( <i>Hippocampus planifrons</i> )                | Main  | No  |
| P2, ETP       | Zebra seahorse<br>( <i>Hippocampus zebra</i> )                          | Main  | No  |
| P2, ETP       | Winged seahorse<br>( <i>Hippocampus alatus</i> )                        | Main  | No  |
| P2, ETP       | Loggerhead turtle ( <i>Caretta</i><br><i>caretta</i> )                  | Main  | No  |
| P2, ETP       | Green turtle ( <i>Chelonia</i><br><i>mydas</i> )                        | Main  | No  |
| P2, ETP       | Flatback turtle ( <i>Natator</i><br><i>depressus</i> )                  | Main  | No  |
| P2, ETP       | Leatherback turtle<br>( <i>Dermochelys coriacea</i> )                   | Main  | No  |
| P2, ETP       | Hawksbill turtle<br>( <i>Eretmochelys imbricate</i> )                   | Main  | No  |
| P2, ETP       | Leaf-scaled sea snake<br>( <i>Aipysurus foliosquama</i> )               | Main  | No  |
| P2, ETP       | Brown-lined sea snake<br>( <i>Aipysurus tenuis</i> )                    | Main  | No  |
| P2, ETP       | Dubois' sea snake<br>( <i>Aipysurus duboisii</i> )                      | Main  | No  |
| P2, ETP       | Short-nosed sea snake<br>( <i>Aipysurus apraefrontalis</i> )            | Main  | No  |
| P2, ETP       | Olive sea snake ( <i>Aipysurus</i><br><i>laevis</i> )                   | Main  | No  |
| P2, ETP       | Mosaic sea snake ( <i>A.</i><br><i>mosaicus</i> )                       | Main  | No  |
| P2, ETP       | Stoke's sea snake<br>( <i>Hydrophis stokesii</i> )                      | Main  | No  |
| P2, ETP       | Olive headed sea snake<br>( <i>Hydrophis major</i> )                    | Main  | No  |
| P2, ETP       | Elegant sea snake<br>( <i>Hydrophis elegans</i> )                       | Main  | No  |

|         |   |      |    |
|---------|---|------|----|
| P2, ETP | Turtle headed sea snake<br>( <i>Emydocephalus annulatus</i> )   | Main | No |
| P2, ETP | Western spiny seahorse<br>( <i>Hippocampus angustus</i> )       | Main | No |
| P2, ETP | Flat-faced seahorse<br>( <i>Hippocampus planifrons</i> )        | Main | No |
| P2, ETP | Winged seahorse<br>( <i>Hippocampus allatus</i> )               | Main | No |
| P2, ETP | Zebra seahorse<br>( <i>Hippocampus zebra</i> )                  | Main | No |
| P2, ETP | Gray's (Mud) pipefish<br>( <i>Halicampus grayi</i> )            | Main | No |
| P2, ETP | Ribboned pipefish<br>( <i>Haliichtys taeniophorus</i> )         | Main | No |
| P2, ETP | Short-tailed pipefish<br>( <i>Trachyrhamphus bicoarctatus</i> ) | Main | No |
| P2, ETP | Loggerhead turtle ( <i>Caretta caretta</i> )                    | Main | No |
| P2, ETP | Green turtle ( <i>Chelonia mydas</i> )                          | Main | No |
| P2, ETP | Flatback turtle ( <i>Natator depressus</i> )                    | Main | No |
| P2, ETP | Leatherback turtle<br>( <i>Dermochelys coriacea</i> )           | Main | No |
| P2, ETP | Hawksbill turtle<br>( <i>Eretmochelys imbricate</i> )           | Main | No |
| P2, ETP | Leaf-scaled sea snake<br>( <i>Aipysurus foliosquama</i> )       | Main | No |
| P2, ETP | Shark Bay sea snake<br>( <i>Aipysurus pooleorum</i> )           | Main | No |
| P2, ETP | Olive headed sea snake<br>( <i>Hydrophis major</i> )            | Main | No |
| P2, ETP | Elegant sea snake<br>( <i>Hydrophis elegans</i> )               | Main | No |
| P2, ETP | Turtle headed sea snake<br>( <i>Emydocephalus annulatus</i> )   | Main | No |
| P2, ETP | Bottlenose dolphin ( <i>Tursiops truncatus</i> )                | Main | No |
| P2, ETP | Indo-Pacific bottlenose dolphin ( <i>Tursiops aduncus</i> )     | Main | No |
| P2, ETP | Narrow sawfish<br>( <i>Anoxipristis cuspidata</i> )             | Main | No |
| P2, ETP | Green sawfish ( <i>Pristis zijsron</i> )                        | Main | No |

|               |  |       |    |
|---------------|--|-------|----|
| P2, Habitat   | SGB: Fine, flat, sparse or no apparent biota | Main  | No |
| P2, Habitat   | SGB: Fine, flat, seagrass dominated          | Minor | No |
| P2, Habitat   | SGB: Fine, flat, sparse filter feeders       | Minor | No |
| P2, Ecosystem | Exmouth Gulf Ecosystem                       | Main  | No |

### 8.3.5 Principle 2 Performance Indicator scores and rationales

#### PI 2.1.1 – Primary species outcome

| 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  |
| <b>A</b>      | Main primary species stock status |  |  |   |
|               | Guide post                        | Main primary species are <b>likely</b> to be above the PRI.<br><br>OR<br><br>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 <b>highly likely</b> to be above the PRI.<br><br>OR<br><br>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 which categorise this species as main</b> , to ensure that they collectively do not hinder recovery and rebuilding. | There is a <b>high degree of certainty</b> that main primary species are above the PRI <b>and are</b> fluctuating around a level consistent with MSY. |
|               | Met?                              | Yes  | Yes  | Yes   |
| Rationale     |                                   |  |  |   |

Based on *Status reports of the fisheries and aquatic resources of Western Australia* 2012/13 to 2017/18 ([www.fish.wa.gov.au](http://www.fish.wa.gov.au)), first MSC certification assessment (Banks et al. 2015) and bycatch survey sampling from 2015-17 (Banks and McLoughlin, 2018), no species that meet the definition of primary species could be identified in EGPMF catch.

This is consistent with a score of 100 when a fishery does not impact on a component (SA3.2.1, MSC, 2018a, p30).

**SG60, 80 and 100 are likely to be met because there are no main primary species.**

|                                    |            |  |  |                   |
|------------------------------------|------------|--|--|-------------------|
| Minor primary species stock status |            |  |  |                   |
| <b>B</b>                           | Guide post | Minor primary species are highly likely to be above the PRI.<br><br>OR<br><br>If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species. |  |                   |
|                                    | Met?       |  |  | <b>Not scored</b> |
| Rationale                          |            |  |  |                   |

The only other commercial fishery in Exmouth Gulf is a small beach seine fishery managed by the DPIRD (Gaughan et al. 2019). A full list of species from the recent bycatch surveys conducted in the EGPMF will be required in order to identify any minor primary species managed in the beach seine fishery, otherwise minor

primary species will not be scored. **A complete list of species identified through recent bycatch surveys was not available and this scoring issue is not scored.**

## References

Banks, R., K. McLoughlin and Trumble, R.J. (2015). Full assessment Exmouth Gulf prawn trawl fishery public certification report. Prepared for M.G. Kailis. Pty Ltd. Prepared by MRAG Americas, Inc. October 22, 2015. 435pp. Available at:  
<https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=cc2XJQ+44oupEaoPVYHkBKqG9QjAI70fGS6hITioYjk6qwd02QOmYlx8SmlEi60p>

Banks, R. and McLoughlin, K. (2018). Exmouth Gulf Prawn Trawl Fishery MSC Surveillance Report # 2. Prepared for MG Kailis Group of Companies. MRAG Americas Inc. 47pp. Available at:  
<https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=oGqyBCtdRpUUHqIVzYeMZoOAYfd2L/06tS5nn7IFgKnKuSBD2TvM8ISxuZLpKC7z>

Gaughan, D.J., Molony, B. and Santoro, K. (eds). 2019. Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18: The State of the Fisheries. Department of Primary Industries and Regional Development, Western Australia. Available at :  
[file:///C:/Users/mihae/Dropbox/Exmouth\\_SharkBay\\_GapAnalysis/status\\_reports\\_of\\_the\\_fisheries\\_and\\_aquatic\\_resources\\_2017-18.pdf](file:///C:/Users/mihae/Dropbox/Exmouth_SharkBay_GapAnalysis/status_reports_of_the_fisheries_and_aquatic_resources_2017-18.pdf)

MSC (2018a). MSC fisheries standard, v.2.1, 31 August 2018. Marine Stewardship Council, London, 133 pp. Available at: [https://www.msc.org/docs/default-source/default-document-library/for-business/program-documents/fisheries-program-documents/msc-fisheries-standard-v2-01.pdf?sfvrsn=8ecb3272\\_11](https://www.msc.org/docs/default-source/default-document-library/for-business/program-documents/fisheries-program-documents/msc-fisheries-standard-v2-01.pdf?sfvrsn=8ecb3272_11)

## Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | ≥80   |
| Information gap indicator | <b>More information sought</b><br>Some species that were not in the list of the 50 most abundant species might classify as minor primary. A full list species identified from the new bycatch surveys should be provided at the site visit in order to identify minor primary species (2.1.1b), otherwise minor species will not be scored. Final score will be >80 |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.1.2 – Primary species management strategy

| 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   |
| <b>a</b>      | Management strategy in place |  |   |  |
|               | 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 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?                         | <b>Yes</b>   | <b>Yes</b>  | <b>Not scored</b>  |
| Rationale     |                              |  |   |  |

A strategy for main primary species specifically is not required. **SG60 and SG80 are met because these refer to main primary species only and no main primary species could be identified in EGPMF catch.**

**SG100 is not scored at this stage because there was not enough information to identify minor primary species. If it can be demonstrated that there no species classify as minor primary, SG100 will be met.**

|          |                                |   |   |   |
|----------|--------------------------------|---|---|---|
| <b>b</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 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 confidence</b> that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved. |
|          | Met?                           | <b>NA</b>   | <b>NA</b>   | <b>NA</b>   |

## Rationale

If it can be demonstrated that no species in the EGPMF catch can classify as primary, this scoring issue is not applicable. If any minor primary species will be identified, scoring issue b will be scored according to the management measures identified for those species.

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



## Rationale

If it can be demonstrated that no species in the EGPMF catch can classify as primary, this scoring issue is not applicable. If any minor primary species will be identified, scoring issue b will be scored according to the management measures identified for those species.

|          |               |   |  |  |
|----------|---------------|---|--|--|
| <b>d</b> | 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 of certainty</b> that shark finning is not taking place. |
|          | Met?          | <b>NA</b>   | <b>NA</b>  | <b>NA</b>  |

## Rationale

No shark species are managed in EGPMF or in the beach seine fishery, thus no shark species are primary, and this scoring issue is not applicable.

|          |                                |  |   |   |
|----------|--------------------------------|--|---|---|
| <b>e</b> | Review of alternative measures |  |   |   |
|          | 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?                           | <b>NA</b>  | <b>NA</b>   | <b>NA</b>   |

## Rationale

If it can be demonstrated that no species in the EGPMF catch can classify as primary, this scoring issue is not applicable. If any minor primary species will be identified, scoring issue e will be assessed at SG100 (SG60 and SG80 refer to main only).

## References

## Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |  |
|---------------------------|--|
| Draft scoring range       | <b>≥80</b>   |
| Information gap indicator | <b>More information sought</b><br>If any minor primary species will be identified, the final score depends on management approach for those species ( <b>≥80</b> ) |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.1.3 – Primary species information

| 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   |
| <b>a</b>      | Information adequacy for assessment of impact on main primary species |   |  |  |
|               | Guide post  | Qualitative information is <b>adequate to estimate</b> the impact of the UoA on the main primary species with respect to status.<br><br><b>OR</b><br><b>If RBF is used to score PI 2.1.1 for the UoA:</b><br>Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species. | Some quantitative information is available and is <b>adequate to assess</b> the impact of the UoA on the main primary species with respect to status.<br><br><b>OR</b><br><b>If RBF is used to score PI 2.1.1 for the UoA:</b><br>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 with a high degree of certainty</b> the impact of the UoA on main primary species with respect to status. |
|               | Met?  | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>   |
| Rationale     |   |   |  |  |

The Department of Primary Industries and Regional Development (DPIRD, previously the Department of Fisheries) produces annual reports on the status of fisheries and the aquatic resources of Western Australia, offering a complete view of the fisheries and fished stocks in the area. These reports are published on the department's website ([www.fish.wa.gov.au](http://www.fish.wa.gov.au)).

Also, quantitative information on total catch composition is available from bycatch surveys conducted in 2015-2017 period. The results of the surveys are summarised in the second MSC annual audit of the fishery when the condition was closed (Banks and McLoughlin, 2018). This information, together with the latest status of fisheries report (Gaughan et al. 2019) were used to identify any primary species in the EGPMF catch (species with management tools in place – limit or target reference points- in the UoA or in overlapping fisheries).

The available information indicates that there are no main primary species.

Information is available and is **adequate to assess with a high degree of certainty** that the UoA has no impact on main primary species. **SG60, 80 and 100 are met.**

|           |  |  |  |  |
|-----------|--|--|--|--|
| <b>b</b>  | Information adequacy for assessment of impact on minor primary species |  |  |  |
|           | Guide post   |  |  | Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status. |
|           | Met?   |  |  | <b>Not scored</b>  |
| Rationale |  |  |  |  |

If any minor primary species will be identified, the score depends on the information available to estimate the impact of the fishery on those species. **At this stage of the assessment this scoring issue cannot be scored.**

| C | Information adequacy for management strategy |   |   |   |
|---|--|---|---|---|
|   | 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 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 certainty</b> whether the strategy is achieving its objective. |
|   | Met?   | NA  | NA  | Not scored  |

#### Rationale

A management strategy for main primary species is not required because there are no main primary species in the catch. The requirements at SG60 and SG80 are not applicable. This scoring issue is not scored at SG100 at this stage of the assessment because more information is needed in order to identify minor primary species.

#### References

Banks, R. and McLoughlin, K. (2018). Exmouth Gulf Prawn Trawl Fishery MSC Surveillance Report # 2. Prepared for MG Kailis Group of Companies. MRAG Americas Inc. 47pp. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=oGqyBCtdRpUUHqIVzYeMZoOAYfd2L/06tS5nn7IFgKnKuSBD2TvM8ISxuZLpKC7z>

Gaughan, D.J., Molony, B. and Santoro, K. (eds). 2019. Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18: The State of the Fisheries. Department of Primary Industries and Regional Development, Western Australia. Available at : [file:///C:/Users/mihae/Dropbox/Exmouth\\_SharkBay\\_GapAnalysis/status\\_reports\\_of\\_the\\_fisheries\\_and\\_aquatic\\_resources\\_2017-18.pdf](file:///C:/Users/mihae/Dropbox/Exmouth_SharkBay_GapAnalysis/status_reports_of_the_fisheries_and_aquatic_resources_2017-18.pdf)

#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | ≥80   |
| Information gap indicator | <b>More information sought in order to identify any minor primary species</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.2.1 – Secondary species outcome

| 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 |   |   |
|---------------|-------------------------------------|--|---|---|
| Scoring Issue |                                     | SG 60  | SG 80   | SG 100  |
| <b>a</b>      | Main secondary species stock status |  |   |   |
|               | Guide post                          | 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 of certainty</b> that main secondary species are above biologically based limits. |
|               |                                     | OR   | 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.                          | If below biologically based limits, there is either <b>evidence of recovery</b> or a <b>demonstrably effective partial strategy</b> in place such that the UoA does not hinder recovery and rebuilding.<br>AND<br>Where catches of a main secondary species outside of biological limits are <b>considerable</b> , there is either <b>evidence of recovery</b> or a, <b>demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species</b> , to ensure that they collectively do not hinder recovery and rebuilding. |   |
|               | Met?                                | <b>Yes</b>   | <b>Yes</b>  | <b>Yes</b>  |
| Rationale     |                                     |  |   |   |

Quantitative information on catch composition is available from 2015-17 bycatch surveys (summary results available in the second annual surveillance to the MSC certification report, Banks and McLoughlin, 2018). No species reached the cut-off of 5% average percentage contribution individually. No species with average contributions over 2% could be considered less resilient. The results from the recent bycatch surveys have been compared to the results from a comprehensive biodiversity study of trawled and untrawled areas (Kangas et al. 2007) and there were no significant differences, both sets of data showing that no secondary species could be classified as 'main'.

**SG60, 80 and 100 are met because the fishery does not impact on 'main' secondary species component (SA3.2.1, MSC, 2018a, p30).**

|          |            |  |  |
|----------|------------|--|--|
| <b>b</b> |            | Minor secondary species stock status   |  |
|          | Guide post | Minor secondary species are highly likely to be above biologically based limits. |  |
|          |            | OR   |  |

|  |           |  |  |  |
|--|-----------|--|--|--|
|  |           |  |  | If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species |
|  | Met?      |  |  | Not scored   |
|  | Rationale |  |  |  |
| Because information about biologically based limits for each minor secondary species is not available, minor secondary species are not scored for outcome. |           |  |  |  |
| References   |           |  |  |  |

Banks, R. and McLoughlin, K. (2018). Exmouth Gulf Prawn Trawl Fishery MSC Surveillance Report # 2. Prepared for MG Kailis Group of Companies. MRAG Americas Inc. 47pp. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=oGqyBCtdRpUUHqIVzYeMZoOAYfd2L/06tS5nn7IFgKnKuSBD2TvM8ISxuZLpKC7z>

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#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.2.2 – Secondary species management strategy

| 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   |
| a             | Management strategy in place |  |   |  |
|               | 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 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?                         | <b>Yes</b>   | <b>Yes</b>  | <b>Yes</b>   |
| Rationale     |                              |  |   |  |

**Specific measures for secondary species**

The strategy to manage secondary species is laid out in the EGPMF Bycatch Action Plan. This includes the application of bycatch reduction devices (grids/turtle excluder devices - TEDs and fish excluder devices – FEDs) as measures specifically designed for secondary species management. The BAP specifies provision of support for further BRD development and testing of effectiveness for reducing bycatch (DOF, 2014a).

The EGPMF has been proactive in participating in BRD development projects and best practice workshops (e.g. <http://www.frdc.com.au/Archived-Reports/FRDC%20Projects/2016-057-DLD.pdf>). **Any information about the effectiveness and implementation of new BRD devices and gear modifications should be provided at or before the site visit.**

**Non-specific measures**

All EGPMF vessels use hopper systems. The use of hoppers increases the chance of post-capture survival for discarded species through keeping the catch in a wet well and prompt removal. The hopper is described as a tank on the deck, filled with sea water, into which each catch is spilled at the end of a trawl. The catch is removed from the bottom of the hopper by way of a sorting conveyor that moves past the crew. This allows the crew to remove target species and byproduct, with bycatch being returned to the sea via a discard chute, usually within 1 minute of being removed from the hopper. (Lawrence and Rose, 2004).

The input controls that are in place, are likely to benefit all secondary species stocks by limiting fishing effort, even if these measures were not specifically designed to manage this component of the ecosystem.

Overall effort in the fishery is constrained by a cap on the number of licences / vessels (limited entry), limits on fishing gear (headrope capacity), restrictions on the number of available fishing days each year (seasonal closure) and restricted trawl hours (mainly night-time trawling). Monthly moon closures of at least four days around each full moon and significant permanent and temporary closed areas throughout the fishery also reduce the effective fishing effort.

**Monitoring and ecological risk assessment**

Fishing activity is monitored using the Vessel Monitoring System (VMS) (DPIRD, 2020). This allows knowledge of the time and location of the gear impact on secondary species, and also verifying compliance with closures.

There is a commitment for regular quantitative data collection through bycatch surveys every three years (DOF, 2014a). These allow identifying secondary species and monitoring mortalities as percentage of total catch, in other words, monitoring the risk to secondary species.

Regular ecological risk assessments (ERA) are undertaken (DOF, 2014a). ERAs are undertaken by DPIRD as part of its EBFM framework and the outputs inform the development of harvest strategies. The latest ERA workshop took place in September 2019. No secondary species or groups were considered to be at medium or high risk from the fishery (Stoklosa, 2019).

Monitoring and ecological risk assessments allow modification of fishing practices in the light of the identification of unacceptable impact.

**Overall, there is a strategy to manage minor secondary species.**

**A strategy for main secondary species is not required and SG 60 and SG 80 are met. SG 100 is met because there is a strategy in place for managing minor secondary species.**

| Management strategy evaluation |            |   |   |   |
|--------------------------------|------------|---|---|---|
| <b>b</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 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 confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved. |
|                                | Met?       | <b>Yes</b>  | <b>Yes</b>  | <b>Yes</b>  |
| Rationale                      |            |   |   |   |

Based on previous research, bycatch to prawn ratio in EGPMF was 2-5:1 (DOF, 2014a). The recent survey results have shown a bycatch to prawn ratio of 0.8:1 (Banks and McLoughlin, 2018). This represents a significant reduction and an objective basis of confidence that the strategy works.

**SG60 and SG80 are met.**

Comparing recent and historical catch composition data, the most abundant fish and invertebrate species being the same in the new data as in the historical data: top 50 species contributed ca. 95% of bycatch; of the top 50 contributing species 34 were the same in both old and new datasets, these representing 75% of the total catch (Banks and McLoughlin, 2018). The ERA 2019, where no increase in risk to secondary species was found, and the decrease in bycatch to prawn ratio over the years, can be considered **testing** supports **high confidence** that the strategy will work, based on information directly about the UoA and/or species involved. **SG100 is met.**

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

The decrease in the bycatch to prawn ratio suggests that the strategy is achieving its objective and it is implemented successfully. There is a long history of continuous development and successful implementation, and improvement of the results achieved in the fishery concerning bycatch (see Banks et al, 2015). **SG60 and SG80 are achieved.**

Compliance with the management measures for secondary species can be demonstrated through the VMS monitoring (compliance with closures and footprint control) and the fact that there is no evidence of systematic non-compliance with the use of BRDs, handling of discards and reporting of retained secondary species catch. Such evidence should be provided at the site visit for SG 100 to be achieved. **SG100 is achieved.**



|          |               |   |  |  |
|----------|---------------|---|--|--|
| <b>d</b> | 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 of certainty</b> that shark finning is not taking place. |
|          | Met?          | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>   |

#### Rationale

Sharks species were not identified in the most abundant bycatch species that constitute 90% of the catch by weight.

Regulation 9ZO from Fisheries Management Regulations 1992 (Australian Government, 2016) prohibits shark finning and requires that sharks are landed with fins attached. No shark species are permitted to be landed in EGPMF. At-sea and aerial patrols are conducted by the Department to monitor compliance with regulations.

Shark finning has not been raised as a compliance issue in EGPMF.

**SG60, 80 and 100 are met**

|          |  |   |  |  |
|----------|--|---|--|--|
| <b>e</b> | Review of alternative measures to minimise mortality of unwanted catch |   |  |  |
|          | 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?   | <b>Yes</b>  | <b>Yes</b>   | <b>No</b>  |

#### Rationale

Over the long history of the fishery, the EGPMF has been engaged in developing and adopting alternative measures to reduce mortality of secondary species in the catch, with significant achievements, with bycatch to prawn ratios decreasing from of 20:1 in the mid-seventies (Banks et al. 2015) to 0.8:1 in recent years.

There have been reviews of the potential effectiveness and practicality of alternative measures to minimise EGPMF-related mortality of unwanted catch of secondary species during BRD trials and implementation by 2005, and continuous improvement since. Some of the secondary catch is retained, thus not unwanted, although this is a small quantity of total catch. Periodic internal reviews of the effectiveness of the BRDs in use and implementation of the most effective ones, are conducted, although not according to a regular schedule, and no written records on the outcomes of these reviews are kept (George Kailis, December 2019).

**This scoring issue does not need to be scored at SG60 and SG80 because there are no ‘main’ secondary species. It cannot be demonstrated that ‘there is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate’. SG100 is not achieved.**

#### References

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Stoklosa, R. 2019. Ecosystem Based Fishery Management—Ecological Risk Assessment of the Exmouth Gulf Prawn Managed Fishery, prepared for the Department of Primary Industries and Regional Development, Fishery, Western Australia. E-Systems, Hobart.

#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.2.3 – Secondary species information

| 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  |
| <b>a</b>      | Information adequacy for assessment of impacts on main secondary species |  |  |   |
|               | Guide post   | Qualitative information is <b>adequate to estimate</b> the impact of the UoA on the main secondary species with respect to status.   | Some quantitative information is available and <b>adequate to assess</b> the impact of the UoA on main secondary species with respect to status.   | Quantitative information is available and <b>adequate to assess with a high degree of certainty</b> the impact of the UoA on main secondary species with respect to status. |
|               |  | OR<br><b>If RBF is used to score PI 2.2.1 for the UoA:</b><br><br>Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species. | OR<br><b>If RBF is used to score PI 2.2.1 for the UoA:</b><br><br>Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species. |   |
|               | Met?   | <b>Yes</b>   | <b>Yes</b>   | <b>Yes</b>  |
| Rationale     |  |  |  |   |

**Availability of Information**

The BAP (DOF, 2014a) states that the current monitoring and information system includes:

- fishery-dependent data collection consisting in daily logbooks and VMS (vessel monitoring system)
- fishery-independent surveys
- research

Recent quantitative information on total catch composition is available from bycatch surveys conducted in 2014-2017 period. These surveys were conducted on board of commercial prawn trawl vessels with the Department of Fisheries (now DPIRD) staff on board. The surveys were undertaken to satisfy a condition of the initial MSC certification of the fishery. The condition required the fishery to collect information on the nature and the amount of bycatch that was adequate to determine the risk posed by the fishery and the effectiveness of the management strategy. The results of the surveys are summarised in the second annual audit of the fishery when the condition was closed (Banks and McLoughlin, 2018). This information, as well as the comprehensive biodiversity study from 2004, were used to identify main and minor secondary species in the EGPMF catch.

**Adequacy of Information**

The information sources are recent and historical independent surveys of catch composition undertaken by scientific observers appointed by DPIRD and, and VMS monitoring and DPIRD published reports on fisheries status (see Banks and McLoughlin, 2018, Kangas et al. 2007). These can be considered lower bias, higher verifiability (see Column A in Table 13). The available information is adequate to show that no species present in EGPMF catch classify as “main” primary.

In addition, fishers’ logbooks provide information on the retained catch, which might be relevant to minor secondary species. Interviews with fishers and management staff will be conducted at the site visit to confirm that there are no “main” secondary species.

**SG60, 80 and 100 are met on the basis that the available information is adequate to show that the fishery does not impact on main secondary species.**

|          |   |
|----------|---|
| <b>b</b> | Information adequacy for assessment of impacts on minor secondary species |
|----------|---|

|  |            |  |  |  |
|--|------------|--|--|--|
|  | Guide post |  |  | Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status. |
|  | Met?       |  |  | <b>No</b>  |

#### Rationale

There is some quantitative catch information on minor secondary species, although because most species have low abundance in the catch and little is known about their stock status, information is not adequate to estimate impact of the UoA on minor secondary species with respect to status.

| C | Information adequacy for management strategy |   |   |  |
|---|--|---|---|--|
|   | 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 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 certainty</b> whether the strategy is <b>achieving its objective</b> . |
|   | Met?   | <b>N/A</b>  | <b>N/A</b>  | <b>Yes</b>   |

#### Rationale

Among research studies relevant to secondary species in EGPMF, a study of the effectiveness of bycatch reduction devices in trawl nets was completed in 2003 (Kangas & Thomson 2004) and a comprehensive biodiversity survey, comparing faunal assemblages in trawled and untrawled areas within Exmouth Gulf, was completed in 2004 (Kangas et al. 2007).

Another source of information on the risk EGPMF poses to secondary species consists in regular ERAs undertaken by DPRD with stakeholder participation as part of its EBFM framework. ERA outputs inform the development of harvest strategies. The latest ERA workshop took place in September 2019 and no secondary species or groups were considered to be at medium or high risk from the fishery (Stoklosa, 2019). DPIRD internal ERAs are undertaken annually and the results are published in the fisheries status reports (e.g. Gaughan et al. 2019). ERA methodology for the risk assessment of the EGPMF is based on the global standard for risk assessment and risk management (AS/NZS ISO 31000), which has been adopted for use in a fisheries context (Fletcher et al. 2002, Fletcher 2005; 2015 in Stoklosa, 2019).

Survey catch data provided to CAB was sampled in 2016 at the start and the end of the season, in 2015 at the end of the season and in 2017 at the beginning of the season. Average catches of the most abundant species over the three-year period were considered representative of the annual catch, but do not allow an assessment of interannual catch variability. Nevertheless, data from these surveys, combined with historical data showing no main bycatch (Banks et al. 2015), constitute adequate quantitative information to determine with high degree of certainty that there are no 'main' secondary species in the EGPMF's catch.

There is a commitment for regular quantitative data collection through bycatch surveys every three years (DOF, 2014a). These will ensure the continuity and the comprehensiveness of data collection.

Information is adequate to assess the impact and to support a **strategy** to manage **all** secondary species.

**SG60 and SG80 are not applicable because there are no main secondary species. The available information** is adequate to support a **strategy** to manage minor secondary species and **evaluate** with a **high degree of certainty** whether the strategy is **achieving its objective**. SG100 is met.

#### References

Banks, R. and McLoughlin, K. (2018). Exmouth Gulf Prawn Trawl Fishery MSC Surveillance Report # 2. Prepared for MG Kailis Group of Companies. MRAG Americas Inc. 47pp. Available at:

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Stoklosa, R. 2019. Ecosystem Based Fishery Management—Ecological Risk Assessment of the Exmouth Gulf Prawn Managed Fishery, prepared for the Department of Primary Industries and Regional Development, Fishery, Western Australia. E-Systems, Hobart.

#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.3.1 – ETP species outcome

| PI 2.3.1   |  | The UoA meets national and international requirements for the protection of ETP species<br>The UoA does not hinder recovery of ETP species   |   |   |
|--|--|--|---|---|
| Scoring Issue  |  | SG 60  | SG 80   | SG 100  |
| <b>a</b>   | Effects of the UoA on population/stock within national or international limits, where applicable |  |   |   |
|  | 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 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 certainty</b> that the <b>combined effects of the MSC UoAs</b> are within these limits. |
|  | Met?   | NA   | NA  | NA  |
| Rationale  |  |  |   |   |
| There are no national or international requirements that set limits on ETP species in Australia. |  |  |   |   |
| <b>b</b>   | Direct effects   |  |   |   |
|  | 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 of confidence</b> that there are no <b>significant detrimental direct effects</b> of the UoA on ETP species.  |
|  | Met?   | Yes  | Yes   | No  |
| Rationale  |  |  |   |   |

### Sea snakes

Short-nosed snake (*Aipysurus apraefrontalis*) was declared critically endangered (CR) on the IUCN Red List (Lukoschek et al. 2010) and Australia's EPBC Act (Environmental Protection and Biodiversity Act, 1999) due to its restricted distributions and documented population declines (DEE, 2019a). It is also listed as CR in WA (Biodiversity Conservation Act 2016). Scattered specimens were found on the NW coast of Australia but were treated as vagrants in the IUCN Red List and EPBC Act assessments on the assumption that breeding populations of the species were restricted to Ashmore and Hibernia (or any other Timor reefs) (Sanders et al. 2015).

Short-nosed snake has disappeared from Ashmore reef but it was found in Exmouth Gulf and offshore from Roebourne and Broome. Genetic studies have shown that the snakes found belonged to separate breeding population (Sanders et al. 2015). The authors of the new AIMS/NESP study, using maximum entropy models, have identified Exmouth Gulf as one of the preferred habitats for short-nosed snake, along with Ashmore Reef complex (Udyawer and Heupel, 2017).

The criteria for the species being listed as CR on both, IUCN and EPBC lists, are debatable, according to D'Anastasi et al. (2016), because the range cannot be considered restricted to Ashmore and Hibernia Reefs, from where they disappeared between 1998 and 2002. As the species is caught in prawn trawls, it is vulnerable to being taken as bycatch. However, the species disappearance from Ashmore reef could not be attributed to trawling and remains unexplained (D'Anastasi et al. 2016).

At the recent ERA, sea snakes were assessed as being at low risk from the EGPMF operational activities (Stoklosa, 2019).

As most snakes are returned to water alive, direct effects of the UoA are **highly likely** to not **hinder recovery** of sea snake species in general and of short-nose sea snake in particular.

While most sea snakes are returned to water alive, short and long-term post-capture survival is unknown. Estimates of maximum sustainable yield are needed to assess how fisheries interactions may affect population structure and identify particular species or life-stages that may be vulnerable to current fishing efforts (Udyawer et al. 2016). There is no **high degree of confidence** that there are no **significant detrimental direct effects** of the UoA on sea snake species.

### Marine Turtles

EGPMF successfully reduced its interactions with turtles by introducing mandatory grids in 2002/2003. The effectiveness of these TEDs was shown to be 95-100% (Kangas and Thomson, 2004) in reducing turtle bycatch. All interactions reported in the last five years resulted in the turtles being returned to sea alive.

Turtles are now mostly caught in trawl gear, which do not have grids. Due to the smaller size of these nets and very short duration of exploratory trawls and the turtles are usually returned alive.

Green turtles are the most abundant turtles in Exmouth Gulf and have a large distributional range outside of the Gulf (Kangas et al. 2006). Adult green turtles are herbivorous and are likely to forage in the shallow seagrass and macroalgal beds. Despite their high abundance in the Gulf, very few green turtles interactions have been reported throughout the history of the fishery (Kangas et al. 2015).

Loggerhead turtles are less common than green turtles in Exmouth Gulf and have a wider distribution outside the Gulf (Kangas et al. 2006). Loggerheads prefer to forage over open substrate, such as the mud / shell substrate that dominates the trawl grounds in the Gulf. It has been suggested that loggerheads may be susceptible to reflex asphyxiation rather than drowning during extended periods of submersion (i.e. in the trawl net). However, there have been very few reported interactions with loggerhead turtles over the history of the fishery. All captured turtles have been returned to the water alive (Kangas et al. 2015).

Hawksbill turtles are relatively uncommon within Exmouth Gulf and there have been no reported interactions with hawksbill turtles over the history of the fishery (Kangas et al. 2015).

Exmouth Gulf is the southern limit of the flatback turtle's distributional range, and they are relatively uncommon within the Gulf. Given their preferred diet and foraging behaviour, they may occur on the trawl grounds. There have been few reported interactions with flatback turtles over the history of the fishery, with all turtles were returned to the water alive (Kangas et al. 2015).

Turtle bycatch mitigation in EGPMF has been addressed with the introduction of the mandatory use of grids in 2002/03. These grids have shown to be effective in the fishery with a 95 – 100 % reduction in turtle bycatch (Kangas and Thomson, 2004). In 2019, out of the 20 turtle interactions, seven were identified as green turtles, while the rest were reported as unidentified.

At the recent ERA, marine turtle species were assessed as being at negligible risk from the EGPMF operational activities (Stoklosa, 2019).

Direct effects of the UoAs are **highly likely** to not **hinder recovery** of marine turtle species, given the fact that all are returned to water alive and in good conditions. However, short and long-term post-capture survival is not known. There is no **high degree of certainty** that there are no significant detrimental direct effects due to the UoAs.

### Seahorses and Pipefish

Various species of syngnathids are found within Exmouth Gulf, along seagrass beds and detached algal communities (Kangas et al. 2007). Although all members of the Syngnathidae and Solenostomidae families are listed marine species under the EPBC Act, no species is currently EPBC listed as threatened. In shallower waters, pipefish and seahorses are a dominant group of fish and are important predators of benthic organisms such as mysids in the zooplankton and small amphipods. (e.g. Kendrick & Hyndes 2005; Martin- Smith 2008 in Kangas et al. 2015).

Species found during the biodiversity survey (Kangas et al. 2007) and likely to interact with EGPMF are Western spiny seahorse (*Hippocampus angustus*) (IUCN -Least Concern (LC), Pollom, 2017a), *Flat-faced seahorse* (*Hippocampus planifrons*) (IUCN – LC, Pollom, 2017b), Winged seahorse (*Hippocampus alatus*) (IUCN – not evaluated, <https://www.fishbase.se/summary/59702>), Zebra seahorse (*Hippocampus zebra*) (IUCN – data deficient (DD), Pollom, 2017c), Gray's (Mud) pipefish (*Halicampus grayi*) (IUCN – LC, Kuo and Pollom, 2016), and Short-tailed pipefish (*Trachyrhamphus bicoarctatus*) (IUCN – LC, Pollom, 2016). The number of individuals caught in EGPMF is much lower than in the SBPMF, although the level of pre-release mortality might be similar or higher. Also, current species composition of syngnathid catch is not known and some species listed as endangered on the IUCN Red List could be caught in small numbers.

At the recent ERA, syngnathids were assessed as being at negligible risk from the EGPMF operational activities (Stoklosa, 2019).

Direct effects of the UoA are **highly likely** to not **hinder recovery** of syngnathid and solenostomid species, considering the low but consistent level of catch. **SG60 and SG80 are likely to be met**. While most individuals are returned to water alive, short and long-term post-capture survival is not known. **SG100 is not likely to be met**.

### Sawfish

Exmouth Gulf is situated at the southern end of the primary distribution range of sawfish species, EGPMF's interactions with sawfish being relatively high compared to SBPMF. Table 16 presents sawfish species that may occur within the EGPMF fishing area and their conservation status.

Narrow sawfish is the most commonly caught species in Australian fisheries, including in Western Australia (D'Anastasi et al. 2013). Even though this species is more productive than other sawfish species, declines of between 50% and 70% over three generation lengths (~18 years) are suspected. These declines have primarily been attributed to ongoing capture in commercial net and trawl fisheries, with the Narrow Sawfish being particularly susceptible given it has poor post-release survival (D'Anastasi et al. 2013). The low-opening nets used in prawn trawling in WA (Banks et al. 2015) might prevent larger sawfish to enter the net, although their saw can entangle in the net from outside. BRDs are compulsory in EGPMF and these are likely to work in allowing some sawfish that are caught in the net to escape. For example, the use of TEDs in the NPF has resulted in a 73% reduction in the capture of the Narrow Sawfish (*Anoxypristis cuspidata*) (Brewer et al. 2006).

Since 2016, there has been a significant improvement in reporting of the status of the ETP individuals upon returning them to sea (i.e. dead or alive). Before 2014, the status was unknown for all sawfish interactions, while in recent year, nearly a half of these are reported as returned alive. Species identification of sawfish has also been integrated into the CMOP and crew education programs (Banks et al. 2019) and it is expected that sawfish mortalities will be reported to species level in the near future. All sawfish that interacted with the EGPMF in 2019 were reported as returned to water alive.

The level of sawfish mortality in this fishery is very low compared to sawfish mortalities in other fisheries (e.g. NPF) and direct effects from EGPMF are **highly likely** to not hinder recovery of the species. However, interactions and mortalities are not reported to species level and it is not clear if the individuals released alive will survive or if some belong to critically endangered species. **SG60 and SG80 are met**. There is no **high degree of confidence** that there are no **significant detrimental direct effects** of the UoA on sawfish species. **SG100 is not met**.

| Indirect effects |            |  |  |  |
|------------------|------------|--|--|--|
| <b>C</b>         | 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 of confidence</b> that there are no <b>significant detrimental indirect effects</b> of the UoA on ETP species. |
|                  | Met?       |  | <b>Yes</b>   | <b>No</b>  |
| Rationale        |            |  |  |  |

The MSC vocabulary does not clearly define “indirect effects” to ETP populations, although these can be interpreted as effects other than derived from direct contact with fishing gear or fishing activities. Indirect effects can occur as entanglements in lost gear, behaviour modification of predators that feed on discards (e.g. dolphins and birds, not the case for EGPMF – very low amount of discards), trophic effects (e.g. the fishery acting as a competitor for the ETP's preferred food species), population structure effects (e.g. selective catch of certain sizes and life stages of a species), habitat degradation etc.

Some indirect effects to ETPs have been considered with the occasion of ERAs, the Department of Environment assessments and the initial MSC assessment, and the fishery was not considered to have significant detrimental indirect effects. Indirect effects have been considered for the UoA and are thought to be **highly likely** to not create unacceptable impacts. **SG60 and SG80 are met**. Some indirect effects have not been considered, in special, the effects of multiple capture on reproductive capacity of sea snakes (Udyawer et al. 2016). There is no **high degree of confidence** that there are no **significant detrimental indirect effects** of the UoA on ETP species. **SG100 is not met**.



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**Draft scoring range and information gap indicator added at Announcement Comment Draft Report**

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | Information is sufficient to score the PI |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.3.2 – ETP species management strategy

|               |  |  |  |  |
|---------------|--|--|--|--|
| PI 2.3.2      |  | The UoA has in place precautionary management strategies designed to: <ul style="list-style-type: none"> <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 |  |  |
| Scoring Issue |  | SG 60  | SG 80  | SG 100   |
| a             | Management strategy in place (national and international requirements) |  |  |  |
|               | 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 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 likely to achieve</b> national and international requirements for the protection of ETP species. | There is a <b>comprehensive strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to <b>achieve above</b> national and international requirements for the protection of ETP species. |
|               | Met?   | NA   | NA   | NA   |
| Rationale     |  |  |  |  |

There are no national or international requirements that set limits on ETP species in Australia

|           |  |   |   |  |
|-----------|--|---|---|--|
| b         | Management strategy in place (alternative) |   |   |  |
|           | 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 strategy</b> in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species. |
|           | Met?                                       | Yes   | Yes   | Not scored   |
| Rationale |  |   |   |  |

The strategy for the management of ETP species consists in measures to reduce capture, such as BRDs, measures to increase survival such as hopers (for syngnathids), best practice handling, monitoring and reporting, and analyses. The strategy is under development and in a stage of accumulating knowledge and building capacity. The information is not yet sufficient to measure trends reliably and design response strategies (mainly because of mortality reporting uncertainty in earlier years) thus, the strategy is not yet comprehensive.

### Specific Measures

#### **BRDs**

The use of TEDs has been introduced primarily to allow turtles and other large animals escape. In 2005, the EGPMF successfully gained certification from the United States Department of State for their BRD compliancy and the use of turtle exclusion devices (TEDs), allowing licensees to export prawns to the US market. In order to meet this exemption, the fishery was required to demonstrate that local legislation that required fishers to use TEDs that meet US standards is in force and that the WA Government effectively monitors compliance and enforces penalties for violations (Banks et al. 2015). However, at the 2016 assessment, the industry

declined to implement the operational changes required because they were determined to have been prohibitive to future gear innovations (Patrick Cavalli, pers comm 24 February 2020). MG Kailis has engaged an independent advisor, Dr John Wakeford, to provide advice on ongoing improvements relating to bycatch and ETP interactions (George Kailis, email communication, 24 February 2020).

BRD research has shown mixed results concerning sea snake catch reduction. TEDs reduced sea snake catch by 42% in Shark Bay but there was no significant difference in Exmouth Gulf at the time of the research (Kangas and Thomson, 2004). Also, in the NPF, TEDs were shown to reduce the catch of narrow sawfish by 73% (Brewer et al. 2006). **Any new evidence of ETP interactions reductions from trials and implementation of new devices should be provided.**

### ***Best practice handling***

Experts from several institutions were engaged in education programs for skippers and the crew in best practice handling of ETP species (Banks et al. 2019). The higher percentage of ETP individuals returned to water alive in 2019 might be a result of better handling due to these education programs.

### **Non-specific measures**

#### ***Gear***

EGPMF vessels use low-opening demersal otter trawl nets in quad-rigged formation. The otter boards restrict the vertical opening of the net, allowing large animals like dolphins to swim over the net (Banks et al. 2015).

#### ***Hoppers***

The use of hoppers is likely to increase the chance of survival of syngnathids during on-deck sorting.

#### ***Permanent and seasonal closures***

About 30% of Exmouth Gulf is closed to trawling (Banks et al. 2019). Fishing is allowed only at night and permanent and seasonal closures are in place which offer protection and refuge to ETP species. The fishery operates adjacent to Ningaloo Marine Park and World Heritage Area which might offer protection to migratory ETP species.

**The ETP strategy** in EGPMF is still under development. It has management measures, linked monitoring, there have been some analyses and independent research on sea snake (the most abundant ETP group in the catch), however, it has not been fully tested yet and there are no set responses.

### **Monitoring and ecological risk assessment**

Accurate reporting of interactions with ETPs is a requirement for the fishery in order to gain Australian Department of Environment (now DEE) accreditation that the fishery operates within the Guidelines for the Ecologically Sustainable Management of Fisheries.

The Department of Fisheries (now DPIRD) has signed an MOU with Australian Department of Environment regarding reporting of protected and listed species interactions with WA state fisheries which requires publication of annual statistics to fishery and gear level (where not prohibited by confidentiality requirements) (DEE and DPIRD, 2017). Interaction reports are published in the annual reports of the status of fisheries and the aquatic resources of Western Australia, produced by the DPIRD and available on the department's website ([www.fish.wa.gov.au](http://www.fish.wa.gov.au)).

#### ***Crew Member Observer Program (CMOP)***

A CMOP has been implemented primarily to collect data on ETP interactions, in particular on sea snakes and sawfish (number and species identification) (Banks et al. 2019)

### ***Ecological Risk Assessments***

Regular ecological risk assessments (ERA) are undertaken (DOF, 2014a). ERAs are undertaken by DPIRD as part of its EBFM framework and the outputs inform the development of harvest strategies. The latest ERA workshop took place in September 2019. All ETP species that interact with the EGPMF were considered to be at low or negligible risk from the fishery, with the exception of sawfish species which were assessed as medium risk (Stoklosa, 2019). Medium risk for sawfish resulted from the uncertainty of the post-capture survival and the potential for public concern although the fishery complies with the national recovery plan for sawfish species and no additional corrective actions were considered necessary (Stoklosa, 2019).

**The ETP strategy** in EGPMF is still under development. It has management measures, linked monitoring, there have been some analyses and independent research on sea snake (the most abundant ETP group in the catch), however, it has not been fully tested and there are no set responses. **SG60 and SG 80 are met but not SG100.** (SG100 is not scored because not all scoring issues achieve SG80)

| Management strategy evaluation |            |  |   |  |
|--------------------------------|------------|--|---|--|
| <b>c</b>                       | Guide post | The measures are <b>considered likely</b> to work, based on <b>plausible argument</b> (e.g., general experience, theory or comparison with similar fisheries/species). | There is an <b>objective 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 confidence</b> that the strategy will work. |
|                                | Met?       | <b>Yes</b>   | <b>Yes</b>  | <b>Not scored</b>  |

#### Rationale

The available evidence shows that the introduction of TEDs reduced the sea snake catch in prawn fisheries, although with mixed results for EGMPF (Kangas and Thomson, 2004). A monitoring and reporting system has been implemented and now information is being collected in order to support the development of a comprehensive strategy in the near future (Banks et al. 2019) There is an objective basis of confidence that the strategy will work based on information directly about the fishery and the species involved. **SG60 and SG80 are met.** The strategy is mainly based on information directly about the fishery and/or species involved, although a **quantitative analysis** that supports **high confidence** that the strategy will work is not yet available. SG100 would not be met if scored. (SG 100 is not scored because not all scoring issues achieve 80).

| Management strategy implementation |            |  |   |   |
|------------------------------------|------------|--|---|---|
| <b>d</b>                           | 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 is <b>achieving its objective as set out in scoring issue (a) or (b).</b> |
|                                    | Met?       |  | <b>Yes</b>  | <b>Not scored</b>   |

#### Rationale

Reporting of the number of ETP interactions has improved in the recent years, as shown by a higher number of interactions being reported, especially the number of sea snakes and syngnathids reported. VMS monitoring allows an assessment of fishers' compliance with closed areas. **SG80 is probably achieved**, although more information on successful implementation will be sought (e.g. logbooks verifiability, observer coverage rate and other). There is no **clear evidence** that the strategy/comprehensive strategy is being implemented successfully and **is achieving its objective as set out in scoring issue (b) and SG100 is not likely to be achieved if scored.** (SG 100 is not scored because not all scoring issues achieve 80).

| Review of alternative measures to minimize mortality of ETP species |            |   |  |  |
|---|------------|---|--|--|
| <b>e</b>  | 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 | No | Not scored |
|------|-----|----|------------|
|------|-----|----|------------|

#### Rationale

There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species with the occasion of the BRD trials, before the introduction of their mandatory use in the fishery. The use of TEDs was found to reduce the catch of sea snakes by 42% in Shark Bay but not in Exmouth Gulf (Kangas and Thompson, 2004). **SG60 is achieved.**

Internal reviews of such alternative measures take place, although not according to a set schedule and no written reports are available (George Kailis, pers com, December 2019). This information will be verified at the site visit through interviews with persons responsible for reviews. If it can be demonstrated that regular reviews (at least every five years) take place, the fishery will pass without a condition for this scoring issue. Otherwise, a condition will be issued.

#### Condition1:

**By the third surveillance, evidence must be presented that there has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and most effective measures are implemented as appropriate, and there is a plan for regular review of such alternative measures.**

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#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |                              |
|---------------------------|------------------------------|
| Draft scoring range       | <b>60-79</b>                 |
| Information gap indicator | More information is required |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

#### Condition1:

**By the third surveillance, evidence must be presented that there has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species**

**and most effective measures are implemented as appropriate, and there is a plan for regular review of such alternative measures.**

## PI 2.3.3 – ETP species information

| PI 2.3.3      |  | Relevant information is collected to support the management of UoA impacts on ETP species, including:   |  |   |
|---------------|--|---|--|---|
|               |  | <ul style="list-style-type: none"> <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>                        |  |   |
| Scoring Issue |  | SG 60   | SG 80  | SG 100  |
| <b>a</b>      | Information adequacy for assessment of impacts |   |  |   |
|               | Guide Post                                     | Qualitative information is <b>adequate to estimate</b> the UoA related mortality on ETP species.<br><br><b>OR</b><br><b>If RBF is used to score PI 2.3.1 for the UoA:</b><br>Qualitative information is <b>adequate to estimate productivity and susceptibility</b> attributes for ETP species. | Some quantitative information is <b>adequate 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.<br><br><b>OR</b><br><b>If RBF is used to score PI 2.3.1 for the UoA:</b><br>Some quantitative information is <b>adequate to assess productivity and susceptibility</b> attributes for ETP species. | Quantitative information is available to assess with a high degree of certainty the <b>magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status</b> of ETP species. |
|               | Met?   | <b>Yes</b>  | <b>Yes</b>   | <b>No</b>   |

## Rationale

The availability and adequacy of information on the UoA's related mortality and impact on ETP species has improved considerably with the fishery meeting Condition 4 of the initial MSC certification. In order to meet this condition, the fishery had to ensure that sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species and that information is sufficient to determine whether the fishery may be a threat to the protection and recovery of the ETP species. This condition was closed at the second surveillance audit (Banks and McLoughlin, 2018). Currently, some quantitative information is available and adequate to assess the UoA related mortality and the impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species, as it was presented in the ETP Outcome PI section. All ETP species have been assessed at ERA as groups of species (Stoklosa, 2019). **SG60 and SG80 are met.**

ETP interactions are not reported at species level, although species specific information, especially for snakes, is collected through the CMOP. **It is not clear if any species level information is collected for sawfish, and syngnathids and this should be clarified before or at the site visit.**

Information is not sufficient to assess all consequences for all ETP species if species level information is not collected. **SG100 is not met.**

|  |            |  |   |   |
|--|------------|--|---|---|
| Information adequacy for management strategy |            |  |   |   |
| <b>b</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 strategy</b> to manage impacts, minimize mortality and injury of ETP species, and evaluate with a <b>high degree of certainty</b> whether a strategy is achieving its objectives. |
|  |            |  |   |   |

| Met? | Yes | Yes | No |
|------|-----|-----|----|
|------|-----|-----|----|

#### Rationale

A monitoring program for ETP, the CMOP, has been implemented and data continue to be collected. Even though currently there is insufficient information to measure trends, data collected will allow this in the near future.

The Department is also engaged as co-investigator on a FRDC project: "Design and implementation of an Australian National Bycatch Report system" and the Department's consolidated protected and listed species bycatch database was in final validation at the time of the third MSC surveillance audit (Banks et al. 2019). The collection of information in a database will make it available for research and support analyses of trends and the development of the strategy. Information is adequate to measure trends and support a **strategy** to manage impacts on ETP species. **SG60 and SG80 are likely to be met.** Information is not yet adequate to support a **comprehensive strategy** to manage impacts, minimize mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives, mainly because there is no information on short-term and long-term post-capture survival of the animals returned to water alive and on indirect effects on species reproductive capacity, especially for sea snakes. **SG100 is not likely to be met.**

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Stoklosa, R. 2019. Ecosystem Based Fishery Management—Ecological Risk Assessment of the Exmouth Gulf Prawn Managed Fishery, prepared for the Department of Primary Industries and Regional Development, Fishery, Western Australia. E-Systems, Hobart.

#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |



## PI 2.4.1 – Habitats outcome

| 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   |
| <b>a</b>      | Commonly encountered habitat status |   |   |  |
|               | 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 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?                                | <b>Yes</b>  | <b>Yes</b>  | <b>Yes</b>   |
| Rationale     |                                     |   |   |  |

Habitat mapping work that has recently been completed in response to Condition 6 of the initial MSC certification, shows that the commonly encountered habitat is flat, soft sediment dominated, with no or sparse biota (Figure 19). Quantitative independent studies undertaken by CSIRO on trawl impact on benthic habitats in Exmouth Gulf suggest that these types of sand/silt habitats are resilient to fishing (Pitcher et al. 2017).

Trawl footprint (Figure 19) has been estimated. A small area of the EGPMF is trawled every year which is approximately 22% while nearly 21% of the Gulf is permanently closed (Banks et al. 2019, Pitcher et al. 2018). Information on trawl footprint estimates has been detailed in the 3<sup>rd</sup> MSC surveillance report (Banks et al. 2019). New bycatch surveys (Banks et al. 2019) have also shown that the biodiversity supported by this habitat did not change significantly since the 2002/03 comprehensive biodiversity survey (Kangas et al. 2007), suggesting the structure and function of this habitat were not significantly altered.

Pitcher et al. (2018) have estimated the Relative Benthic Status (RBS) of the predicted assemblages in Exmouth Gulf as a measure of the habitat status. RBS provides an estimate of the long-term equilibrium status of the benthos with current trawling effort, relative to that with no trawling. This measure allows an assessment of habitat status against sustainability standards and represents the probability that habitat's structure and function are >80% of their unaltered state (Pitcher et al. 2018) consistent with MSC standard. This index could be used as quantitative information in probabilistic terms that meet MSC requirements of "likely" (60% confidence) "highly likely" (70% confidence) and "high degree of certainty" (80% confidence) (Table SA9, MSC, 2018a, p. 31).

The estimated RBS index for the broad scale habitat that is encountered by EGPMF (part of assemblage 1, Figure 20) was 0.918, i.e. there was 91.8% probability that the trawled habitats' status is above 80% of their unimpacted level (Pitcher et al. 2018). To be noted that only a part of that assemblage is in Exmouth Gulf. The work done in Exmouth Gulf for this project was undertaken at a finer scale, as a case study, showing how this quantitative risk assessment method can be successfully applied in data-limited fisheries, where comprehensive habitat mapping is not available for entire extent of the fishery (Pitcher et al. 2017).

Pitcher et al. (2017), using Exmouth Gulf as a case study, have found that the status of trawled habitats and their RBS value depend on impact rate (depletion per trawl), recovery rate and exposure to trawling. In the shrimp-trawl fishery region, gravel habitat was most sensitive, and though less exposed than sand or muddy-sand, was most affected overall (regional RBS = 91% relative to un-trawled RBS = 100%). Muddy-sand was less sensitive, and though relatively more exposed, was less affected overall (RBS = 95%). Sand was most heavily trawled but least sensitive and least affected overall (RBS = 98%). The predicted distribution of mud – sand – gravel sediments is shown in Figure 21. Region-wide, >94% of habitat area had >80% RBS because most trawling and impacts were confined to small areas (Pitcher et al. 2017). These values are evidence that the commonly encountered habitat has not been reduced to a level lower than 80% of its unimpacted level.

Benthic habitats were assessed at the 2019 ERA and the resulted scores for sand and mud habitat were low risk (Stoklosa, 2019).

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 and **SG60, 80 and 100 are likely to be**

met based on quantitative estimates of probability that the commonly encountered habitat's status is >80% of unimpacted level.

| b | VME habitat status |   |  |   |
|---|--------------------|---|--|---|
|   | 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 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?               | NA  | NA   | NA  |

No VMEs could be identified in Exmouth Gulf and this scoring issue does not need to be scored.

| c         | Minor habitat status |  |  |   |
|-----------|----------------------|--|--|---|
|           | 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?                 |  |  | Yes   |
| Rationale |                      |  |  |   |

There is a low interaction with other habitats. This has been detailed in Banks et al. (2019).

There is minimal interaction with other habitats. This has been detailed in the third surveillance report in Banks et al. (2019).

According to the new habitat map (MG Kailis/DPIRD, 2018 in Banks et al, 2019) minor habitats are:

- Coral reef
- Filter feeder habitat
- Mixed assemblage (macro algae, seagrass, anemones, ascidians, bryozoans, soft coral) (Table 17).

**Filter feeder habitat** can be considered the most sensitive habitat and potential VME if its structure and function will be proven to have VME characteristics. The participants at the 2019 ERA workshop considered that this habitat type was at a medium risk from the fishery's operational activities (Stoklosa, 2019). However, at this stage there are no rules and regulations for the protection of filter feeder habitat that overlaps with the EGPMF and it cannot be assessed as VME. In any case, the overlap with the footprint is less than 20%, which is consistent with the MSC standard that requires VME to not be reduced to less than 80%. The overlap in 2018 was about 6% of the habitat range, mostly trawled at low intensity, less than 2% being trawled at medium intensity. The 2018 overlapping area is less than the 2012-16 cumulative overlap (see Table 17). In addition, extensive filter feed habitat occurs within the Ningaloo Marine Park, while the role of the filter feeder patches in Exmouth Gulf may not be as significant. Kangas et al. (2015) state that some areas of high biodiversity such as sponge gardens can be found within trawlable areas, but these may not be permanent structures given the high natural environmental disturbance regime (e.g. storm surges, tides, flooding and cyclones).

**Mixed assemblage habitat**, as identified in the new habitat map, had an overlap with the trawl footprint slightly higher than 20%. In 2018, however, the overlap of the mixed assemblage habitat was lower than the 2012-2016

cumulative overlap (22% vs 24%) of the habitat range, with no high intensity trawling, and half of the overlapping area being trawled at low intensity.

Macroalgal beds are a significant feature of Exmouth Gulf and are considered responsible for the comparatively high levels of productivity despite an apparent lack of nutrient input. Macroalgal beds are predominantly located in the southern reaches and on the periphery of the Gulf in the shallow subtidal and low intertidal limestone pavement regions. The majority of these areas, as well as large areas of seagrass beds, are protected from trawling in the permanent nursery closure (Kangas et al. 2015).

Experiments in the NPF have indicated that sessile or slow-moving taxa recover from the effects of intensive trawling within 6 – 12 months (Haywood et al. 2005), and it is likely that benthic habitats in Exmouth Gulf would recover in a similar time frame.

The low overlap is **evidence** 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 and **SG100 is achieved**.

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Banks, R., McLoughlin, K. and Zaharia, M. (2019) Exmouth Gulf Prawn Managed Fishery MSC Surveillance Report No 3. Prepared for the MG Kailis Group of Companies. MRAG Americas, Inc. April 2019. Available at: <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=V6xqPnjiNh4ET6v9Sv3nPU8DK93cbZ5BQHJgXWgOs6K64PbSYcOPxXp5Gh4RnMzl>

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## Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.4.2 – Habitats management strategy

| 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   |
| <b>a</b>      | Management 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 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?                         | <b>Yes</b>   | <b>Yes</b>   | <b>Yes</b>   |

### Rationale

DPIRD together with the Department of Biodiversity Conservation and Attractions (DBCA) manage and conserve the aquatic habitats of Western Australia, including Exmouth Gulf. There is a strategy in place to manage all MSC UoAs and non-MSC fisheries impacts on habitats. This consists in marine reserves managed by DBCA, with zones with specific protection objectives, including several zones for habitat protection such as Mandu Special Purpose Zone for benthic protection. Trawling is not allowed in any marine park zones, except for in general use zones.

All commercial fisheries and recreational fisheries are managed by DPIRD. The Department of Fisheries has established a comprehensive set of spatial management closures within the Gascoyne region that are equivalent to a number of IUCN categories for marine protected areas. Extensive trawl closures, including inside Exmouth Gulf regions, provide protection to sensitive benthic habitat such as coral reef, sand flats and seagrass beds (Gaughan et al. 2019).

For EGPMF the main measure that is specifically designed for habitat management is measuring and controlling trawl footprint. Fishing activities (location and intensity) are monitored by the Department via a Vessel Monitoring System (VMS), with all licenced fishing boats operating in the EGPMF required to have an operational Automatic Location Communicator (DPIRD, 2018). VMS data is used to estimate annual and multiannual footprint and footprint overlap with different habitat types.

Ongoing video assessment and predictive mapping of habitats has also implemented (Banks et al. 2019).

There is a **strategy** in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats. **SG60, 80 and 100 are likely to be achieved.**

|          |                                |  |  |   |
|----------|--------------------------------|--|--|---|
| <b>b</b> | Management strategy evaluation |  |  |   |
|          | 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 basis for confidence</b> that the measures/partial strategy will work, based on <b>information directly about the UoA and/or habitats</b> involved. | <b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on <b>information directly about the UoA and/or habitats</b> involved. |
|          | Met?                           | <b>Yes</b>   | <b>Yes</b>   | <b>Yes</b>  |

### Rationale

Sensitive habitats from Exmouth Gulf have been mapped and their ranges are known. These are protected in marine park zones and do not overlap or there is small overlap with trawl footprint (i.e. filter feeder habitat, coral reefs, algal mats, seagrass meadows). For commonly encountered habitat, which could not be mapped using traditional methods, estimating the RBS index (see Outcome PI) allows an assessment of habitat status in rapport to its unimpacted levels, when detailed information is missing. RBS values obtained are evidence that the commonly encountered habitat has not been reduced to a level lower than 80% of its unimpacted level. This, together with the results from the analysis of the recent bycatch survey that show that abundance and species composition of the catch were similar to historical data, suggest the structure and function of the

habitat were not affected. The RBS study and bycatch surveys can be considered testing that support high confidence that the strategy will work, based on **information directly about the UoA and habitats** involved. **SG60, 80 and 100 are met.**

| Management strategy implementation |            |  |  |  |
|------------------------------------|------------|--|--|--|
| <b>C</b>                           | Guide post |  | There is <b>some quantitative evidence</b> that the measures/partial strategy is being implemented successfully. | There is <b>clear quantitative evidence</b> that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a). |
|                                    | Met?       |  | <b>Yes</b>   | <b>Yes</b>   |
| Rationale                          |            |  |  |  |

To ensure compliance with the specified closures, fishing activities (location and intensity) are monitored by the Department via a Vessel Monitoring System (VMS), with all licenced fishing boats operating in the EGPMF required to install an operational Automatic Location Communicator (DPIRD, 2018). Using VMS data, trawl footprint is estimated and monitored as well as the level of overlap with each habitat type (Banks et al. 2019). This is clear quantitative evidence that the strategy is implemented successfully. The high RBS indexes that were found in independent research (Pitcher et al. 2017, 2018) suggest that the strategy is achieving its objective. **SG80 and SG100 are achieved.**

| Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs |            |  |   |  |
|---|------------|--|---|--|
| <b>d</b>  | Guide post | There is <b>qualitative evidence</b> that the UoA complies with its management requirements to protect VMEs. | There is <b>some 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 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?       | <b>NA</b>  | <b>NA</b>   | <b>NA</b>  |
| Rationale   |            |  |   |  |

Currently there are no requirements or measures from other fisheries to protect VMEs. The scoring issue does not need to be scored.

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#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |



## PI 2.4.3 – Habitats information

| 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  |   |   |
|---------------|---------------------|---|---|---|
| Scoring Issue |                     | SG 60   | SG 80   | SG 100  |
| <b>a</b>      | Information quality |   |   |   |
|               | Guide post          | <p>The types and distribution of the main habitats are <b>broadly understood</b>.</p> <p><b>OR</b></p> <p><b>If CSA is used to score PI 2.4.1 for the UoA:</b><br/>Qualitative information is adequate to estimate the types and distribution of the main habitats.</p> | <p>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.</p> <p><b>OR</b></p> <p><b>If CSA is used to score PI 2.4.1 for the UoA:</b><br/>Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.</p> | The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats. |
|               | Met?                | <b>Yes</b>  | <b>Yes</b>  | <b>Yes</b>  |
| Rationale     |                     |   |   |   |

Information of benthic habitats from Exmouth Gulf is available from Lyne (2006) and a validation map realised in 2018 by MG Kailis and DPIRD. The method used for the 2018 map is detailed in Banks et al. 2019. As a summary, both maps have shown a dominance of sand habitat, with some filter feeder habitat, coral reefs and mixed assemblages. The validation survey showed a good correlation with Lyne map (Banks et al. 2019). However, the authors consider that, given the increased number of training sites used, it is likely that the 2018 map provides a more accurate estimate of the spatial distribution of benthic habitats within the EGPMF and suggest that the validation sites can be surveyed on a regular basis to monitor potential changes in the benthic habitats within the EGPMF. Video monitoring of the site has been implemented (Banks et al. 2019).

Ecological Risk Assessment include habitat component. The latest ERA found that most habitat type were at low or negligible risk from the EGPMF. Only filter feeder habitat was scored as medium risk, however the overlap of the trawl footprint with this minor habitat is less than 20% (Stoklosa, 2019), thus over 80% remains in its unimpacted state.

The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats due to historical and recent habitat mapping work and ongoing video monitoring. **SG60, 80 and 100 are met.**

|          |  |  |  |  |
|----------|--|--|--|--|
| <b>b</b> | Information adequacy for assessment of impacts |  |  |  |
|          | Guide post                                     | <p>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.</p> <p><b>OR</b></p> <p><b>If CSA is used to score PI 2.4.1 for the UoA:</b></p> | <p>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.</p> <p><b>OR</b></p> | The physical impacts of the gear on all habitats have been quantified fully. |
|          |  |  |  |  |

|  |      |  |   |            |
|--|------|--|---|------------|
|  |      | Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats. | <b>If CSA is used to score PI 2.4.1 for the UoA:</b><br>Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats. |            |
|  | Met? | <b>Yes</b>   | <b>Yes</b>  | <b>Yes</b> |

#### Rationale

Footprint data was used also in Pitcher project to estimate impact from trawl fisheries on benthic habitats (Pitcher et al. 2018). Physical impact of the gear on EGPMF commonly encountered habitat has been quantified in this project as less than 20%, with a high degree of certainty (i.e. there is less than 20% chance that the habitat's structure and function has been reduced to a level lower than 80%, as shown by the RBS indices higher than 0.80). Physical impact on all other habitats have been quantified through trawl footprint overlap which is less than 20% of each habitat's range.

The physical impacts of the gear on all habitats have been quantified fully. **SG60, 80 and 100 are met.**

| Monitoring |            |  |   |  |
|------------|------------|--|---|--|
| <b>C</b>   | 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?       |  | <b>Yes</b>  | <b>Yes</b>   |

#### Rationale

VMS data continues to be collected and stored in the DPIRD's database to increase footprint estimate accuracy. Validation sites continue to be video monitored for changes (Banks et al. 2019). Changes in all habitat distributions over time are measured and **SG60, 80 and 100 are met.**

#### References

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#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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



|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.5.1 – Ecosystem outcome

| 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   |
| <b>a</b>         | <b>Ecosystem status</b> |  |   |  |
|                  | <b>Guide post</b>       | 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 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. |
|                  | <b>Met?</b>             | <b>Yes</b>   | <b>Yes</b>  | <b>Yes</b>   |
| <b>Rationale</b> |                         |  |   |  |

An ecosystem modelling study was not undertaken for Exmouth Gulf and it is not required, considering the small scale of the fishery. Ecosystem modelling studies have been undertaken for larger areas where prawn trawling occurs, such as Spencer Gulf (Gillanders et al. 2015) and the Gulf of Carpentaria (Bustamante et al. 2010). The results of these studies suggested that the effects of prawn trawling at the current level of fishing did not disrupt key elements underlying ecosystem structure and function and cannot be distinguished from other sources of variation.

Exmouth Gulf is an inverse estuary with an area of ~4000 km<sup>2</sup> tropical gulf in the Gascoyne Coast Bioregion of WA, at the transition between the tropical waters of the northern coast and the temperate waters of the southwest. The Gulf is open to the north and enclosed by the Cape Range and large sand beaches to the west, and a narrow band of mangroves bordering extensive salt flats to the east and south (Stoklosa, 2019). Exmouth Gulf supports an important commercial fishery, EGPMF, as well as a small beach seine fishery, nature-based tourism and recreational fisheries, and represents an important habitat for protected species such as dugong, sea snakes, sawfish and turtles. In addition, Exmouth supports some aquaculture sites (Gaughan et al. 2019).

Important ecosystem elements in Exmouth Gulf are the cyanobacterial mats with important role in the ecosystem's productivity, limited areas of seagrass habitat and macroalgae which offer nursing and feeding grounds as well as refuge for species of commercial importance and ETPs, as well as the filter feeder communities. These key habitats are nearly fully protected in permanently closed areas and physically separated from trawling grounds (Gaughan et al. 2019). Cyanobacterial mats that live in the hyper-saline water of the reverse estuary have an important role in Gulf's primary production due to their capacity of nitrogen fixation during tidal inundation (Adame et al. 2012).

Most ecosystem impacts from fishing activities in the EGPMF are likely to be due to the removal of the target species, brown tiger and western king prawns, as these are the species with the highest proportion in the catch (see catch composition in Banks and McLoughlin, 2018). Fishing mortality rate of prawns in Exmouth Gulf is relatively low compared to the natural seasonal variability of prawn populations as a consequence of environmental conditions, such as water temperature, currents and natural events, e.g., cyclones (Kangas et al. 2006 in Banks et al. 2015). Other retained (non-target) species are taken in relatively small quantities (Banks et al. 2019) and generally have large distribution ranges (Kangas et al. 2007).

The biodiversity of Exmouth Gulf in relation to prawn fishing activities has been studied as part of an FRDC-funded project by Kangas et al. (2007). Results indicate that latitudinal effects appear to exert a stronger influence on community structure than the effects of trawling, although for fish it was shown that the fishing impacts were detectable with moderate to high trawl intensities and that low trawl effort sites had the highest abundance (Kangas et al. 2007).

The new bycatch survey data has been compared to historical biodiversity data and, while some differences were found, these were expected, considering the gap of over a decade between surveys. The bycatch samples were extremely diverse, with the most abundant fish and invertebrate species being the same in the new data as in the historical data: top 50 species contributed ca. 95% of bycatch; of the top 50 contributing

species 34 were the same in both old and new datasets, these representing 75% of the total catch (Banks and McLoughlin, 2018).

The recent ERA assessed the main risks of impacts of the fishery on the ecosystem, such as:

- Trophic interactions due to removal of retained species;
- Trophic interactions due to discarding bycatch;
- Risks of translocation of pests and disease;
- Risks of ghost fishing;
- Risks to broader environment such as fuel discharge and turbidity (Stoklosa, 2019).

The ERA workshop participants considered that all these risks were low or negligible (Stoklosa, 2019).

The longevity of the fishery of over five decades (DPIRD, 2018) and the accreditation of operating within the Guidelines for the Ecologically Sustainable Management of Fisheries (the Department of the Environment accreditation) are also evidence to support that the fishery is operating sustainably.

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, 80 and 100 are likely to be met.**

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Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.5.2 – Ecosystem management strategy

| 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   |
| <b>a</b>  | Management strategy in place       |  |  |  |
|   | 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 strategy</b> in place, if necessary, which takes into account <b>available information and is expected to restrain 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 main impacts of the UoA</b> on the ecosystem, and at least some of these measures are in place. |
|   | Met?                               | <b>Yes</b>   | <b>Yes</b>   | <b>Yes</b>   |
| Rationale   |                                    |  |  |  |
| EGPMF Harvest Strategy 2014-2019 consists of a plan in place which contains measures to address all main impacts of the EGPMF on the ecosystem (DOF, 2014a), and measures are in place for each component: target, retained species/primary, bycatch/secondary, ETPs, and habitats. The plan includes management objectives, performance indicators, reference levels and control rules. EGPMF Harvest Strategy (2014-2019) remain in force until replaced. There is a <b>strategy</b> that consists of a <b>plan</b> , in place which contains measures to <b>address all main impacts of the UoA</b> on the ecosystem, and these measures are in place.<br><b>SG60, SG80 and SG100 are met.</b> |                                    |  |  |  |
| <b>b</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 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 confidence</b> that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.   |
|   | Met?                               | <b>Yes</b>   | <b>Yes</b>   | <b>No</b>  |
| Rationale   |                                    |  |  |  |
| There is <b>some objective basis for confidence</b> that the strategy will work, based on empirical testing, from practical experience, and based on bycatch and habitat research. The information is directly about the UoA and/or the ecosystem involved. <b>SG60 and SG80.</b> The strategy has not been analytically tested and there is no testing that supports high confidence (80% probability) that the strategy will work. <b>SG 100 is not met.</b>  |                                    |  |  |  |
| <b>c</b>  | Management strategy implementation |  |  |  |
|   | Guide post                         |  | There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented successfully</b> .  | There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented successfully and is achieving its objective as set out in scoring issue (a)</b> .                                    |
|   | Met?                               |  | <b>Yes</b>   | <b>Yes</b>   |

## Rationale

There is evidence for effective implementation in the form of lowering of overall bycatch, increased reporting, VMS monitoring of temporal and spatial closures, estimation of the trawl footprint and the overlap of the footprint and each habitat type which did not increase. These represent **clear evidence** that the strategy is being **implemented successfully and is achieving its objective as set out in scoring issue (a). SG80 and SG100 are met.**

## References

DPIRD (2018). Exmouth Gulf Prawn Managed Fishery Harvest Strategy 2014 - 2019. Department of Fisheries, WA. Available at: [https://www.fish.wa.gov.au/Documents/management\\_papers/fmp265.pdf](https://www.fish.wa.gov.au/Documents/management_papers/fmp265.pdf)

[Draft scoring range and information gap indicator added at Announcement Comment Draft Report](#)

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 2.5.3 – Ecosystem information

| 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 |
| <b>a</b>      | Information quality |   |   |        |
|               | 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?                | <b>Yes</b>  | <b>Yes</b>  |        |
| Rationale     |                     |   |   |        |

Quantitative information is available and continue to be collected on each component of the ecosystem (catch landings, catch composition - from bycatch surveys, ETP interactions and mortalities, habitat mapping and trawl footprint estimates. Information on target and byproduct species life history and stock status is also collected. Stock assessments are available for target species (Kangas et al. 2017 in Banks et al. 2019). Peer reviewed published research studies are available on trawl impact on benthic habitats (Pitcher et al. 2017, 2018). Publicly available research and other assessments reports also constitute information sources. Reports of the latter type are available on trawl impacts on Exmouth Gulf Biodiversity (Kangas et al. 2007), BRD trials results (Kangas and Thomson, 2004), the MSC report series (Kangas et al. 2015), MSC surveillance reports, the Department of Environment Assessment reports (e.g. DEE, 2015), and others.

The effects of climate change on the coastal ecosystems of Western Australia have become clear after an extreme marine heat wave in 2011, with significant loss of seagrass and declines in some commercial invertebrate stocks. Stock declines were due to a combination of factors including high fishing pressure in previous years and environmental change. The effects of climate change and factors influencing the recovery of marine invertebrate stocks, including target and primary species in EGPMF, have been the focus of research since. A number of peer reviewed journal articles have been published on this subject. A summary of this research is presented in Caputi et al. 2019.

Information is adequate to **broadly understand** the key elements of the ecosystem. **SG60 and 80 are met.**

|                              |            |   |  |  |
|------------------------------|------------|---|--|--|
| Investigation of UoA impacts |            |   |  |  |
| <b>b</b>                     | Guide post | Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but <b>have not been 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 investigated in detail.</b> | Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and <b>have been investigated in detail.</b> |
|                              | Met?       | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>   |
| Rationale                    |            |   |  |  |

When investigating main interactions between the UoA and the ecosystem elements, the MSC guidance recommends that at SG 100 focus should be on the “main interactions between the UoA and the ecosystem elements” and

- the UoAs should be capable of adapting management to environmental changes as well as managing the effect of the UoA on the ecosystem.
- monitoring the effects of environmental change on the natural productivity of the UoAs should be considered best practice and should include recognition of the increasing importance of climate change.

Caputi et al. (2016) illustrates that fisheries management under extreme temperature events requires an early identification of temperature hotspots, early detection of abundance changes (preferably using pre-recruit surveys), and flexible harvest strategies which allow a quick response to minimize the effect of heavy fishing on

poor recruitment to enable protection of the spawning stock. This has required researchers, managers, and industry to adapt to fish stocks affected by extreme environmental events that may become more frequent due to climate change. Caputi's methodology has been adopted and is used for early detection of low recruitment and decision making in the management of invertebrate stocks. This suggests that the UoA should be capable of adapting management to environmental changes as well as managing the effect of the UoA on the ecosystem, i.e. lower TACC or stop fishing to allow stock to recover. Through pre-recruitment surveys, the effect of the environmental change on natural productivity of the UoA is monitored and the increasing importance of climate change is well recognised. **SG80 and SG100 are achieved.**

| c | Understanding of component functions |  |   |   |
|---|--------------------------------------|--|---|---|
|   | 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?                                 |  | <b>Yes</b>  | <b>Yes</b>  |

#### Rationale

The impacts of the fishery on target species, secondary, ETP species and habitats have been identified with the occasion of the first MSC assessments and MSC surveillance and during current MSC reassessment and the main functions of these components are understood from the available information. **SG80 and SG100 are met.**

| d | Information relevance |  |  |  |
|---|-----------------------|--|--|--|
|   | 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 elements</b> to allow the main consequences for the ecosystem to be inferred. |
|   | Met?                  |  | <b>Yes</b>   | <b>Yes</b>   |

#### Rationale

Overall, the information on the impacts of the UoA on the components **and elements** is available and adequate (see issue a and b) to allow the main consequences for the ecosystem to be inferred.

All identified potential hazards to ecosystem elements and to ecosystem overall are periodically assessed at ERAs. The most recent ERA stakeholder workshop has been completed in 2019 (Stoklosa, 2019) **SG80 and 100 are likely to be met.**

| e | Monitoring |  |  |   |
|---|------------|--|--|---|
|   | 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?       |  | <b>Yes</b>   | <b>Yes</b>  |

#### Rationale

Sufficient information is collected and stored in DPIRD databases and analysed to support the development of strategies to manage all fisheries impacts on Exmouth Gulf's ecosystem (e.g. Gaughan et al. 2019). **SG60, 80 and 100 are likely to be met.**



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## Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |   |
|---------------------------|---|
| Draft scoring range       | >80                                       |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## 8.4 Principle 3

### 8.4.1 Legal and customary framework (P 3.1.1)

The Offshore Constitutional Settlement provides for the Australian states and the Northern Territory to manage fisheries out to 3 nautical miles from the coast, and for the Australian Government to manage fisheries from three to 200 nautical miles. The settlement is not set out in one single document but is found in the legislation that implements it, including WA fisheries legislation. However, these default arrangements are frequently varied through instruments known as offshore constitutional settlement arrangements.

Australia is a signatory to a number of international agreements and conventions (which it applied within its EEZ), such as:

- *United Nations Convention on the Law of the Sea* (regulation of ocean space);
- *Convention on Biological Diversity and Agenda 21* (sustainable development and ecosystem based fisheries management);
- *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES; protection of threatened, endangered and protected species);
- *Code of Conduct for Responsible Fisheries* (standards of behaviour for responsible practices regarding sustainable development);
- *United Nations Fish Stocks Agreement*; and
- State Member of the *International Union for Conservation of Nature* (marine protected areas).

The Environment Protection and Biodiversity Conservation (EPBC) Act 1999 is the Australian Government's (hereafter referred to as the 'Commonwealth Government') central piece of environmental legislation. The EPBC Act is administered by the Commonwealth DoE 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. The DoE 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 Commonwealth DoE, through the Commonwealth Minister, has a legislative responsibility to ensure that all managed fisheries undergo strategic environmental impact assessment before new management arrangements are brought into effect; and all fisheries in Australia from which product is exported undergo assessment to determine the extent to which management arrangements will ensure the fishery is managed in an ecologically sustainable way in the long term.

WA fisheries legislation and policy conforms to overarching Commonwealth Government fisheries and environmental law, including the EPBC Act. WA's commercial export fisheries have been

assessed using the Australian National ESD Framework for Fisheries, in particular, the *Guidelines for the Ecologically Sustainable Management of Fisheries* (the Guidelines; CoA 2007).

There are three different statutory entities responsible for the control and management of fisheries off the coast of WA:

- the WA State Government;
- the WA Fisheries Joint Authority; and
- the Commonwealth Australian Fisheries Management Authority (AFMA).

The WA State Government and Fisheries Joint Authority-managed fish resources that fall under the jurisdiction of the FRMA are described in a formal agreement between the Commonwealth and State Governments known as the *Offshore Constitutional Settlement 1995* (OCS 1995). Commonwealth fisheries are managed by AFMA under the Commonwealth *Fisheries Management Act 1991*.

The OCS 1995 sets out that the State will manage all trawling on the landward side of the 200 m isobath in WA, and the Commonwealth will manage all deep-water trawling. The EGPMF is managed by the State of WA pursuant to the OCS 1995, as its western boundary is the 200 m isobath. There are no migratory or straddling stock management requirements associated with this fishery.

The Government of WA operates under the Westminster system, and an important tenant of this system is that the responsible Minister makes executive decisions. Insofar as the administration of fisheries in WA is concerned, the relevant executive decision maker is the Minister for Fisheries.

The role of the Department of Primary Industries and Regional Development (the Department) is established and governed under the State Public Sector Management Act 1994 (PSM Act) which is administered by the Western Australian Public Sector Commission under the Department of Premier and Cabinet. Departmental staff must act in accordance with the PSM Act and any allegations of official corruption by Departmental staff are handled by the WA Corruption and Crime Commission. The Department is required to report on its performance annually via its Annual Report to State Parliament (Annual Report).

The Department is principally responsible for assisting the Minister for Fisheries in administering the following Acts and Regulations that apply to the aquatic resources (excluding pearling) located in WA:

- Fisheries Resources Management Act (FRMA) 1994;
- Fish Resources Management Regulations (FRMR) 1995;
- Fisheries Adjustment Schemes Act 1987; and
- Fishing and Related Industries Compensation (Marine Reserves) Act 1997.

The FRMA adheres to arrangements established under relevant Australian laws with reference to international agreements as set out in sections 3 and 4A —

Section 3 of the FRMA:

*“The objects of this Act 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.”*

Section 4A of the FRMA precautionary principle, effect of, states —

*“In the performance or exercise of a function or power under this Act, lack of full scientific certainty must not be used as a reason for postponing cost-effective measures to ensure the sustainability of fish stocks or the aquatic environment.”*

The FRMA deals with broad principles, the provision of head powers and high-level overarching matters; the FRMR and other subsidiary legislation, such as commercial fishery management plans, deal with the details needed to put these matters into practice.

In many cases, the FRMA will specifically require some matters to be dealt with by subsidiary legislation. Subsidiary legislation cannot be inconsistent with the provisions of the FRMA, under which it was made, and must be permitted to be made by a head of power in the empowering Act.

In 2010, the (then) Minister for Fisheries directed the Department to investigate and scope the requirements for a new Western Australian Act of Parliament to ensure the sustainable development and conservation of the State's aquatic biological resources into the future.

This review recognised the need for the establishment of a clear statutory basis for commercial and recreational fishing access rights as a component in improving the overall robustness of sustainable fisheries management and improving security of resource access for all fisheries sectors.

A *Aquatic Resources Management Act* (ARMA) was drafted in 2014 to replace the FRMA but not as yet implemented. This aims to ensure the ecologically sustainable development (ESD) of Western Australia's living aquatic biological resources and ecosystems and to preserve the *status quo* for marine reserves planning and management of marine mammal, reptile and bird populations under the *Wildlife Conservation Act 1950*, and the *CALM Act 1984*.

Importantly the ARMA's proposed framework (Government of Western Australia, 2016<sup>1</sup>) is to include provision for a rights-based management approach for all fishing sectors in the context of aquatic resource management strategies and sectoral harvest strategy plans.

ARMA's objectives of sustainable fisheries and aquatic management policy are as follows:

- the ecologically sustainable development and management of the State's aquatic resources;
- the development of strategies and plans for the conservation of aquatic resources and the protection of aquatic ecosystems;
- the development and management of aquaculture that is compatible with the protection of aquatic ecosystems; and
- the management of aquatic biosecurity.

The guiding principles for the proposed ARMA are that it:

- Provides an integrated aquatic resource management framework which incorporates ESD and biodiversity conservation goals;
- Incorporates the precautionary principle more explicitly;
- Broadens the base of the Act to include aquatic ecosystem issues in the management prescriptions;
- Provides a basis for simplifying subsidiary legislation where possible;
- Provides for greater devolution of decision making and delegation where suitable;
- Provides flexibility for more cost-effective management based on more explicit risk assessment;
- Provides explicit head powers to achieve biological and allocation outcomes across all harvest sectors as required; and
- Provides improved security of access for all resource users.

The Government's expectation is that the Bill will be ready for introduction into Parliament before the end of March 2020. The timeframe for passage of the amendment will be dependent on Parliamentary priorities.

There are well established mechanisms for administrative and legal appeals of decisions taken in respect of fisheries, which are prescribed in Part 14 of the FRMA. Most decisions made by the Chief Executive Officer of the Department and disputes regarding the implementation and administration of

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<sup>1</sup>

[https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc\\_40749.pdf/\\$FILE/Aquatic%20Resources%20Management%20Act%202016%20-%20%5B00-c0-00%5D.pdf?OpenElement](https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_40749.pdf/$FILE/Aquatic%20Resources%20Management%20Act%202016%20-%20%5B00-c0-00%5D.pdf?OpenElement)

fisheries legislation can be taken to the Western Australian State Administrative Tribunal (SAT) for review or the WA (and Commonwealth) Court System.

These mechanisms have been used and tested across several fisheries. The decisions of the SAT and the Courts are binding on the Department (for details of decisions see <http://decisions.justice.wa.gov.au/SAT/SATdcsn.nsf>). All SAT decisions must be carried out by the Department (section 29(5) of the *State Administrative Tribunal Act 2004*).

Criminal offences against the FRMA are dealt with by the Magistrates Courts and a commercial operator or recreational fisher is either found guilty or not guilty.

All changes to, or new, fisheries legislation, including subsidiary legislation such as management plans and orders, 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 who 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 fisheries legislation. Fisheries legislation is “passed and enacted” when it is gazetted.

This framework applies to the EGPMF. It should be noted that the consultative, educative and partnership approach to management, which is inclusive of all stakeholders, provides informal but effective mechanisms to minimise opportunities for disputes.

Statutory aboriginal native title rights are managed under the Commonwealth *Native Title Act 1993* (NTA). A registered native title claim is an application where a decision about native title is yet to be made. A determination of native title is a decision that native title does or does not exist in a particular area of land and / or waters (the determination area). The National Native Title Tribunal facilitates the negotiation of indigenous land use agreements following a claim or determination and is required to keep registers of approved native title determination and native title claims.

A key aspect of the legislation is that proposed developments or activities (including fisheries where a registered claim or determination extends into State waters) that may affect native title are classed as ‘future acts’. This requirement has been in place since 1993. In 1999, the Department obtained a ‘Report for Fisheries Western Australia’ in respect of the interaction between fisheries / pearling legislation and the NTA. That Report advised that:

1. The very wide scope of what can be done under a management plan means that they do have the potential to affect native title. As a result, a new management plan would be considered a ‘future act’ for the purpose of the NTA.
2. Because a new management plan would be covered by *Native Title Act* s24HA, it can be validly made without the need for any specific native title notification or comment procedure.
3. While specific notification is not required, it would, however, be prudent for comment to be sought from any native title parties likely to be affected by the new management plan under the provisions of the FRMA section 64(2).
4. The granting of licences and permits under management plans will not be future acts in their own right, and they can therefore be granted without the need for any native title procedure or notification requirement.

In accordance with point 3 above, the Department provides any native title party, or parties, with an opportunity to comment on the development of a proposed fishery.

There are relatively large Aboriginal communities within the Gascoyne Coast Bioregion, and fishing is a popular activity. People of Aboriginal descent do not need a recreational fishing licence if fishing using traditional methods.

There is a registered Native title claim that includes the waters of Exmouth Gulf (WAD161/98) by the Gnulli people, who are represented by the Yamatji Marlpa Aboriginal Corporation. There is no indigenous land use agreement in place at this time. While the management plan for the EGPMF was established before 1993, the native title claimants are recognised as stakeholders.

The Australian High Court decision related to the application of State fisheries law to native title holders fishing for abalone in their local area in South Australia (Owen John Karpanty & Anor V Peter John Dietman)<sup>2</sup>. *The decision concluded that the State fisheries legislation did not extinguish native title rights to fish and that the defence under section 211 of the NTA was applicable. It is therefore unlikely that fisheries legislation in WA has the effect of extinguishing native title rights to fish and that the defence provided by section 211 of the NTA will apply to most cases where the right being exercised is for a traditional, non-commercial purpose and where the person is in fact, an Aboriginal person.*

At this stage Native Title rights do not confer exclusivity in relation to any Australian waters and there is no impact to existing commercial fishing licences as a result. However, the WA Government and DPIRD are committed to working with the customary fishing sector to recognising customary rights. Section 6 of the FRMA acknowledges the rights of Aboriginal persons fishing for a customary fishing purpose —

*“Aboriginal persons, application of Act to An Aboriginal person is not required to hold a recreational fishing licence to the extent that the person takes fish from any waters in accordance with continuing Aboriginal tradition if the fish are taken for the purposes of the person or his or her family and not for a commercial purpose.”*

The FRMA defines customary fishing as:

*“fishing by an Aboriginal person that —*

*(a) is in accordance with the Aboriginal customary law and tradition of the area being fished; and*

*(b) is for the purpose of satisfying personal, domestic, ceremonial, educational or non-commercial communal needs.”*

The FRMA also provides the power to make regulations to manage customary fishing.

These provisions are also included on the ARMA.

As standard practise department of Fisheries consults with relevant Native Title representative bodies regarding new legislation including in the development of new Management Plans, however, there is no legislative requirement to do so.

DPIRD released a policy position statement in 2009 relating to customary fishing in WA (DoF 2009), which states that customary fishing applies, within a sustainable fisheries management framework, to persons of Aboriginal descent who are fishing in accordance with the traditional law and custom of the area being fished and fishing for the purpose of satisfying personal, domestic, ceremonial, educational or non-commercial communal needs. Further details regarding social aspects of customary fishing in WA can be found in Franklyn QC (2003).

To date, the only survey designed to document the Indigenous catch was the National Recreational and Indigenous Fishing Survey carried out in 2000/01 (Henry and Lyle 2003). While this survey did not present data separately for regional WA, what is clear from this report is that the vast majority of the Indigenous catch is from inland and coastal waterways. Under the proposed ARMA, a quantity of a specified aquatic resource will be reserved for conservation and reproductive purposes, then setting a sustainable allowable harvest level for use by the fishing sectors. The quantity “reserved” also includes an allowance for Customary fishing and public benefit purposes, such as scientific research. This means that a specific share does not have to be allocated to the Customary sector, as that share is set aside prior to setting an allowable harvest level for the resource, and Customary fishing can continue in accordance with existing Customary fishing arrangements.

Integrated Fisheries Management (IFM) is a Government initiative adopted in 2004 aimed at making sure that WA’s fish resources continue to be managed in a sustainable way in the future. IFM recognises the rights of customary fishers of Aboriginal descent who are fishing for cultural needs. Given there is no evidence of Indigenous (or recreational) fishing for prawns in Exmouth Gulf, there is no requirement to implement IFM to manage the catch share of prawns between sectors in Exmouth Gulf; however, the customary fishing framework still applies.

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<sup>2</sup> <http://www.hcourt.gov.au/assets/publications/judgment-summaries/2013/hca47-2013-11-06.pdf>

#### 8.4.2 Consultation, Roles and Responsibilities (P 3.1.2)

The role and responsibilities of the State of WA in fisheries management is explicitly outlined in the *Western Australian Government Fisheries Policy Statement March 2012* and in the OCS 1995 arrangements, particularly in relation to the management of trawl fisheries.

The members of the Department's Corporate Executive and an organisational chart are published in the Department's *Annual Report 2019*. With respect to the EGPMF, key personnel to whom the responsibility of ensuring management, research and compliance outcomes, including proper prioritization of Departmental funding, include:

- Gascoyne / Northern Bioregion Program Manager (Aquatic Management Division);
- Gascoyne / Northern Bioregion Principal Management Officers (Aquatic Management Division);
- Supervising Scientist – Invertebrates (Research Division);
- Senior Scientist – Invertebrates (Research Division);
- Gascoyne Bioregion Compliance Manager (Regional Services); and
- Gascoyne Bioregion Regional Manager (Regional Services).

Planning and prioritisation is done in conjunction with the Chief Executive Officers of the peak sector bodies for the commercial and recreational sectors (where relevant) in WA:

- the Chief Executive Officer of the Western Australia Fishing Industry Council (WAFIC); and
- the Chief Executive Officer of Recfishwest.

The Department or Minister is responsible for advising licensees and WAFIC of Ministerial / Department decisions which are the subject of a consultation process. Responsibilities of the Department in formal consultation arrangements with WAFIC include that it

- Provides annual funding to WAFIC equivalent to 0.5 % of WA commercial fishing gross value of product (based on a three-year average), plus a pro-rata amount equivalent to 10 % of water access fees paid by aquaculture and pearling operators. Payments to WAFIC are made by six monthly instalments each year.
- Works with WAFIC in a manner consistent with WAFIC's role as the peak body representing commercial fishing interests in WA; and
- Engages with WAFIC, sector bodies and commercial fishing interests according to WAFIC Operational Principles contained in Table 19. .

**Table 19. WAFIC's Commercial Fisheries Consultation Operational Principles**

| Principle   | Responsible Body  | Example   |
|---|---|---|
| On generic policy issues which could affect, as a whole, the commercial fishing, aquaculture, and pearling industries   | WAFIC   | Bioregional marine planning; safety, education and training; research and development policy and biosecurity  |
| On policy issues which currently primarily affect one sector but which could have implications for the broader industry | WAFIC will nominate the relevant sector body and WAFIC and that body will jointly represent industry. | WAFIC would represent industry on marina and port access issues which may primarily initially impact on the fishing industry in regard to certain locations but have precedents for the |

rest of the industry for other locations; and on animal welfare.

|  |   |   |
|--|---|---|
| On issues which affect only one specific industry group. | The relevant sector association would represent itself but WAFIC would be kept informed and may have a statutory consultation role. | Regulation of gear design or compliance (WAFIC and specific industry associations). |
|--|---|---|

The Department or Minister is also responsible for ensuring that the recreational fishing sector, through Recfishwest, is formally consulted on proposed changes to recreational fisheries management and is advised of Ministerial / Department decisions which are the subject of a consultation process. The Minister is responsible for providing Recfishwest with a proportion of the income generated from annual recreational fishing licence fees to undertake its role as the peak body representing recreational fishing interests in WA.

The Department or Minister may seek and provide advice directly through peak bodies (WAFIC and Recfishwest) and / or sector associations. For example, WAFIC and Recfishwest, have direct input into the annual planning and priority setting process used to determine management, compliance, research and other priorities.

The WA Government formally recognises WAFIC and Recfishwest as the key sources of coordinated industry advice for the commercial and recreational sectors, respectively.

WAFIC is an incorporated association and is the peak industry body representing professional fishing, pearling and aquaculture enterprises, as well as processors and exporters in WA. It was created by the industry more than forty years ago to work in partnership with Government to set the directions for the management of commercial fisheries in WA.

WAFIC aims to secure a sustainable industry that is confident:

- of resource sustainability and security of access to a fair share of the resource;
- of cost-effective fisheries management;
- that its businesses can be operated in a safe, environmentally responsible and profitable way; and
- that investment in industry research and development is valued and promoted.

WAFIC provides a monthly newsletter to subscribers and publishes annual reports and financial information. 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.

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;
- Providing professional advice to the Government and industry members on issues affecting commercial fishing;
- Engaging, facilitating and consulting as necessary in order to deliver the above;
- 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 the Department;
- Providing feedback to the Department 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;
- Engaging in promotion, education and awareness of key sustainability messages consistent with best practice fisheries management and objects of the FRMA; and
- Conducting agreed activities that are consistent with the FRMA as it relates to the provision of assistance to, or promotion of, the fishing industry.

In carrying out the consultation functions on matters referred to it by the Minister or Department, WAFIC must:

- Distribute proposed changes to management arrangements including the Minister's / Department's reasoning for the proposal(s) and the information on which the proposal(s) is based to all licence holders in the relevant fishery;
- Describe the method by which licence holders may put their views;
- Ensure that licence holders have a reasonable period in which to consider their position and respond; and
- Ensure that the decision maker is fully aware of the views being put forward, so the decision maker gives proper and genuine consideration to the views being put forward.

Government's commitment to consultation with stakeholders is set out in the Western Australian Government's Fisheries Policy Statement of 2012. The broad consultation framework was developed following the outcome of a 2009 review (Paust et al. 2009) of consultation arrangements between the fishing sector and Government that incorporated the following objectives:

1. Enhanced efficiency, cost effectiveness and flexibility;
2. Clarification with respect to
  - a. fishing sector representation;
  - b. expertise based advice to the Department; and
  - c. the Department of Fisheries as the primary source of management advice to the Minister for Fisheries; and
3. Enhancement of the Department's engagement with industry, stakeholders and the public.

The review process resulted in:

- The replacement of Management Advisory Committees (MACs) with two key sources of advice: The Department as the key source of Government advice on fisheries management and WAFIC and Recfishwest as the key sources of coordinated industry advice for the commercial and recreational sectors, respectively.
- Recognition of WAFIC as the peak body representing the commercial fishing sector (including pearling and aquaculture), with funding provided by Government to support WAFIC in this role.
- Recognition of Recfishwest as the peak body representing the recreational fishing sector, with funding provided by Government to support Recfishwest in this role.
- Establishment of an Aquatic Advisory Committee (AAC) to provide independent advice to the Minister or the Department on high-level strategic matters.

- The establishment by the Minister (or Department) of tasked working groups to provide advice on specific fisheries or operational matters. Tasked working groups differ to MACs in that they are expertise based and operate on the basis of a written referral on a specific matter. Tasked working groups have been established in the past to provide advice on matters such as water access (lease) fees, strengthening of access rights in the fisheries legislation, development of a Government fisheries policy statement, and determining catch shares among sectors.
- Capacity for peak bodies to perform consultation functions on behalf of the Minister. In this regard, the Department has entered into a Service Level Agreement (SLA) with WAFIC for the provision of specified consultation services with the commercial sector (Paust et al. 2009).

An *Aquatic Advisory Committee* consists of members who have strong backgrounds in governance and policy (not necessarily fisheries) and provides independent advice to the Minister or the Department on high-level strategic matters.

Tasked working groups and panels can be established by the Director General or the Minister for Fisheries to provide independent, expert advice relating to a range fisheries management matters. They are highly flexible and are usually provided with a specified task, such as addressing resource access (e.g. closures and compensation) and allocation (e.g. IFM) or reviewing research, management or Government policy. The working groups work to a specific terms of reference within a particular timeframe.

### **Fishery Annual Management Meetings**

The Department has a general practice of holding regular (often annual) ‘management meetings’ with fishery licensees to discuss fishery research, management, compliance and specific issues affecting the fishery (e.g. marine park planning). These management meetings underpin the decision-making process at a fishery-specific level.

WAFIC coordinates the commercial fishery annual management meetings under the SLA. The location and timing (including priority) of the annual management meetings are determined by the WAFIC Industry Consultation Unit (ICU) in liaison with relevant Department managers.

These meetings are attended by Department officers, WAFIC and licence holders and can occur at any time during the year, but are usually held either before the start of a licensing year or at the end of a fishing season, in accordance with the schedule as agreed by WAFIC and the Department. The annual management meetings can also be open to other stakeholder groups (e.g. Recfishwest, processors, universities, other government departments, the conservation sector and the general public) following consultation with industry.

The annual management meetings are widely-recognised by the commercial licence holders as a mechanism for receiving the most up-to-date scientific advice on the status of the fishery, facilitating information exchange and for discussing new and ongoing management issues. The invaluable local information licensees provide to the Department at these forums is considered when making research, management and compliance decisions, such as amendments to Management Plans, if changes are being considered for the next season (noting that such amendments are subject to statutory consultation under the FRMA). Because there is only one company operating in the EGPMF, formal management meetings are held on an “as needs” basis (but are generally held annually).

The Department may also hold meetings, workshops or consult in writing with the operator in the EGPMF and other identified stakeholders on an “as needs” basis on a range of fisheries management matters including:

- Updates on the implementation of the ARMA;
- Ministerial decisions regarding the EGPMF or wider commercial fisheries’ policy and management;
- Environmental risk assessment workshops;
- ESD accreditation, including conditions and reassessments;
- Intra and inter-sectoral access, allocation and conflict issues;

- Impacts of other State Department policies (e.g. marine park planning or mining activities);
- Implementation of new initiatives (e.g. MSC accreditation, new mobile applications);
- Expert review workshops;
- FRDC project steering committee representation;
- Published research results;
- Release of discussion papers that seek stakeholder input; and
- The implementation of IFM (where relevant).

**Stakeholders in the EGPMF include**

- the MFL holder;
- The Representative organisation for that stakeholder, in this case MG Kailis, but nominated through WAFIC;
- Management, Compliance and Research staff of the Department of Fisheries;
- Department of Biodiversity, Conservation and Attractions (DBCA);
- Ningaloo Wildlife Heritage Advisory Committee
- Bush Heritage, Australia
- Environmental NGO sector representatives (notably. Conservation Council of WA and WWF)
- Scientific institutions (CSIRO, AIMS; NESP; and WAMSI); and
- University representatives

The prawn resources targeted by EGPMF are not taken in any major numbers by recreational or customary fishers. Other interested stakeholders are recognised on the basis that the EGPMF:

- has the potential to impact on ecosystem components, including ETP species and habitat;
- targets a species susceptible to changes in environmental conditions;
- currently has a Native Title claim within its boundaries;
- has the potential to interact with other marine users in Exmouth Gulf;
- may be impacted upon by mining activities; and
- provides an iconic seafood product to retailers and consumers both locally and overseas.

Based on these aspects of the fishery, other interested stakeholders relevant to the EGPMF include:

- Organisations / institutions undertaking research relevant to Exmouth Gulf and environmental factors (e.g. The Western Australian Marine Science Institution (WAMSI), universities and the Commonwealth Scientific and Industrial Research Organisation (CSIRO));
- Local Government and State Government agencies (e.g. DBAC);
- Native Title claimant and their representatives (Gnulli people, represented by the Yamatji Marlpa Aboriginal Corporation);
- Local government (Shire of Exmouth);
- Investors, banking representatives, boat brokers, etc.;
- Retailers and consumers; and
- The wider community.

Before making a decision around aquatic resource policy, the Minister for Fisheries must demonstrate that they have asked for, and taken into account, interested and affected parties' submissions on

policy proposals. Evidence that the management system demonstrates consideration of the information and explains how it is used, is available from various letters written to WAFIC and others. However, it appears that the consultation process is heavily focussed on the licensee, the representative fisher association and WAFIC.

The release of Fisheries Management Papers (discussion papers) for public comment are the most common way the Department undertakes wider consultation and invites stakeholder engagement on fisheries management proposals. Importantly, published Fisheries Management Papers detail the recommended management approach arising out of an expert review process and seek public comment on those recommendations, which must be taken into account before a decision is made in respect to future management.

The Department provides the facility for stakeholder comment in regard to any proposed management recommendations and publicises the release of Fisheries Management Papers. To do this, the Department uses a variety of processes including:

- Direct consultation in writing;
- Press releases;
- Newspaper, radio and television interviews;
- Information posted on the Department's website information;
- Inviting stakeholders to sit on tasked working groups, scientific reviews / workshops, risk assessments and management reviews.

The peak sector bodies are also responsible for seeking advice from their sector during consultation periods and providing consolidated advice to the Department. These processes ensure that stakeholders and the community more generally have an increased awareness and access to relevant information. Making information available and providing for a discussion and exchange of ideas encourages input from stakeholders and the community in the management process.

The opportunity for non-fisher stakeholders to participate or engage in relevant meetings exists

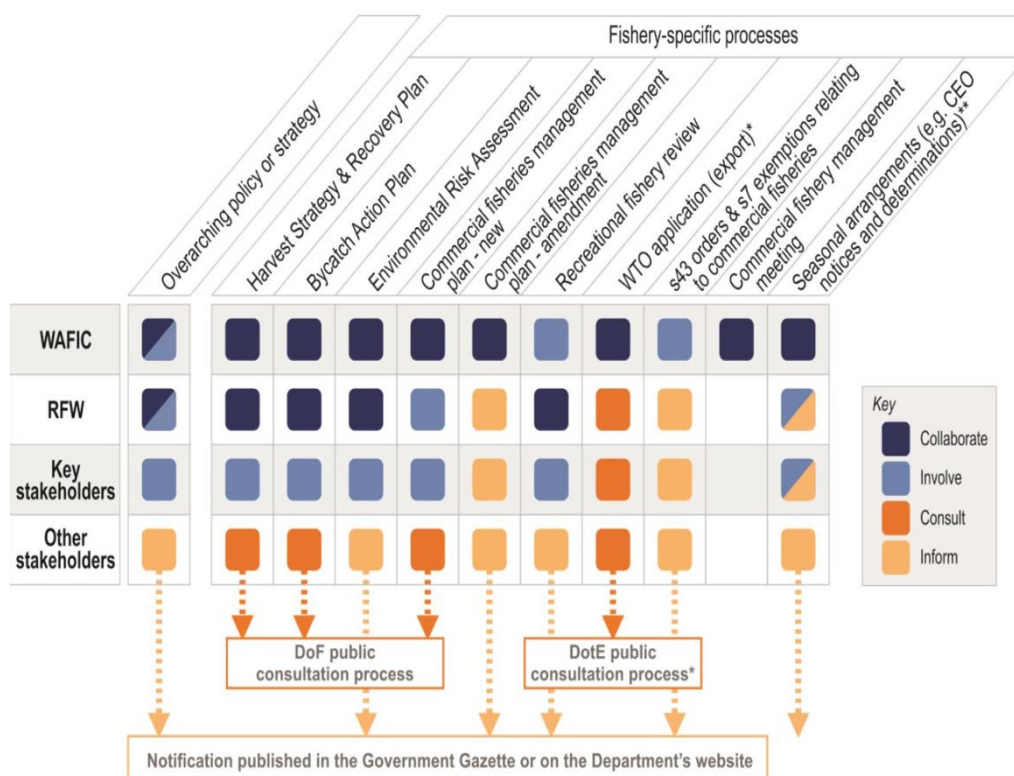
A Public Consultation Plan was put in place in 2016. The Plan highlighted a number of activities to be completed:

- Review CCP feedback across numerous WA fisheries with regard to Performance Indicator 3.1.2.
- Identify fishery specific interested and affected parties:
  - Who are they;
  - Level of interest;
  - Areas of interest relevant to the fishery;
  - Potential representatives.
- Outline current fishery specific consultation arrangements.
- Review agency wide consultation protocols (i.e. SLA) to identify aspects of current engagement that are already and that could be extended to non-fishers.
- Investigate existing forum structure held by governing bodies of Marine Park & World Heritage areas to evaluate opportunities for offering attendance and/or briefings.
- Develop protocols that outline opportunities for communication and information sharing and information to be shared.
- Outline strategies and opportunities to incorporate into fishery specific consultation processes that provide opportunity to non-fisher groups (interested and affected parties).
- Develop communication package modifiable to suit the needs of specific groups.
- Implement revised consultation arrangements.

The Department developed and implemented a *Stakeholder Engagement Guideline* (SEG) that reflects best practice public policy and meets the MSC standard and the future needs under the proposed new Aquatic Resources Management Act (ARMA).

The guideline 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.



To broaden stakeholder participation on key fisheries policy matters and initiatives, the DPIRD has created a public comment space on its website. This allows all interested and affected parties to view information and make submissions on draft documents released for public comment for specified periods of time. Key stakeholders are invited directly to provide comment through this forum.

The public consultation space can be accessed at the following web address:

<http://www.fish.wa.gov.au/About-Us/Public-Comment/Pages/default.aspx>,

This shows all of the documents currently open for public comment.

Further to the above, a Stakeholder Engagement Project specific to the EGPMF and SBPMF fisheries was developed to improve non-fisher stakeholder consultation processes (referenced above). Below is a summary of fishery specific consultation during 2019.

- The Department initiated the establishment of an Annual Management Meeting between the Department, WAFIC and industry.
- Fishery-specific stakeholder lists have been developed in an effort to implement the new SEG and for each stakeholder group on the list the 'area of interest' and 'level of interest' has been described.
- The governing bodies of the State Marine Park and World Heritage Areas relevant to both fisheries (Conservation and Parks Commission, Department of Biodiversity, Conservation and Attractions (DBAC), the two World Heritage Advisory Committees), and the Shires of Shark Bay and Exmouth have been identified as key (non-fisher) stakeholders.
- The Department has established the key contacts within these stakeholder groups to develop processes for opportunity to be involved in or informed of management decisions where relevant.
- A number of discussions were held with staff relevant to the governing bodies of the relevant State Marine Park and World Heritage Areas to develop strategies for better collaboration and communication with these key stakeholders going forward.
- A fishery-specific communication protocol has been developed between DPIRD and Department of Biodiversity, Conservation and Attractions, formerly DPAW (DPaW & DoF,

2016) to provide for two way communication and sharing of information to support effective management of prawn trawling activities within and adjacent to the Shark Bay and Ningaloo Marine Parks and Muiron Islands Marine Management Area. The scope of this protocol includes the Exmouth Gulf and Shark Bay Prawn trawl fisheries; and the Shark Bay and Ningaloo Marine Parks and Muiron Islands Marine Management Area. Over time the scope of this communication protocol may develop to address communication and information sharing for a range of commercial and recreational fisheries management issues relevant to the Gascoyne marine reserve network, and Shark Bay and Ningaloo Coast World Heritage Areas.

- The Department attends the joint Ningaloo Coast and Shark Bay World Heritage Advisory Committee Meeting held in Carnarvon on to brief the committees regarding the management of the SBPMF and EGPMF and ongoing communication with these committees.
- The trawl team has liaised with Recfishwest to discuss priorities and in-season fishing arrangements that may be of interest to recreational fishers.

### Statutory Consultation

Most management changes and seasonal fishing arrangements in the EGPMF are facilitated through amendments to the Management Plan and by notices determined by the Director General<sup>3</sup>; however, other arrangements can be implemented via section 43 orders, MFL conditions and section 7 exemptions, as required.

In the case of amendments to the EGPMF Management Plan, these cannot be undertaken without addressing statutory consultation requirements pursuant to clause 20A of the Management Plan, which explicitly identifies those key stakeholders that the Minister must consult with prior to making an amendment. It should be noted that, since there is no longer a Joint Trawl Management Advisory Committee as a result of the consultation review, the key stakeholder in the EGPMF defaults to the licence holder or its representative organisation.

The Minister for Fisheries is the final decision maker in determining or amending legislation including the Management Plan, and the Department has a series of formal decision-making delegations for licensing decisions and exemptions from legislation. Ministerial decisions are not reviewable by the State Administrative Tribunal, but most Departmental decisions are subject to review.

Section 65 of the FRMA sets out the legislative consultation requirements the Minister must adhere to when amending an existing management plan. Section 65 has 'natural justice' origins, in that a person whose rights may be about to be affected should have an opportunity to be heard before any adverse action / impact is given effect. Given the commercial aspects of fishing access rights and the potential for amendments to management arrangements to adversely affect these interests, it is fundamental that the holders of these interests:

- are consulted;
- have the opportunity to respond to any proposed amendments by the Minister/Department; and
- have these responses genuinely considered by the decision maker prior to the final decision.

These principles lead to the requirement for the Minister to consult before determining or amending a Management Plan. The Minister has the Department undertake the work of consultation on his behalf. The statutory consultation function is presently conducted by WAFIC on behalf of the Department under the SLA.

The EGPMF is opened annually pursuant to clause 10 of the Management Plan. The Department consults with the licensee prior to providing advice to the Chief Executive Officer, who must provide notice of his decision to the licensee in writing.

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<sup>3</sup> Note that the Director General is the equivalent office to the 'Executive Director' as referred to in the EGPMF Management Plan.

### 8.4.3 Long-term Objectives (P 3.1.3)

The WA Government has set a long-term overarching objective that is underpinned by the principle of social and environmental responsibility *to ensure that economic activity associated with aquatic resources is managed in a socially and environmentally responsible manner for the long-term benefit of the State*. This objective is explicit in both fisheries legislation and management policy, as described below.

Overarching long-term objectives for managing aquatic resources are set out in WA fisheries legislation. Sections 3 and 4 of the FRMA set out the current overarching long-term sustainability strategy, including a precautionary approach, for fisheries and the aquatic environment in WA. The broad scope of the legislation ensures that it:

- Manages all factors associated with fishing (ESD and ecosystem-based fisheries management);
- Provides a clear basis for management of a whole biological resource (as opposed to just one sector);

Gives effect to IFM by:

- Creating head powers that can establish management strategies with clear biological outcomes for all sectors as required;
- Establishing formal harvest allocations where these have been made; or
- Describes the basis of informal allocations where these operate; and
- Clearly distinguishes between managed aquatic resources and fisheries with biological targets and socially-regulated fisheries.

Section 3(2)(e) of the FRMA states that one of the objectives is to achieve *the optimum economic, social and other benefits from the use of fish resources*.

- Performance against social and economic objectives is measured regularly. Commercial fisheries' gross value of production and rates of employment are reported annually in the *Status Reports of the Fisheries and Aquatic Resources of WA: the State of the Fisheries* (e.g. Fletcher & Santoro 2013). Other indicators of acceptable performance for social and economic objectives include maximising the opportunity for commercial fisheries to operate viably within a sustainable framework, high levels of licensee satisfaction, low levels of inter-sectoral conflict, appropriate areas put aside for aquatic conservation and appreciation, stakeholder satisfaction surveys, initiatives to benefit recreational fishers and the availability of fresh, locally sourced fish to the retail sector and community.

Government's desired outcome for DPRD is the conservation and sustainable development of the State's fish resources. The Department has developed effectiveness and efficiency indicators to show the extent to which the Department achieved its goal of conserving and sustainably developing the State's aquatic resources. Performance against these indicators is reported annually in the Department's *Annual Report*.

The Internal Audit Committee maintains and manages the Department's internal audit function on behalf of the Director General. The committee assists the Director General to identify and quantify risks that have the potential to impede the Department in achieving its goals and guide the development and implementation of risk-mitigation strategies.

The Department's *Strategic Plan 2018 -2021* sets out clear and explicit strategic activities. These include Sustainability - Sustainable fisheries management — to optimise social, economic and sustainable outcomes; and Natural Resource Management planning and assessment — natural resources sustainably used and managed using sound risk based planning and assessment approach.

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<sup>4</sup> [http://www.fish.wa.gov.au/Documents/corporate\\_publications/strategic\\_plan\\_2009-2018\\_phase3.pdf](http://www.fish.wa.gov.au/Documents/corporate_publications/strategic_plan_2009-2018_phase3.pdf)

The *Strategic Plan 2009 - 2018* also sets out other strategies and key deliverables for delivery including international competitiveness; Research, development and innovation; and Enabling environment.

The Government's fisheries and aquatic resource policy is set out in broad terms in *Western Australian Government Fisheries Policy Statement March 2012* (DoF 2012a). The Policy Statement focuses on the Government's approach to sustainable resource management, fisheries and aquaculture development and growth, and appropriate structures and processes to ensure good governance is achieved in:

- aquatic resource management;
- aquatic resource access and allocation;
- aquatic environmental management
- marine planning;
- development and growth; and
- structures and processes (e.g. administration).

The FRMA was amended in 2011 to incorporate some short-term changes to existing legislation and administrative practice, which provided some immediate improvements to the trading aspects of fishing rights created under Part 6 (Management Plans) of the FRMA. Specifically, the amendments improved the transferability, security and duration characteristics of fishing access rights created under FRMA within the existing rights management approach.

The costs of managing the aquatic resources, including conducting research, are met from a variety of sources. In particular, significant contributions can come from:

- Commercial fishing licence fees;
- State Government Consolidated Revenue;
- the Fisheries Research and Development Corporation;
- the Recreational Fishing Account (from recreational fishing licence fees);
- the National Heritage Trust;
- the Western Australian Marine Science Institution;
- Australian Research Council linkage grants;
- the Natural Resource Management Rangelands Catchment Coordinating Group;
- the Commonwealth Scientific and Industrial Research Organisation; and
- Commonwealth World Heritage Funding.

Key Resource Management Policies for Meeting Long-Term Objectives include:

1. Ecologically Sustainable Development (ESD)
2. Ecosystem-Based Fisheries Management 12.3.3.2
3. Harvest Strategy Policy
4. Aquatic Biodiversity Policy

The Western Australian Government is committed to the concept of ESD, which seeks to integrate short- and long-term economic, social and environmental effects in to all decision-making. The key principles of ESD are implicitly contained in the objectives of the FRMA, and the Department's ESD Policy (Fletcher, 2002).

For the purposes of the wildlife trade provisions of Part 13A of the EPBC Act (i.e. to be exempt from export controls for native species harvested in a fishery), management agencies must demonstrate that fisheries management regimes comply with the objectives of ESD. The DoE has prepared publicly-available guidelines (CoA 2007), on which management agencies are required to base their submissions for export approval. The submissions are released for public comment, which ensures rigorous and transparent assessments are conducted with input from Commonwealth and State fisheries agencies, the fishing industry and the wider community. All documents pertaining to the submissions and assessments, including the Commonwealth Minister's decisions and any conditions that are set on the fishery, are publicly available on the Commonwealth DoE's website.



WA fisheries assessments are conducted against the Commonwealth Guidelines which outline specific principles and objectives designed to ensure a strategic and transparent way of evaluating the ecological sustainability of fishery management arrangements. Adequate performance of fishing in relation to the Commonwealth Guidelines will see that the management arrangements demonstrate a precautionary approach, particularly in the absence of information. A precautionary approach is used in all stages of fishery management, from planning through to assessment, enforcement and then re-evaluation. A precautionary approach requires managers to utilise the best scientific evidence available when designing a management regime. It also requires that a minimum level of information be available before a fishery is established. Thus, information collection and ongoing research is of significant importance and may be inversely proportional to the level of precaution that is taken in setting management measures for a fishery. Sources of uncertainty within the data should be identified and where possible, quantified. Until research on the specific stock provides information, a precautionary approach requires the setting of conservative limits to account for the unknown level of uncertainty. A review of management arrangements as part of the fishery harvest strategy is triggered if annual (or in-season) evaluation against the operational (short-term) objectives indicates the potential need (i.e. when the threshold level is breached) for a management response. This means that a precautionary approach is taken and potential issues are recognised and addressed in a timely manner prior to the following fishing season or during the current season, to meet operational and long-term management objectives (DPIRD, 2018)<sup>5</sup>.

To satisfy the Commonwealth Government requirements for a demonstrably ecologically sustainable fishery, the fishery (or fisheries if a species is caught in more than one fishery), must operate under a management regime that meets Principles 1 and 2 of the Commonwealth Guidelines. The management regime must take into account arrangements in other jurisdictions, and adhere to arrangements established under Australian laws and international agreements.

Under the Commonwealth Guidelines, the management regime does not have to be a formal statutory fishery management plan as such, and may include non-statutory management arrangements or management policies and programs. The management regime should:

- be documented, publicly available and transparent;
- be developed through a consultative process providing opportunity to all interested and affected parties, including the general public;
- ensure that a range of expertise and community interests are involved in individual fishery management committees and during the stock assessment process;
- be strategic, containing objectives and performance criteria by which the effectiveness of the management arrangements are measured;
- be capable of controlling the level of harvest in the fishery using input and/or output controls;
- contain the means of enforcing critical aspects of the management arrangements;
- provide for the periodic review of the performance of the fishery management arrangements and the management strategies, objectives and criteria;
- be capable of assessing, monitoring and avoiding, remedying or mitigating any adverse impacts on the wider marine ecosystem in which the target species lives and the fishery operates; and
- require compliance with relevant threat abatement plans, recovery plans, the National Policy on Fisheries Bycatch, and bycatch action strategies developed under that policy.

The steps to apply this 'ecosystem type of approach' to individual fisheries are based on the adoption of international standards for risk management (Australian Standards/New Zealand Standards 4360

<sup>5</sup> [https://www.fish.wa.gov.au/Documents/management\\_papers/fmp265.pdf](https://www.fish.wa.gov.au/Documents/management_papers/fmp265.pdf)

2009)<sup>6</sup>, reflecting that fisheries management is a specific form of risk management. These steps have also now been routinely applied elsewhere in Australia and internationally.

The *Australian National ESD Framework for Fisheries* includes an ESD reporting framework for fisheries outlined within a series of reports, making the completion of ESD reports as efficient and effective as possible. There are four main processes needed to complete an ESD report: identifying issues; determining the importance of each of these issues using risk assessment; completing suitably detailed reports; and compiling sufficient background material to put these reports into context.

Following the success of the ESD framework for individual fisheries, a practical, risk-based framework for use with regional-level management of marine resources was developed by the Department to enable cross / multiple fishery management at the bioregional level to fully implement Ecosystem Based Fisheries Management (EBFM). This was designed to replace the previous, disjointed fishery-level, planning systems, with a single, coordinated risk-based system to generate efficiencies for the use of Departmental (government) resources. The simple set of steps developed has enabled adoption of a fully regional, 'ecosystem-based' approach in WA without material increases in funding.

Resource Program Briefs assist the Department in achieving its desired Agency Level Outcome by providing a planned and structured approach to management of capture fishery resources (assets), including review of management arrangements for fish stocks, assessment and monitoring of fish stocks and compliance planning. This process provides the Department with a basis or framework for allocating resources to individual capture fishery assets and to provide greater certainty to peak bodies and industry participants on the timelines for management review (DPIRD, Northern Invertebrates Aquatic Resource Program Summary 2018/19 ).

The Harvest Strategy Policy articulates all performance levels and the management actions designed to achieve agreed objectives. These objectives articulate what is to be achieved, and why, both for the resource and the relevant fisheries. This policy is aimed at ensuring target species' sustainability in the long term. Where a harvest strategy is required, the core elements are:

1. Articulation, at an operational level, of what is to be achieved, and why, both for the resource and the relevant fisheries (operational objectives);
2. Determination of performance indicators to be used to measure performance against operational objectives;
3. Based on achieving acceptable risk levels, establishment of appropriate reference points/levels for each performance indicator;
4. The selection of:
  - a. the most appropriate Harvesting Approach (e.g. constant harvest/exploitation, constant escapement/stock size, constant catch);
  - b. the associated Harvest Control Rules which articulate pre-defined, specific management actions based on current status designed to maintain target levels and avoid breaching thresholds or limits; and
  - c. the Acceptable Catch/Effort Tolerance which is used to evaluate the effectiveness of the management actions in delivering the specific catch/effort as determined by the Harvest Control Rules and IFM allocation decisions;
5. Monitoring and assessment procedures for the collection and analysis of all the data needed to underpin the harvest strategy and determine stock status and fishery performance against operational objectives; and
6. The timetable and frequency for review of the harvest strategy elements.

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<sup>6</sup> <http://www.standards.org.au/Pages/default.aspx>

The EGPMF is subject to an industry-agreed and published harvest strategy (DPIRD, 2018) under this framework.

#### 8.4.4 Fisheries Specific Objectives (P 3.2.1)

Long and short-term specific objectives are documented in the *EGPMF Harvest Strategy 2014 – 2019* (DPIRD, 2018) and *EGPMF Bycatch Action Plan 2014 – 2019* (BAP; DoF 2014a). These are supported by defined performance indicators, management reference levels and control rules. The Plans are in the process of being amended for a future 5-year term.

The EGPMF has a long-term management objective, which is demonstrably consistent with achieving outcomes expressed by MSC Principle 1, *to maintain spawning stock biomass of each target species at a level where the main factor affecting recruitment is the environment*.

The annual (short term) performance of the fishery is measured by undertaking a post-season evaluation of each performance indicator against the reference levels set out in the harvest strategy. Along with the long-term management objectives for the principal target species (tiger prawns, king prawns and blue endeavour prawns), there is a short-term operational objective to maintain annual performance above the threshold reference level (and as close to the target reference level as possible) for each component of the fishery.

As part of the EGPMF harvest strategy, a review of management arrangements is triggered if the annual performance measure (spawning stock index) is below the target level. This ensures that potential issues are recognised and addressed prior to the following fishing season and that the long-term management objective relevant to MSC Principle 1 continues to be met.

The performance of the EGPMF against the brown tiger, western king prawn and blue endeavour prawn spawning stock mean catch rate reference level is evaluated at the end of the fishing season. If the threshold level is breached, a review of the season arrangements and monitoring system is triggered which ensures that potential issues are recognised and addressed prior to the following fishing season to ensure the long-term management objective relevant to MSC Principle 1 continues to be met.

For banana and coral prawn species, the threshold reference level is to ensure that the annual catch of any species is above the acceptable catch range for two consecutive years, with specified targets for each species.

The long-term management objectives for the EGPMF, which are demonstrably consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are:

- *To maintain spawning stock biomass of each retained species at a level where the main factor affecting recruitment is the environment;*
- *To ensure fishery impacts do not result in serious or irreversible harm to bycatch species populations;*
- *To ensure fishery impacts do not result in serious or irreversible harm to ETP species populations;*
- *To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function; and*
- *To ensure the effects of fishing do not result in serious or irreversible harm to ecosystem processes.*

There is good evidence to suggest that each of the long-term management objectives listed above are being met. The performance of the Fishery against the management objective for (non-ETP) bycatch species populations has been measured (since 2002) against the annual area trawled and the compliance with BRD requirements. Good information exists for both retained species showing the general downward trend in the catches of non-prawn retained non-target species since the introduction of BRDs in the Fishery in 2002/03, and the bycatches recorded in 2013 were the lowest since 2002.

No explicit limits have been set for bycatch. The current *EGPMF Bycatch Action Plan 2014 – 2019* (BAP; DoF 2014a) for the fishery provides for a commitment to improve the monitoring of bycatch levels to more regularly: 'to collect bycatch (non-retained) species composition data every three years and to has established a crew-member observer program (CMOP) as an ongoing data collection system'. Accurate bycatch data was available from surveys undertook in 2002-2003 and in 2015-2017. The Performance Indicators in the EGPMF Harvest Strategy provision for bycatch, ETP, habitat and ecological risk assessments; annual management arrangements, extend of the use of BRDs and extent of area trawled annually. The fishery has been consistently maintained at the target reference levels – 100% BRD application, Fishery impacts expected to generate an acceptable risk level (i.e. moderate risk or lower), and low trawl footprint.

Impact of the fishery on ETP species populations was ranked as low (DPIRD ESD Risk Assessment, 2020). Notwithstanding this, the current BAP for the Fishery aims to improve the consistency and validation of ETP interaction reporting, further crew education on ETP species identification and develop a better understanding of ETP population sizes and distribution in Exmouth Gulf Measures to reduce further injury and incidental mortality of ETP species captured by the Fishery will also be investigated. Evidence of these actions have been provided in the annual surveillance reports from 2016 onwards (MRAG Americas 2017, 2018 and 2019).

The performance of the Fishery against the management objective for maintaining habitat structure and function is measured against the annual area trawled. The fishery has been consistently maintained at the target reference level since 2002. As part of the condition outcomes, assessment was also undertaken on the risks to habitat functions and biota (MRAG Americas 2019). These indicate low levels of risk from the fishery.

The performance of the fishery against the management objective for ecosystem processes is measured against the reference levels for all ecosystem components (target species, retained non-target species, bycatch, ETP species and habitat structure and function). The risk to ecosystem processes from the removal of species and discarding bycatch by the fishery was ranked as low (2020 ESD Risk Assessment), as the amount of discards that result from the fishery is not considered significant.

#### **8.4.5 Decision making processes (P 3.2.2)**

There are established decision-making processes in the EGPMF management system that are fully understood by all stakeholders and underpinned by explicit and transparent consultation. The fishery specific decision-making processes for the EGPMF consist of three components:

1. Annual and in-season consultation and decision-making that may result in measures to meet short-term (operational) objectives (driven by the control rules contained in the current Harvest Strategy);
2. In-season consultation and decision-making that is designed to meet the economic objective to provide the fishery with the opportunity to optimise economic returns (cooperative framework); and
3. Longer-term consultation and decision-making that results in new measures and strategies to achieve the long term fishery-specific management objectives (i.e. changes to the management framework).

The Harvest Strategy control rules guide the management response in the event that the operational objective (i.e. to maintain the performance indicator above the threshold reference level) is not met. In these cases, the decision-making processes may result in measures to achieve fishery-specific objectives in response to research, monitoring evaluation and consultation.

An overview of the annual and in-season consultation and decision-making processes to achieve short-term operational objectives under the current management framework are described below.

The annual decision making processes include:

*Post-season Report / Pre-season Briefing to the Licensee.*

The Department's research staff undertake a post-season evaluation of the fishing season outcomes and develop a written report for the licensee<sup>7</sup>. This report, together with a summary presentation, is provided to the licensee each year in February / March.

Discussions might include preliminary investigation of reasons why target reference levels were not met (if this was the case). If sustainability is considered to be at risk, changes to fishing arrangements are discussed with the licensee and are implemented for the following fishing season (e.g. a delay to the commencement of fishing to reduce effort). Consultation between the Department and the licensee also occurs at this stage to decide on the statutory season opening date (usually after the full moon in April) and closing date, the in-season survey schedule and the extent of moon closures.

- *Annual Advice to Management and the Director General regarding the Opening / Closing of the Fishing Season*

Following consultation with the licensee, a written briefing is provided to the Director General recommending the statutory opening and closing dates for the coming fishing season. The Director General (as the Chief Executive Officer<sup>8</sup>) determines the opening and closing dates for the fishery by signing a notice pursuant to clause 10 of the Management Plan, a copy of which is provided to the licensee in writing. The notice is then made publically available on the State Law Publisher's website<sup>9</sup>. This notice statutorily caps the overall fishing effort (fishing days) for the season at an acceptable level (i.e. no more than 200 fishing days). Clause 10 of the Management Plan provides the power for the Director General to statutorily set the annual fishing season without the need for an amendment to the Management Plan. The Director General also approves the boundaries of the management areas in the notice.

- *Pre-season Skippers Briefing*

The Department's research staff develop an information package<sup>10</sup> and provide a briefing to the fleet skippers for the coming season. Skippers are also provided with a presentation of the outcomes of the previous fishing season. The skippers' briefing provides a feedback loop to the Department on the proposed seasonal arrangements for the coming season.

In-Season decision-making processes operates as follows:

- The key in-season decision-making process is undertaken pursuant to the control rules designed to achieve the in-season operational objectives in the Harvest Strategy (i.e. to achieve above the threshold reference levels). Consultation is undertaken by the Department's Research staff directly with the licensee around the timing and extent of fishing in the management areas throughout the season. This decision-making processes is informed by a combination of the recruitment and spawning stock survey regime (catch rates and prawn size composition), knowledge of prawn biology (spawning and movement patterns of brown tiger and western king prawns) and daily monitoring of commercial catch rates. The resulting decisions are communicated to skippers, as well as to the Department's management and compliance (including VMS) staff. The annual in-season fishing arrangements designed to achieve the in-season operational objectives in the Harvest Strategy are implemented on a non-statutory basis. If it is identified that an area of the fishery may need to be closed statutorily, this can be achieved quickly (within 24 hours) via a notice pursuant to clause 10 of the Management Plan.

Cooperative management processes include the following:

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<sup>7</sup> DPIRD, Exmouth Prawn Managed Fishery Season Report, 2019 (March 2020)

<sup>8</sup> Note that annual notices made pursuant to clause 10 of the Management Plan are signed by the Director General as 'Chief Executive Officer' transitioned from the 'Executive Director' pursuant to section 242 of the *Machinery of Government (Miscellaneous Amendments) Act 2006*

<sup>9</sup> [http://www.slp.wa.gov.au/statutes/subsiduary.nsf/0/D36C2D29CE34209248257CF30025401B/\\$file/10.06.14.+egp+notice+no+2+2014.pdf](http://www.slp.wa.gov.au/statutes/subsiduary.nsf/0/D36C2D29CE34209248257CF30025401B/$file/10.06.14.+egp+notice+no+2+2014.pdf)

<sup>10</sup> DoF, Skippers Briefing Package, 2-14 Exmouth Gulf Prawn Managed Fishery: Guide to Management Areas, All positions relating to GDA 94

- Once requirements have been addressed in line with the Harvest Strategy, an in-season cooperative consultation and decision-making process is used to provide the licensee with the opportunity to optimise economic returns from the target prawn species within the sustainable fishing framework. Decisions around optimising economic returns are informed by prawn size composition information arising from both Department and industry surveys and real-time monitoring of daily commercial catch data. The consultation and decision-making process is undertaken in person between the Department's Research staff and the licensee and is communicated to fleet skippers, compliance and VMS staff (Kangas et al. (2008)). The fishing arrangements (i.e. timing and extent of fishing) resulting from the cooperative framework are non-statutory because they are not in place for stock sustainability reasons; however, they are monitored by VMS staff.

There is an established fishery-specific management system decision-making process in place that results in measures and strategies to ensure the management objectives continue to be met in the longer term.

This decision-making process is triggered primarily as a result of analysing longer-term patterns or trends in the annual monitoring of the success of the existing management regime. Variations in the operating environment caused by other factors (e.g. environmental conditions, market conditions, fishing behaviour, conflicts with other marine users, determination of native title, marine planning, etc.) can also trigger investigation and discussion that may lead to a change to the management system.

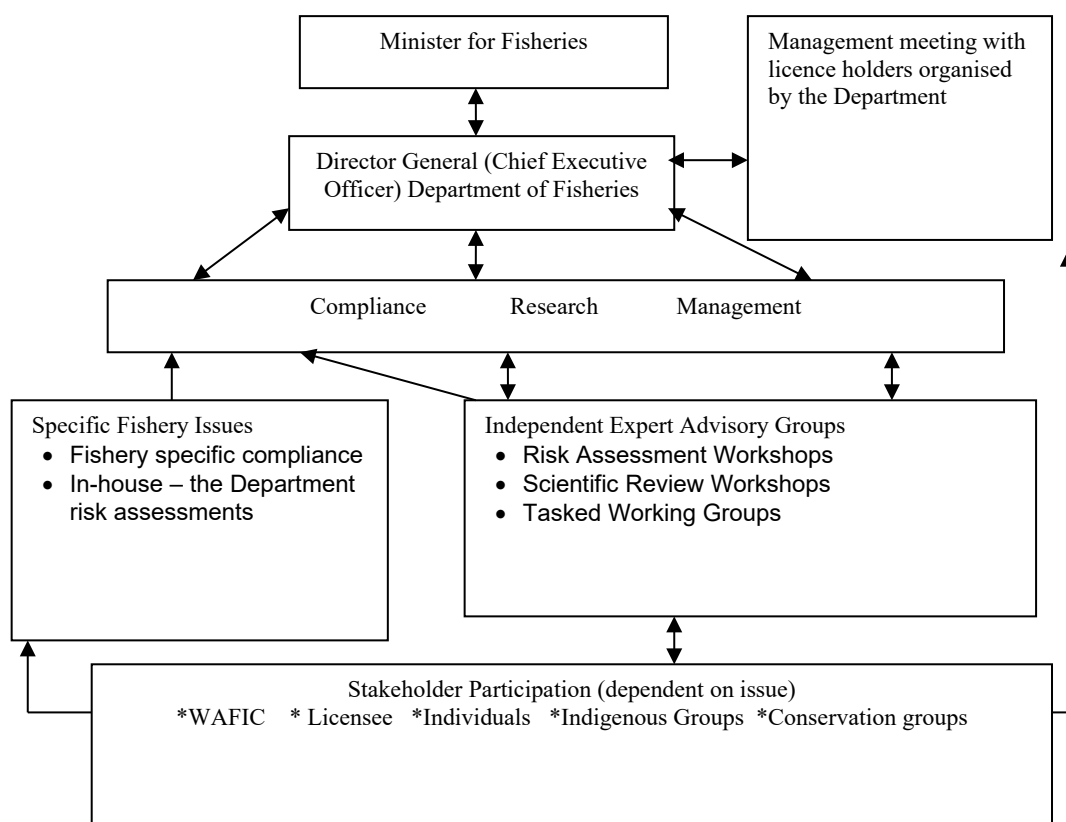
Changes to the management system as a result of implementing new measures and strategies tend to be more permanent (i.e. lasting for more than one season) and are often implemented in legislation. Depending on the issue and stakeholders affected, consultation can occur through the following mechanisms:

- directly in writing;
- at licensee meetings and skipper's briefings;
- establishment of a tasked working group;
- external / expert workshops (e.g. ecological risk assessments); and / or
- internal workshops (e.g. harvest strategy development, ecological and compliance risk assessments).

These forums are used to work through options for addressing emerging issues, consider both key and other interested stakeholder advice and take into account the broader implications of those options. Following the consultation process, any new proposed management measures and strategies that require changes to legislation or publication must be provided to the statutory decision maker (usually the Director General or the Minister for Fisheries). The Department must set out evidence of consultation and the results of the decision-making process during this process (Kangas et al. 2015).

Recent examples of the fishery-specific management system decision-making process that resulted in new strategies include the development of the current Harvest Strategy and BAP for the EGPMF, both of which were developed following multiple internal workshops and face-to-face consultation with the licensee.

Figure 22 shows the consultation and decision-making process as it relates to the EGPMF management system.



**Figure 22. Fishery-specific consultation and decision-making framework for the EGPMF management system**

The decision-making processes described above allows for a response process in instances where management changes need to be applied to alleviate unacceptable risks to stocks. The timing of provision of scientific advice on the status of prawn stocks is immediate given the real-time monitoring regime.

The annual and in-season control rules contained in the current Harvest Strategy are applied consistently and are informed by both real-time monitoring of fishery-independent and fishery-dependent catch rates (for decisions implemented in-season) and annual evaluation (for decisions implemented in the following fishing season).

The urgency of consultation and decision-making processes relevant to more permanent changes to the management system is based on risk. This can be a quick and streamlined process, given there is only one licensee in the EGPMF. Once approved, such management actions tend to be implemented by way of changes to legislative instruments. For example, actions to close areas of the fishery (or the entire fishery), reduce fishing days / hours (temporal effort management) or change management area boundaries (spatial effort management) can be implemented almost immediately by the Director General pursuant to clause 10 of the Management Plan.

Changes to other existing arrangements (such as headrope limits and gear specifications) can also be applied very quickly (within days or weeks), depending on urgency. Once a decision is made, the approval and implementation of such changes is undertaken by amendment to the relevant legislative instrument in a transparent and accountable way and in line with statutory requirements where necessary.

For example, the Minister for Fisheries must consult with the licensee before approving an amendment to the Management Plan (section 65 of the FRMA). While the Director General can impose, delete or vary a MFL condition, his decision is subject to a formal appeals process (section 147 of the FRMA). There are no statutory provisions as to the consultation requirements relating to section 7 instruments of exemption or section 43 orders (noting that section 43 orders can be disallowed in State Parliament); however, in the absence of any statute specifying consultative procedures, the Department has regard for common law principles to afford natural justice to the

licensee. As such, the Department will formally consult with the licensee when making changes to management arrangements via an instrument of exemption or an order.

The outcomes of the decision-making process and implementation of statutory arrangements is always formally communicated to the licensee in writing and available publicly on the State Law Publishers website.

Examples of the responsiveness of the decision-making process to implement longer-term management changes include:

- In line with the MSC certification requirements from the beginning of 2016 to 2018, the Department and the licensee worked to monitor bycatch, ETP interactions and habitat interactions to provide input to the 2020 ESD report and determine whether any changes were required to the Bycatch management Plan. Bycatch actions were incorporated in the Harvest Strategy document (MRAG Americas 2018<sup>11</sup> and 2019<sup>12</sup>).
- The issue of the low abundance of brown tiger prawns in Exmouth Gulf in 2012 and 2013 triggered by a significant heatwave in 2011 (MRAG Americas 2017)<sup>13</sup>.

The decision-making process also allows for the consideration of the wider implications of decisions, particularly where proposed longer-term management actions may result in adverse unintended consequences to other management components. It is important to note that all ecological objectives must be met prior to considering responses to achieve economic objectives. For example, the move to a quad-rigged net configuration by 2007 improved fishing efficiency for commercial purposes; however, a maximum headrope length for the fishery was imposed for sustainability purposes. Similarly, the removal of the 375 boat unit rule was also aimed at maximising economic efficiency and flexibility; however, an overall limit on boat length was also imposed.

The EGPMF is managed based on a constant escapement harvesting approach. The management activities related to this approach have been developed over time based on a comprehensive understanding of the biology of brown tiger and western king prawns in Exmouth Gulf, together with a long-term annual and in-season monitoring and assessment regime. Based on this information, the decision-making processes have led to the implementation of a sustainable management framework over time. Furthermore, the reference levels are considered appropriate, as they are demonstrably achieving the fishery-specific management objectives.

The control rules incorporate a precautionary approach to the decision-making process by requiring a review when the target reference level is not met. This ensures that any warning signs are recognised and investigated / addressed in their early stages. The frequency of evaluation (both annually and in-season) and review means that management action to investigate and, where required, alleviate adverse impacts on stocks is always taken before the performance indicators reach the limit reference level. For example, decisions regarding the extent of fishing in 2013 and 2014 took into account the best available information and set the level of fishing more conservatively based on the previous seasons' outcomes.

Sources of uncertainty within the data and data gaps have been identified, particularly where they relate to obtaining a more quantified and up-to-date assessment of the risk posed by the fishery to bycatch and ETP species' populations. The application of the EBFM provides a good tool to assess the relative risks to bycatch, ETP species and habitats, which if required, will identify precautionary actions to deal with at risk species and assemblages. An example on where the precautionary approach was applied to the P2 component in this fishery includes the introduction of the BRDs, where even though the original risk assessment conducted in 2001 ranked the impact from the fishery on ETP species populations as low, mandatory BRDs were implemented in 2002. Management actions within the BAP can be changed should the existing management system prove to be posing an unacceptable risk.

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<sup>11</sup> MRAG Americas, April 2018, <https://fisheries.msc.org/en/fisheries/exmouth-gulf-prawns/@assessments>

<sup>12</sup> MRAG Americas April 2019 <https://fisheries.msc.org/en/fisheries/exmouth-gulf-prawns/@assessments>

<sup>13</sup> MRAG Americas, January, 2017.

<https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=E611ZC24Sicex96PfGxSgUUqnQKpEygRHVVqNjDAN6rJT3j6w62gCufhJLLV9l2U>



Formal and regular reporting to key stakeholders relating to information on fishery performance and management actions, and how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity, is primarily provided at the annual meeting between the Department and the licensee. This reporting consists of presentations and the provision of the annual season report for the fishery.

Key stakeholders are also formally briefed on the outcomes of research prior to publication. Such meetings and briefings are also used as a forum to discuss relevant recommendations and proposed management actions. Recommendations and final decisions that result in new measures or strategies are often published by the Department as fisheries management papers, research reports or in State of the Fisheries. For example, the current Harvest Strategy and Bycatch Action Plan for the EGPMF were developed directly in consultation with the licensee. These strategies are published and available on the Department's website.

Formal / direct reporting to other interested stakeholders to provide information on the performance and management of the EGPMF, how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity is undertaken on a case-by-case basis. For example, formal / direct reporting is provided to other interested stakeholders that are involved in consultation and decision-making processes, such as tasked working groups, external risk assessments or external reviews of the EGPMF management system.

Notwithstanding this, comprehensive information on fishery performance and management actions, and how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity, is compiled on a regular basis and is publicly available in documents published on the Department's website including:

- *The Annual Status Report of the Fisheries and Aquatic Resources of Western Australia: the State of the Fisheries (2016/17)*<sup>14</sup>;
- The EGPMF Management Plan<sup>15</sup> (available on the State Law Publisher's website via a link from the Department's website);
- CEO notices regarding opening and closing the fishery<sup>16</sup>;
- *The EGPMF Harvest Strategy 2014 – 2019* (DPIRD, 2018);
- The Research, Monitoring, Assessment and Development Plan 2015 – 2020<sup>17</sup>, which provides information on all completed and proposed research relating to the EGPMF and the associated ecosystem;
- *The EGPMF Bycatch Action Plan 2014 – 2019* (DoF 2014a); and
- Outcomes of management decisions, research and studies (e.g. Fisheries Management Papers, Fisheries Research Reports and Occasional Papers).

Other mediums for communication with other interested stakeholders can include media releases<sup>18</sup>; the MG Kailis website<sup>19</sup> also provides information targeted at consumers.

The EGPMF consultation and decision-making processes proactively avoid legal disputes through the inclusion of stakeholders during consultation on key management matters. This allows for all impacts of proposed management actions to be considered, conflicts to be addressed and negotiation and compromise to be reached. In addition, the close collaboration and regular communication between the Department, the licensee and skippers has resulted in a mutual and in-depth understanding of industry operations and the fishery management system. Given this, there have been no actual legal disputes or requirement to implement judicial decisions in the EGPMF.

However, there are well-established mechanisms for administrative and legal appeals of decisions, which are prescribed in Part 14 of the FRMA. Should they arise, disputes regarding statutory validity

<sup>14</sup> [https://www.fish.wa.gov.au/Documents/sofar/status\\_reports\\_of\\_the\\_fisheries\\_and\\_aquatic\\_resources\\_2016-17.pdf](https://www.fish.wa.gov.au/Documents/sofar/status_reports_of_the_fisheries_and_aquatic_resources_2016-17.pdf)

<sup>15</sup> <http://www.slp.wa.gov.au/statutes/subsidiary.nsf/FisheriesT?openpage>

<sup>16</sup> <http://www.slp.wa.gov.au/statutes/subsidiary.nsf/Fisheriesexec?openpage>

<sup>17</sup> [https://www.fish.wa.gov.au/Documents/occasional\\_publications/fop122.pdf](https://www.fish.wa.gov.au/Documents/occasional_publications/fop122.pdf)

<sup>18</sup> <http://www.fish.wa.gov.au/About-Us/Media-releases/Pages/Prawn-fisheries-seek-sustainability-certification.aspx>

<sup>19</sup> <http://www.mgkailisseafood.com.au/ExmouthFishingOperations.aspx>

are dealt with by the Courts. These decisions are publically available. Examples of these cases include:

- Shine Fisheries Pty Ltd vs Minister for Fisheries (2002) at <http://decisions.justice.wa.gov.au/supreme/supdcsn.nsf/judgment.xsp?documentId=89CBEA251EC082BB48256B5A000C1635&action=openDocument>.  
This judgement has been put into effect in practice, by allowing the nominated operator of a vessel to be changed.
- Edgemere Pty Ltd vs Minister for Fisheries & Anor (1997) at <http://decisions.justice.wa.gov.au/supreme/supdcsn.nsf/judgment.xsp?documentId=E2B71DECD36F4C1B48256497004CD3F9&action=openDocument>.

The decisions of the State Administration Tribunal (SAT) and the Courts are binding on the Department (for details of decisions see <http://decisions.justice.wa.gov.au/SAT/SATdcsn.nsf>). All SAT decisions must be carried out by the Department (section 29(5), page 20 of the *State Administrative Tribunal Act 2004*<sup>20</sup>).

#### 4.5.7 Compliance and enforcement PI (P 3.2.3)

In order to optimally utilise compliance resources, enforcement effort is designed to maximise the potential for fishers to voluntarily comply with fishery rules, while at the same time provide a reasonable threat of detection, successful prosecution and significant penalties for those who do not comply. This is achieved through a range of strategies, including effective monitoring and surveillance, appropriately trained staff, suitable deterrents in the forms of fines and administrative penalties and targeted educative campaigns.

The Department's Operations and Compliance Division (OCD) delivers the Department's compliance and educational services, with the support of the Communications and Education Branch, and the OCD also provides licensing facilities at the regional offices, as well as online renewal and payment. There are approximately 170 OCD staff across the State, spread throughout regional and district offices. Regional operational areas are supported by the Regional Services Branch's Perth-based Central Support Services and Strategic Policy sections.

Key compliance programs in place throughout the State include:

- Recreational fishing;
- Commercial fishing;
- Biosecurity;
- Pearling and Aquaculture;
- Marine parks (State and Commonwealth);
- Fish Habitat Protection Areas (FHPAs);
- Marine Safety; and
- Organised, unlicensed fisheries crime.

Compliance and community education services in the Gascoyne Coast Bioregion (GCB), which includes Shark Bay and Exmouth Gulf, are delivered by Fisheries and Marine Officers (FMOs), Community Education Officers and associated management and administrative support staff based at the District Offices in Denham, Carnarvon and Exmouth. Most Fisheries Officers are permanently located in the main population centres with access to appropriate platforms to allow them to undertake patrols up and down the entire WA coastline. A small number of Officers are also specifically employed to undertake mobile patrols to conduct 'surprise' inspections, an activity that is particularly important in smaller towns where fishers can quite easily learn the movement patterns of local Officers.

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<sup>20</sup> [http://www.slp.wa.gov.au/legislation/statutes.nsf/main\\_mrtitle\\_918\\_homepage.html](http://www.slp.wa.gov.au/legislation/statutes.nsf/main_mrtitle_918_homepage.html)

A significant aspect of the region's compliance work is the provision of compliance services to the State's Marine Parks. The GCB has two of WA's most iconic and significant Marine Parks, Ningaloo Marine Park (and the associated Commonwealth Ningaloo Marine Park) and the Shark Bay Marine Park and associated World Heritage Area. These two Marine Parks occupy just over 70 % of the GCB. In partnership with the DBCA, FMOs monitor and deliver compliance and education programs covering some 30 Sanctuary Zones, Marine Managed Areas and other protected areas. Details of the educational and enforcement activities are highlighted in an annual collaborative operational plan (DBCA/DPIRD, Collaborative Operational Plan 2019/2020).

FMOs undertake regular land, air and sea patrols using a compliance delivery model supported by a risk assessment process and associated operational planning framework. Throughout the bioregion, they employ specially equipped four-wheel-drive vehicles, quad bikes and small towable vessels. They also make use of sophisticated surveillance, mapping and GPS equipment to assist in evidence gathering. This includes high-powered telescopes and photographic mapping technology. A high-visibility Recreational Fishing Mobile Patrol has been added to the Gascoyne pool of resources. This dedicated education and enforcement unit patrols the coast from Onslow through to Kalbarri.

FMOs at Exmouth make extensive use of the 13-metre Patrol Vessel (PV) the PV *Edwards* to conduct compliance activities throughout the GCB, while FMOs in Carnarvon and Denham use an 8.5-metre Naiad and a 7.5 Naiad, respectively. Both vessels are used to conduct at-sea inspections in Shark Bay and within the southern aspects of the Ningaloo Marine Park and Commonwealth Ningaloo Marine Park. In all three Districts, FMOs spend approximately 90 days a year at sea on patrol duties. Historically, large patrol vessels (greater than 20 m in length) have assisted FMOs at various times of the year for offshore patrols. FMOs conduct patrols the length of the GCB and target offenders in all of the recreational and commercial fisheries based on intelligence gathered, as well as conduct aerial surveillance, at-sea and on-land licence, gear and marine safety inspections and attend community events and school education programs.

## Monitoring, Control and Surveillance Systems

Monitoring, control and surveillance (MCS) mechanisms ensure a fishery's management measures are enforced and complied with. There is a comprehensive MCS system implemented in the EGPMF that has demonstrated a consistent ability to enforce relevant management measures, strategies and / or rules. The MCS system is administered by the Department's OCD through a fishery-specific Operational Compliance Plan (DPIRD, OCP 2019/2020).

A fishery's OCP provides clear and unambiguous direction and guidance to FMOs for the yearly delivery of compliance-related activities in the fishery. The development of fishery-specific OCPs and compliance strategies continues to provide the most effective and efficient method for a planned and measurable approach to compliance delivery.

## Compliance Risk Assessments and Operational Compliance Plan

Fishers and other stakeholder groups may be directly involved in setting compliance priorities through compliance risk assessments. The Department conducts compliance risk assessments every 1 – 2 years in major fisheries (including the EGPMF) or those perceived to be at high risk and every 3 – 5 years in minor fisheries. The last risk assessment was carried out in February 2020 (DPIRD, OCP 2019/20). The risk assessment process can also be triggered by the introduction of new supporting legislation<sup>21</sup> in a fishery / resource or the identification of any new major issues that would require OCD managers to assess their compliance program including (but not limited to):

- A sectoral complaint;
- Ministerial or Parliamentary enquiry;
- Management framework issues;
- Public complaint or sustained media interest;

<sup>21</sup> 'Supporting legislation' refers to any legislation that would allow non-compliance with the management framework to be detected and prosecuted with a reasonable chance of securing a conviction.

- Intelligence; or an
- Upward trend in non-compliance.

The risk assessment process involves the participation of managers, field-based FMOs, researchers, commercial and recreational fishers, fish processors and representatives from other interested stakeholder groups, where relevant. There are two tiers in the risk assessment process — the first tier is the formal transparent process involving industry and other stakeholders, and the second tier is internal, utilising researchers, fishery managers and compliance personnel. The second process feeds into the fishery's OCP<sup>22</sup>, which provides the formal framework for the delivery of specific compliance services that remove or mitigate the identified risks.

The compliance risk assessment process identifies modes of offending, compliance countermeasures and risks and relies on a weight-of-evidence approach, considering information available from specialist units, trends and issues identified by local staff and Departmental priorities set by the Aquatic Management Division through the Aquatic Resource Program Summary.

An OCP provides a formal and transparent process for staff to carry out defined compliance activities in order to monitor, inspect and regulate the compliance risks to each specific high-risk activity in a fishery, and in turn confirm they are at an acceptable and manageable level. This is supported by measurable reporting methods defined under the OCP to demonstrate compliance activities being undertaken are having a direct and significant impact on reducing identified risks.

The development of an OCP consists of identifying and applying tailored compliance strategies for each identified risk. In the case of EGPMF, this includes strategies that may deal with higher identified risks related to seasonal considerations, spatial considerations, environmental considerations and identified persons or groups of interest.

OCPs have been operating for several years now in the EGPMF and other major commercial fisheries in the GCB and for the management of the Ningaloo Marine Park, Shark Bay Marine Park and Commonwealth Ningaloo Marine Park. Each OCP is reviewed following a compliance risk assessment. Additionally, by regularly reviewing the OCPs for all fisheries in a particular location, rational, accountable decisions can be made about deploying compliance resources and ensuring that resources are available to mitigate risks to an acceptable level.

Following a formal review of a fishery's OCP and associated compliance strategies, compliance activities are prioritized in accordance with risk, budget and resourcing considerations. All existing OCPs were reviewed and updated during the 2019/20 year using this model.

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.

## Compliance Operations

Gascoyne regional staff co-ordinate the allocation and prioritisation of existing resources across all programs in the region based on the risk assessments and related OCPs. Compliance planning meetings are held regularly to ensure staffing requirements are adequate for scheduled compliance activities.

Available compliance resources are allocated based on the risk assessment outcomes and the contacts and compliance statistics which are captured, reported on and reviewed at the end of each year. The allocated resources and compliance strategies (i.e. monitoring, surveillance and education activities) are outlined in the OCP, which specifies planned hours and staff allocated to key compliance tasks and duties. This planning and delivery process allows for more-targeted, effective and relevant compliance service in terms of both cost and activities.

There is also flexibility within the region to allocate additional resources to respond to changes, such as the need for a planned tactical operation in response to fresh intelligence. This may be achieved by redirecting existing resources or seeking additional resources from other areas or units. Similarly,

<sup>22</sup> By their nature, OCPs contain sensitive information and are only made available to authorised compliance personnel.

changing priorities and resourcing on a local level can involve reducing planned delivery of compliance services to ensure resources are directed to where they are most needed.

The Regional Office of the Department relevant to the EGPMF is located Carnarvon and supported by district offices located at Exmouth, Carnarvon and Denham. Staff located at these offices provide on-ground compliance and educative delivery for these fisheries. Key compliance and enforcement personnel located in the region and their responsibilities include:

1. Compliance Managers

- Overall responsibility for OCPs and compliance strategies, including their development, review and ensuring outcomes are delivered;
- Responsible for providing sufficient and appropriate resources to achieve compliance outcomes;
- Ensuring FMO safety is considered at all times and the Region's occupational health and safety requirements are met;
- Monitoring the progress of the OCPs and strategies during their execution;
- Consulting with all key stakeholders when reviewing the OCPs and strategies; and
- Reporting outcomes.

2. Supervising Fisheries and Marine Officers

- Field responsibility for OCPs and strategies, including reporting any deficiencies and reporting the outcomes as they are delivered or achieved;
- Supervision of staff performance;
- Ensuring officer safety is considered at all times and the district's occupational health and safety requirements are met;
- Provide briefings and de-briefings as required;
- Ensuring all equipment required to execute the OCPs and strategies is serviced, operational and available; and
- Liaising with staff from other agencies operating in a joint servicing arrangement.

3. Fisheries and Marine Officers (FMOs):

- Day-to-day responsibility for the execution of the OCPs and strategies in their interaction with users of the Fishery;
- Ensuring FMO safety is considered at all times and individual occupational health and safety requirements are met;
- Reporting any deficiencies and outcomes in a timely and accurate manner; and
- Complying with the *Standard Operating Procedures*, *Prosecution Guidelines*<sup>23</sup>, the Department's *Code of Conduct* and promoting the vision and mission statement of the Department and its joint-servicing partners.

FMOs are formally appointed pursuant to the FRMA, which clearly sets out their powers to enforce fisheries legislation, enter and search premises, obtain information and inspect catches. FMOs are highly trained; they must have a thorough knowledge of the legislation they are responsible for enforcing and follow a strict protocol for undertaking their duties in accordance with FRMA and in recording information relating to the number and type of contacts, offences detected and sanctions applied.

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<sup>23</sup> The *Prosecution Guidelines* is a confidential guide used by FMOs that provide a tiered framework for dealing with fishery offences, thus it is not a publically-available document.

In addition to regional compliance staff there are a number of units within the Department that support the delivery of compliance outcomes, including:

1. Patrol Boat Business Unit
  - Provides large oceangoing patrol vessels for Statewide offshore compliance operations and education activities.
2. Vessel Monitoring System Unit
  - Operates the Department's vessel monitoring system (VMS) to help manage the State's commercial fisheries.
3. Serious Offences Unit
  - Undertakes covert operations and deals with connections to organised crime;
  - Conducts major investigations and initiates proactive intelligence-driven operations;
  - Targets any serious and organised criminal activity within the fishing sector;
  - Provides specialist investigative training; and
  - Provides technical assistance in relation to covert surveillance.
4. Fisheries Intelligence Unit
  - Responsible for providing intelligence reports to support strategic, operational and tactical needs of compliance programs; and
  - Collects and analyses compliance data.
5. Compliance Statistics Unit
  - Develop monitoring and sampling programmes to support compliance delivery;
  - Collects and analyses compliance data to identify trends; and
  - Provides compliance statistics to help target enforcement activities.
6. Prosecutions Unit
  - Manage the electronic system used to issue infringement notices or commence prosecution processes when offences are detected; and
  - Custodians of information relating to detected offences which can be used for official reporting purposes.
7. Strategic Policy Section of the Regional Services Branch
  - Develops and implements strategic compliance policy and standards;
  - Provides compliance risk assessments for fisheries;
  - Provides review and implementation of fisheries management and compliance legislation;
  - Oversees collection and analysis of compliance data;
  - Oversees compliance research projects;
  - Develops occupational health and safety standards for FMOs; and
  - Provides recruitment and training of new and existing FMOs.

## MCS Systems

Compliance staff utilise a number of formal monitoring and surveillance activities and control mechanisms in the EGPMF.

VMS is a mandatory requirement for real-time monitoring to ensure fishers are operating within the legislated permitted fishing areas. All vessels operating in the EGPMF have installed an Automatic Location Communicator<sup>24</sup> (ALC) pursuant to the fishery's Management Plan. The ALC tracks the location of the boat and transmits information such as the geographical position, course and speed of the boat via a satellite link to a VMS database at the Department's Marine Operations Centre in Fremantle, with authorised Departmental officers able to access VMS data in real-time. This monitoring reduces incentives to break the law due to a high level of certainty that an offence would be detected.

The licensee and / or the master of every licenced fishing boat is required (under regulation 64 of the FRMR) to submit accurate and complete catch and effort returns on forms approved by the Department. Daily<sup>25</sup> Trawl Logbook Sheets (see Appendices in the associated MSC Assessment Document) have been completed by all skippers in the fisheries since 1962/63 and have been compulsory since 2008. On each logbook sheet, fishers are required to report the starting position (longitude and latitude), start time, duration, mean depth and catches of each retained species for each trawl shot, as well as daily records of all ETP species interactions and environmental data (i.e. water temperature and moon phase).

These fisheries operate using a constant escapement approach, with catch and effort monitored by the research branch and used to inform in-season control rules related to the rolling opening/closure of management areas throughout the Fishery. As part of the control rules, once the catch rates in an area fall below the limit reference levels, the area is closed to fishing activity (for a specified period of time or for the remainder of the season depending on the area). Thus, there is an incentive for fishers not to under-report catches, as this will generate a lower catch rate and thus, the potential closure of an area to fishing activity.

### Control Mechanisms

Fisheries legislation forms the main component of the control system for commercial fisheries in WA, along with conditions applied on an MFL. The EGPMF is subject to controls under:

- The EPBC Act (export exemptions);
- The FRMA;
- The FRMR;
- The *EGPMF Management Plan*; and
- MFL conditions;

A description of the control measures in place are provided in Table 20.

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<sup>24</sup> Statutory approved directions are gazetted and readily-available to regulate the installation, use, servicing and testing of approved ALCs.

<sup>25</sup> Shot-by-shot information provided since 1998



**Table 20. Description of the control measures and instruments of implementation in the EGPMF**

| Measure                                    | Description   | Instrument   |
|--|---|--|
| Limited Entry                              | A limited number of Managed Fishery Licenses (15) are permitted to operate in the EGPMF.  | EGPMF Management Plan  |
| Effort Restrictions                        | The fishery currently operates under a maximum headrope capacity restriction of 395.02 metres (216 fathoms).  | EGPMF Management Plan<br>FRMA (Section 7 exemptions)   |
| Gear Controls                              | Include controls on mesh size ( $\leq 60$ mm) of nets, boat length, size of the ground chain ( $\leq 10$ mm diameter) and the dimensions of the otter boards, including metal shoes.  | EGPMF Management Plan<br>FRMA (Section 7 exemptions)   |
| Bycatch Reduction Devices (BRDs)           | The fleet is required to have BRDs in the forms of grids and fish exclusion devices (FEDs), such as square mesh panels, in all standard nets.   | MFL Condition  |
| Annual Closed Season & Cap on Fishing Days | The fishery is closed to fishing between November and April each year, with the aim of a maximum of 200 total fishing days each year.   | EGPMF Management Plan (clause 10 annual notice)  |
| Spatial Closures                           | <p>The south-eastern area of Exmouth Gulf is permanently closed to trawling activities to preserve seagrass and other sensitive habitats that are essential nursery areas for prawns and other species.</p> <p>There is a Port Area Closure in place within three nautical miles of Exmouth.</p> <p>There are permanent trawling closures in place as part of the Ningaloo Marine Park and Muiron Islands Marine Management Area.</p> <p>Non-statutory rolling spatial closures in the management areas are used throughout the season to contain and direct overall fleet effort, control effort on brown tiger prawns, and provide industry the opportunity to maximise economic returns.</p> | <p>EGPMF Management Plan</p> <p>FRMA (Section 43 orders)</p> <p>Co-operative arrangement (non-statutory)</p> |
| Temporal Closures                          | <p>Fishing is only permitted between 1800 and 0800 hours the following day, as prawns are nocturnal. In some years approval has been granted to fish later than 0800.</p> <p>Fishing closures also occur for a minimum of four days around each full moon.</p>  | <p>EGPMF Management Plan (clause 10 annual notice)</p> <p>Co-operative arrangement (non-statutory)</p>       |
| Reporting                                  | Fishers are required to report all retained (target and non-target) species catches, effort, ETP species interactions and fishing location in statutory daily logbooks.   | FRMR (regulation 64)   |



| Measure | Description  | Instrument            |
|---------|--|-----------------------|
|         | Fishing activities are also monitored via the satellite VMS and the master must submit a nomination of intention to enter the fishery via VMS. | EGPMF Management Plan |

## Surveillance Activities

FMOs deliver compliance activities directed at commercial fisheries through pre-season briefings with the masters of the licenced fishing boats and pre-season inspections, as well as at-sea inspections and investigations resulting from suspected breaches detected via the VMS and intelligence-led operations.

FMO's follow a variety of established Standard Operating Procedures (SOPs) when undertaking patrol and inspection work. This procedure ensures that inspections are carried out safely, efficiently, correctly and with due regard to relevant policies. SOPs also ensure consistency in the delivery of compliance services and the ability to quickly familiarise new staff to the specifics of important compliance elements in a fishery.

The majority of surveillance activities in the EGPMF are undertaken by FMOs during field-based patrols. Compliance activities undertaken during patrols are recorded and reported by FMOs using a daily patrol contact (DPC) form. The purpose of these forms is to record and classify contacts and time spent in the field for each FMO. These forms provide managers with information about:

- The number of field contacts made, which provides a context for the number of offences detected. This includes random contacts and offences from random inspections;
- The number of targeted<sup>26</sup> contacts made, which provides information on the effectiveness of the intelligence gathering capacity at identifying 'targets';
- The number of face-to-face contacts outside of a compliance context (referred to as 'A/L/E' contacts) made, which provides information on the educative effort of FMOs in a fishery; and
- Other routine information that can be used to help managers' report on where and on which fisheries FMOs have undertaken patrols. This information is also used in patrol planning and risk assessments and ensures accountability of the compliance program.

A 'contact' occurs when an FMO has a chance of detecting illegal activity being undertaken by a fisher and includes personal contact (face-to-face), covert activities (e.g. deliberate, intensive surveillance), unattended gear checks (e.g. checking BRDs on a trawl net) and A/L/E contacts. VMS vessel days are also considered commercial compliance contacts. VMS vessel days are a proxy for fleet size and compliance coverage, representing each day that a vessel has an ALC operational (whether fishing or not) and therefore, a day that FMOs can assess whether it is complying with statutory spatial closures. In addition, VMS allows for a more targeted and cost effective on-ground compliance delivery.

The DPC form also includes a section to record details of individual commercial vessel inspections / checks. These inspections may involve:

- Inspection of all nets, BRD's, otter boards, VMS and other gear;

<sup>26</sup> A targeted contact is one that is initiated because available information indicates that an offence may have been committed or may be more likely to have been committed.

- Inspection of all authorizations; and
- Inspection of freezers and fish on board the boat.

Compliance field activity undertaken by FMOs operating from large (> 20 m) patrol vessels are reported and captured in the patrol vessel database (PVDB), which is available for use by compliance managers and other patrol vessels as needed.

The Department has also implemented an initiative called Fishwatch<sup>27</sup>, whereby the community can report instances of suspected illegal fishing. The Fishwatch phone line provides a confidential quick and easy way to report any suspicious activity to Departmental compliance staff.

### Informal MCS Systems

There are a number of other informal factors that deter illegal activity including self-monitoring by the Company and skippers in the fishery, the homogeneity of the fishery in the EGPMF (all licences owned by one company) and market factors related to the demand / preference for different size prawns.

In order to assess compliance with voluntary area closures in place throughout the fishing season, vessel movements are monitored onshore by the licence holder (MG Kailis Pty Ltd) using the **Automatic Identification System**<sup>28</sup>. Additional to the licence holder, skippers are able to monitor plotting lines on-board their boat and generally self-report any accidental incursions into closed areas. Additionally, as all skippers can see the activities of other boats, all skippers know when another vessel crosses a boundary and may also notify the skipper in question and / or Kailis when a boundary is breached.

Although compliance with the rolling opening / closing of various areas throughout the fishery is voluntary, the Department's VMS compliance team also monitor and report on VMS incursions annually. Information from these reports is used to assess general compliance levels in the fishery and inform the OCP and associated compliance activities for the following seasons.

### Sanctions

There is an explicit and statutory sanction framework that is applied should a person contravene legislation relevant to the EGPMF. Sanctions applicable to the FRMA or FRMR are generally specific to each section or regulation. For example, section 74 of the FRMA sets out the sanctions applied when a clause of the *EGPMF Management Plan* is contravened<sup>29</sup>, while section 77 sets out the sanctions applied should a condition of the MFL (e.g. the requirement to install prescribed bycatch reduction devices) be contravened.

Breaches in fishery rules may occur for a variety of reasons, and FMOs undertake every opportunity to provide education, awareness and advice to fishers; however, all offences detected in the fishery are considered to be of significant concern and are addressed by FMOs via the prosecution process outlined in the Department's *Prosecution Guidelines* and rules set out in the FRMA and FRMR. When an FMO detects a breach of the FRMA, the officer determines if the matter is prosecutable (according to the Department's *Prosecution Guidelines*) and where it is, a prosecution brief is prepared by the FMO and submitted to their supervisor. Based on the *Prosecution Guidelines*, there are four tiers of enforcement measures applied by FMOs when an offence is detected in the fishery including:

- Infringement warnings: These are written warnings issued for minor fisher offences. They do not incur a fine, but are a written record of a minor offence that may be referred to by Fishery Officers in the future. A certain number of infringement warnings for similar offences in a designated period may result in an infringement notice;

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<sup>27</sup> <http://www.fish.wa.gov.au/About-Us/Contact-Us/Pages/Fish-watch.aspx>

<sup>28</sup> The Automatic Identification System (AIS) is an automatic tracking system used on ships and by vessel traffic services (VTS) for identifying and locating vessels by electronically exchanging data with other nearby ships,

<sup>29</sup> Note that clause 19A of the Management Plan (offences and major provisions) is redundant as section 75 of the FRMA was revoked and replaced with section 74, which applies across all Fishery Management Plans

- **Infringement notices:** These are written notifications to pay a monetary penalty for an observed offence. Fishers issued infringement notices may choose to defend the matter in court; however, most fishers simply choose to pay the fine. The Department may initiate a prosecution brief for those fishers who appear to be habitual offenders;
- **Letters of warning:** A letter of warning (LOW) is an available sanction that achieves a formal record of a commercial offence where a prosecution may be unduly harsh under the circumstances. A LOW may be issued where an offence may have been committed but detected outside of the 45-day period where an infringement can be issued. There may not be a public interest in prosecution, but this still formally records the detected offence. A LOW formally advises the offender of their actions and seeks future 'voluntary' compliance.; and
- **Prosecutions:** These are offences of serious nature (prescribed in the FRMA) that immediately proceed to formal, legal prosecution. Such matters often incur hefty fines or can even result in incarceration, and matters brought before the court are often vigorously defended (especially by commercial fishers).

FMOs have the autonomy to issue an infringement warning after detecting some 'minor' offences that have resulted from a lack of understanding of the rules or an error of judgment, while infringement notices are used to apply a modified penalty and are usually used in cases where the offence does not warrant prosecution action that is likely to end up in court. Modified penalties are prescribed in Schedule 12 of the FRMR and can only be applied to particular sections of the FRMA (including contravening a provision of a Management Plan) and the FRMR<sup>30</sup>. A copy of the infringement notice is provided in Schedule 14 of the FRMR. If there is a dispute over an infringement notice, the offender can request the matter be heard in court.

More serious offences against the legislation will require the Department to seek to prosecute. The Department's Prosecution Advisory Panel (PAP) reviews recommendations made by the OCD in respect to alleged offending against the FRMA (or Pearling Act) and considers whether such decisions are in the 'public interest'. This process ensures fairness, consistency and equity in the prosecution decision-making process. The PAP consists of three panel members (representing legal and executive services and the compliance and aquatic management branches) who meet on a monthly basis or as necessary. The PAP operates on a majority basis, with the prosecution process continuing where the majority of the PAP agrees with the recommendation to prosecute. If the majority of the PAP disagrees with the recommendation to prosecute, the matter is referred to the Chief Executive Officer (CEO) of the Department, who will then make a determination on the matter. Should prosecution action be undertaken, the outcomes are generally released to the public via media releases and recorded on the Department's website<sup>31</sup>. Penalties for illegal activity in WA fisheries are commensurate with the value of the illegal fish involved and the type of illegal activity. This can sometimes result in large monetary penalties for certain types of activities, with large penalties considered necessary in order to create a deterrent effect for high-value species, such as western rock lobster or abalone. Additional penalty provisions that apply should there be a prosecution are provided in the FRMA under sections 222 (mandatory additional penalties based on value of fish), 223 (court ordered cancellations or suspensions of authorisations), 225 (prohibition on offender activities) and 218 (forfeiture of catch, gear, etc.).

A successful prosecution for a serious offence in a commercial fishery may result in a 'black mark' against the fisher or the commercial licence (as per section 224 of the FRMA). If an authorisation holder or a person acting on behalf of the holder accumulates three black marks within a 10-year period, the authorisation is suspended for one year. Additionally, under section 143, the CEO has the administrative power to cancel, suspend or not renew an authorisation in certain circumstances, which can be used even if cancellations through the court are unsuccessful. These powers have been regularly used to deal with serious offending in other fisheries.

All fisheries offences in WA are recorded in a dedicated Departmental offences system, which also manages the workflow associated with infringements and prosecutions. In order to link this

<sup>30</sup> [http://www.slp.wa.gov.au/legislation/statutes.nsf/main\\_mrtitle\\_1458\\_homepage.html](http://www.slp.wa.gov.au/legislation/statutes.nsf/main_mrtitle_1458_homepage.html)

<sup>31</sup> Example of media release: <http://www.fish.wa.gov.au/About-Us/Media-releases/Pages/Court-fines-hit-hard-for-out-of-season-lobster-fishing.aspx>

information with patrol data, FMOs include information about the fishery, DPC area, type of patrol and whether the offence resulted from a targeted inspection in all offence paperwork.

Despite a continuing level of MCS in accordance with the OCP, there have been few offences in the last six years (Table 21.). Note the data provided here indicate offences that resulted in an outcome in-line with the enforcement measures described above. The non-compliance rate in the EGPMF has been 6.6%, with no prosecutions (DPIRD OCD, 2019/20).

**Table 21. Summary of offences in the EGPMF from 2004/05 – 2013/14**

| Year    | Infringement Warnings | Infringement Notices | Letters of Warning | Prosecution |
|---------|-----------------------|----------------------|--------------------|-------------|
| 2014/15 | 2                     | 2                    | 0                  | 0           |
| 2015/16 | 0                     | 0                    | 0                  | 0           |
| 2016/17 | 0                     | 0                    | 0                  | 0           |
| 2017/18 | 1                     | 0                    | 0                  | 0           |
| 2018/19 | 0                     | 0                    | 0                  | 0           |
| 2019/20 | 0                     | 0                    | 0                  | 0           |

Although there are no industry-implemented sanctions in place, at the end of each fishing year in the EGPMF, skippers are eligible for a 'bonus' payment (from their employer), which is calculated based on the percentage of the total catch they landed during the season and their voluntary compliance<sup>32</sup> with industry closures during the season. Thus, skippers have a financial incentive to comply with voluntary closures in order to receive a higher bonus at the end of the season. The company reaffirms that systematic non-compliance behaviour would result in dismissal (G. Kailis, pers comm, February 2020).

In evaluating compliance in a specific fishery, the Department uses a weight-of-evidence approach, which considers:

- Ongoing evidence of a sustainable fishery, i.e. whether ecological objectives continue to be met;
- Assessment of the risk posed by the fishery to target species and ecosystem components under the current management regime;
- Annual outputs arising from formal MCS systems —
  - Adequacy of commercial compliance coverage (patrol hours) including VMS;
  - Number of offences and successful prosecutions (dependent on whether compliance is undertaken in a random or targeted manner); and
  - Average non-targeted compliance rate;
- Number of reports of illegal activity logged by Fishwatch and from intelligence gathered by FMOs;
- General level of industry support / buy-in around fishing rules; and
- Level of compliance education and communications during key stakeholder engagement (at least annually).

<sup>32</sup> While not formally reported, voluntary compliance statistics and sanctions applied by the licence holders can be made available for assessment purposes if required.

Using this weight-of-evidence approach, there is a high degree of confidence that fishers in the EGPMF comply with the management system in place, including providing information of importance to the effective management of the fishery based on the following:

- There is ongoing evidence that the fishery is operating sustainably, as the performance indicators for each component (i.e. target species, retained non-target species, bycatch, ETP species, habitat and ecosystem processes) of the fishery has been maintained above threshold reference levels (see “*Fishery-Specific Objectives [P 3.2.1]*” in associated MSC Assessment document).
- In the most recent ecological risk assessment (2008) for the EGPMF, the highest risk indicated to any component was ‘moderate’ (i.e. the maximum acceptable level of impact). Where this was the case (i.e. brown tiger prawns), appropriate management actions have been implemented to mitigate this risk. The *Status Report of the Fisheries and Aquatic Resources of Western Australia* report on the evaluation of performance of the fishery annually.
- There have been no offences recorded (based on formal compliance systems) in the EGPMF within the last five years;
- There were between 1 and 29 intelligence reports for the EGPMF on the Department’s intelligence management system, “Seastar”, over the last six years.

**Table 22. Summary of intelligence reports relating to the EGPMF**

| Year    | Random Personal | Targeted Personal | Random Covert | Targeted Covert | Random Gear | Target Gear | Random Contacts | Total Fisher Contacts | ALE | Total Contacts |
|---------|-----------------|-------------------|---------------|-----------------|-------------|-------------|-----------------|-----------------------|-----|----------------|
| 2014/15 | 12              | 12                | 0             | 0               | 0           | 0           | 12              | 24                    | 0   | 24             |
| 2015/16 | 1               | 0                 | 0             | 0               | 0           | 0           | 1               | 1                     | 0   | 1              |
| 2016/17 | 12              | 2                 | 0             | 0               | 0           | 0           | 12              | 14                    | 14  | 28             |
| 2017/18 | 4               | 6                 | 1             | 0               | 0           | 0           | 5               | 11                    | 0   | 11             |
| 2018/19 | 17              | 0                 | 12            | 0               | 0           | 0           | 29              | 29                    | 0   | 29             |
| 2019/20 | 13              | 4                 | 4             | 0               | 0           | 0           | 17              | 21                    | 0   | 21             |

- Additionally, apart from statutory requirements around submitting catch returns, the licensees actively participate in providing extra information for the effective management of the fishery, particularly through the provision of industry boats for Department surveys and the collection of additional data via industry surveys, which are delivered under a Service Level Agreement (SLA) with the Department.

The Department also measures compliance outcomes by estimating compliance and non-compliance rates. These terms refer to the proportion of fishers in a defined group (i.e. the EGPMF) that, on the basis of random inspections, were found observing fishing rules or not, respectively. Thus, the estimated average annual compliance rate is obtained by comparing the number of non-targeted contacts with fishers in the EGPMF against the number of detected offences. The annual average compliance rate for the EGPMF between 2015/16 and 2019/20 was 98.68 %. Based on the weight-of-evidence approach detailed above and the long-term compliance rate, there is no evidence of systematic non-compliance by the licensees and skippers in the EGPMF, nor is there evidence that the existing (negligible) level of non-compliance in the past five years is a risk to target prawn stocks or ecosystem components.

#### 4.5.9 Performance Review

The EGPMF has in place mechanisms to evaluate all parts of the management system. Should any data arising from regular monitoring and evaluation indicate that the EGPMF is having an unacceptable impact, review processes are triggered and decision-making processes are implemented.

- General management

As part of the Department’s risk-based planning cycle, the current risk assessment for the EGPMF management system is reviewed annually. The risk assessment reviews any changes to the management system, including the Aquatic Resource Program, the EGPMF research plan and

compliance requirements. The review also takes into account the level of resourcing across the management, research and compliance for the EGPMF, which will be modified if a change to the level of risk has altered the level of management, compliance, monitoring or assessment required in the future. The risk assessment and management review involve extensive consultation with the key stakeholders.

A public sector performance report<sup>33</sup> is required annually by legislation in the form of the Department's Annual Report which includes key performance indicators (KPIs) around the management and sustainability of the State's fish resources (Administration/Management) and the State of the Fisheries (Research, Compliance and Management) report to Parliament. Our performance against KPIs is reviewed annually by independent Office of the Auditor General.

- Fisheries specific management and harvest strategy evaluation

The statutory management framework is reviewed when there is evidence to support statutory changes to the longer-term management measures or to implement new longer-term measures. There is no need to regularly amend the Management Plan; but the EGPMF Management Plan was updated in 2018 to classify endeavour prawns as a key target species and to include specific changes to bycatch monitoring indicators.

Annual evaluation of the performance of the fishery against the reference levels contained in the harvest strategy is the main mechanism used to evaluate the fishery-specific management system. An internal review of one or more parts of the management system is triggered if annual (or in-season) performance evaluation against the operational (short-term) objectives indicates the potential need for a management response (i.e. when below the target level). Potential issues are recognised and addressed in a timely manner prior to the following fishing season or during the current season, to meet both operational and long-term management objectives.

The economic target reference level was met in 2018, indicating that the EGPMF was provided with the opportunity to optimise the economic returns under the current management framework. The licensee and skippers continue to work with the Department under the cooperative management framework, and there are no signs that the licensee is dissatisfied with the current arrangements.

The outcomes of annual monitoring and evaluation are reported annually in the *Status Report of the Fisheries and Aquatic Resources of Western Australia: The State of the Fisheries*.

The EGPMF harvest strategy was subject to extensive internal review, followed by review process in consultation with the licensee, which resulted in the current harvest strategy (2014 – 2019; DPIRD, 2018). While the next review of the harvest strategy is presently underway (2019/2020), the appropriateness of the current performance indicators, reference levels and control rules may be refined and updated during this time in consultation with the licensee as further relevant information becomes available (e.g. new research, risk assessments and expert advice).

- **Research and Research Plan**

The status and progress of activities required under the EGPMF research plan are closely monitored by Research staff to ensure that actions are being undertaken within the designated timeframes. Any issues around milestones, monitoring, reporting, resourcing, etc., relevant to the EGPMF research plan are discussed with Management staff as they arise. In addition, the Research Division's Supervising Scientists group has fortnightly meetings to raise any issues, which could include risks around the timing of delivery of research programmes / information. This group develops actions to address slippages, and any significant issues can be included as standing items.

The regular monitoring framework applied to the EGPMF research plan may identify a need to undertake interim external or internal review of the research plan outside of the normal five year review cycle.

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<sup>33</sup> DPIRD, Annual Report 2019, <https://www.dpird.wa.gov.au/annual-report>



Any results arising from the research plan are generally externally peer reviewed, and always internally peer reviewed prior to publishing. The Supervising Scientists group manages the peer review process of all fisheries, including with external reviewers.

The Aquatic Resource Program and the higher level DPIRD Research Strategic Plan is reviewed annually. The stock assessment and research framework for the EGPMF was externally reviewed by Malcolm Haddon (Marine Research Laboratory Tasmanian Aquaculture and Fisheries Institute, University of Tasmania) during a two day workshop undertaken in November 2012. As a result of the workshop, the annual survey methodology for the EGPMF was reviewed and amended in 2013. An external science review was conducted by Malcolm Haddon<sup>34</sup> in April 2019 for the Shark Bay prawn and scallop fisheries. The findings of this review had some relevance to the EGPMF in terms of feedback regarding prawn survey programs (Patrick Cavalli, DPIRD, prese. Comm. February. 2020.).

The EGPMF Bycatch Action Plan was subject to extensive internal review, followed by consultation with the licensee. The revised draft Bycatch Action Plan is now in its review stages.

An internal review of the WA ESD risk assessment process was completed in 2015<sup>35</sup>.

Monitoring and evaluation against ESD performance measures is undertaken annually and reported in *Status Report of the Fisheries and Aquatic Resources of Western Australia: The State of the Fisheries*.

The EGPMF's export accreditation (and therefore its entire fishery specific management system) is externally reviewed (re-assessed) every five years by the Commonwealth DoE<sup>36</sup>. The EGPMF fishery-specific management system was most recently reviewed by the DoE in 2025 and succeeded in achieving export accreditation the fishery for a period of five years.

#### • MCS System

Ongoing annual monitoring of compliance service delivery is undertaken at a Regional and local office level and relies on a weight-of-evidence approach considering information available from specialist units, trends and issues identified by local staff and Departmental priorities set by the Aquatic Management Division.

Offence types, numbers and sanctions relevant to the EGPMF are monitored on an annual basis by the Compliance Statistics Unit and, together with annual VMS days, patrol hours and contacts, are reported annually on a bioregional basis in *Status Report of the Fisheries and Aquatic Resources of Western Australia: The State of the Fisheries*. Based on this, data used to annually evaluate compliance effectiveness in the EGPMF include:

- level of fishing effort
- VMS vessel days
- patrol hours
- targeted and non-targeted contacts
- detected offences (type and number)

The estimated annual non-targeted compliance rate is obtained by comparing the number of non-targeted contacts with the EGPMF against the number of detected offences. In 2019/20, the estimated non-targeted compliance rate in the EGPMF was 98.7%. Should the evaluation of the annual non-targeted compliance rate identify a decrease in the level of compliance in the EGPMF, a

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<sup>34</sup> Haddon, M, Shark Bay Trawl Fisheries Science Review, September 2019

<sup>35</sup> Fletcher, W.A. Review and refinement of an existing qualitative risk assessment method for application within an ecosystem-based management framework, *CES Journal of Marine Science*, Volume 72, Issue 3, March/April 2015, Pages 1043–1056, <https://doi.org/10.1093/icesjms/fsu142>

<sup>36</sup> Australian Government, D0SEWPF, Assessment of the Western Australian Exmouth Gulf Prawn Managed Fishery, <https://www.environment.gov.au/marine/fisheries/wa/exmouth-gulf-prawn>

review is triggered to investigate the reasons, which may result in an immediate review of the MCS System.

Regular internal review of the EGPMF's MCS system is undertaken every 12 – 18 months by means of a compliance risk assessment. The EGPMF OCP is reviewed following the compliance risk assessment.

Gascoyne regional compliance staff and the VMS section primarily contribute to the compliance risk assessment process; however, management and research staff can attend and are given an opportunity to provide advice. Should the level of risk to compliance increase, further advice / resourcing can be sought from other areas of compliance (e.g. Special Operations Unit). Following the compliance risk assessment review, the operational compliance plan is updated as required.

An external Auditor General's Public Sector Performance Report (pp 16-27) <sup>37</sup> on compliance in WA's commercial and recreational fisheries, including those of the West and South Coast Bioregions, was submitted to Parliament in June 2009. Following the Auditor General's Report, in November 2009, the Department's compliance program was evaluated with the aim of recommending optimisation in commercial and recreational fisheries in WA, the results of which were published in Green and McKinlay (2009).

As a result of these reviews, the Department has greatly improved its compliance program by:

- Developing regional and state-wide compliance risk assessments as a basis for its compliance program;
- Determining the level of compliance activity that is required to achieve effective compliance outcomes for individual fisheries; and
- Identifying and collecting the key information required for compliance reporting and management purposes.
- Developing a Collaborative Operational program with DBCA.

Appropriate outcome indicators measure whether compliance outcomes are being achieved in the long term. This will help to validate the effectiveness of the existing weight of evidence approach of combining compliance risks assessments and compliance outputs with sectoral involvement and research advice.

The measurement of compliance outcomes is different from fisheries compliance outputs. Output measures are relatively easy to determine (e.g. number of people fined), but fisheries compliance outcomes are not (i.e. a change in the skills, attitude, behaviour and circumstances of the target group or community in general). The project seeks to outline current best practice for compliance outcome measures, assess their strengths and weaknesses and where possible set a direction for the adoption of a national framework based on best practice. This is expected to result in a credible, reviewable framework for measuring fisheries compliance outcomes that can readily demonstrate value for money and an assessment of quality.

As part of a commitment to reviewing the framework of WA's Compliance system, the Department also participated in a national study in measuring fisheries compliance outcomes (Price, et al, FRDC 2014). This includes a review of methodologies to assess effectiveness of compliance programs and measure compliance outcomes; a survey on aspects relating to output and outcome indicators collected by a limited sample of fisheries compliance agencies; and a workshop process. Workshop participants included AFMA, Fisheries (Victoria), Primary Industries (South Australia), the University of Maryland and DPIRD (WA).

#### • **US TED Accreditation Review**

In 2016, Staff from the National Oceanic Atmospheric Administration (NOAA) carried out TED reviews for the United States Department of State BRD-compliance and the use of turtle exclusion devices (TEDs). The client declined to implement the operational changes required because the

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<sup>37</sup> [https://audit.wa.gov.au/wp-content/uploads/2013/05/report2009\\_07.pdf](https://audit.wa.gov.au/wp-content/uploads/2013/05/report2009_07.pdf)



proposed operational changes that were to be required were determined to have been prohibitive, to future gear innovations. MG Kailis has engaged an independent advisor, Dr John Wakeford, to provide advice on ongoing improvements relating to bycatch and TEP interactions.

### 8.4.1 Principle 3 Performance Indicator scores and rationales

#### PI 3.1.1 – Legal and/or customary framework

| PI 3.1.1  |  | The management system exists within an appropriate legal and/or customary framework which ensures that it:   |  |   |
|---|--|--|--|---|
|   |  | <ul style="list-style-type: none"> <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> |  |   |
| Scoring Issue   |  | SG 60  | SG 80  | SG 100  |
| a   | Compatibility of laws or standards with effective management |  |  |   |
|   | Guide post   | There is an effective national legal system <b>and a framework for 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 <b>and organised and effective 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 <b>and binding procedures governing cooperation with other parties</b> which delivers management outcomes consistent with MSC Principles 1 and 2. |
|   | Met?   | Yes  | Yes  | Yes   |
| Rationale   |  |  |  |   |
| <p>Australia is a signatory to a number of international agreements and conventions (which it applied within its EEZ). These include: United Nations Convention on the Law of the Sea (regulation of ocean space); Convention on Biological Diversity and Agenda 21 (sustainable development and ecosystem based fisheries management); Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES; protection of threatened, endangered and protected species); Code of Conduct for Responsible Fisheries (standards of behavior for responsible practices regarding sustainable development); United Nations Fish Stocks Agreement; and State Member of the International Union for Conservation of Nature (marine protected areas).</p> <p>The Offshore Constitutional Settlement provides for the demarcation of fisheries management responsibility between the States and Australian Commonwealth. The State of Western Australia has responsibility for management outside to manage fisheries inside 3 nautical miles.</p> <p>WA fisheries legislation and policy conforms to overarching Commonwealth Government fisheries and environmental law, including the EPBC Act. The EPBC Act 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.</p> <p>The Fisheries Resources Management Act, 1994 sets out the legal requirements for managing WA fisheries and in consistent with MSC Principles 1 and 2. The Director General of the Department of Fisheries (Chief Executive Officer) is appointed under Part 3 of the Public Sector Management Act, 1994 for five years. The executive structure of the Department brings all key aspects of fisheries management, such as research, policy, compliance &amp; enforcement under a single dedicated department umbrella. It is relatively unusual for all fisheries management functions to fall under a single department and for that department to be focused solely on fisheries.</p> <p>Binding procedures are explicit within these acts. Therefore, the national legal system and governing binding governance cooperation meets SG 60, SG 80 and SG 100.</p> |  |  |  |   |

| Resolution of disputes |            |   |  |  |
|------------------------|------------|---|--|--|
| <b>B</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 mechanism</b> for the resolution of legal disputes which is <b>considered to be 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 mechanism</b> for the resolution of legal disputes that is appropriate to the context of the fishery and has been <b>tested and proven to be effective</b> . |
|                        | Met?       | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>   |
| Rationale              |            |   |  |  |

There are well established mechanisms for administrative and legal appeals of decisions taken in respect of fisheries, which are prescribed in Part 14 of the FRMA. Most decisions made by the Chief Executive Officer of the Department and disputes regarding the implementation and administration of fisheries legislation can be taken to the Western Australian State Administrative Tribunal (SAT)<sup>38</sup> for review or the WA (and Commonwealth) Court System<sup>39</sup>. These mechanisms have been used and tested across several fisheries. The decisions of the State Administration Tribunal (SAT) and the Courts are binding on the Department (for details of decisions see <http://decisions.justice.wa.gov.au/SAT/SATdcsn.nsf>). All SAT decisions must be carried out by the Department (section 29(5) of the State Administrative Tribunal Act 2004<sup>40</sup>).

The consultative, educative and partnership approach to management adopted by DoF, is inclusive of all stakeholders, but usually working with key 'peak' consultation bodies ('WAFIC' and 'Recfishwest'), provides informal but effective mechanisms to minimise opportunities for disputes. Therefore, the national legal system provides for a transparent mechanism for the resolution of legal disputes and meets SG 60, SG 80 and SG 100.

| Respect for rights |            |  |  |  |
|--------------------|------------|--|--|--|
| <b>C</b>           | 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?       | <b>Yes</b>   | <b>Yes</b>   | <b>Yes</b>   |
| Rationale          |            |  |  |  |

Western Australian inshore coastal fishing requires consideration of the degree to which indigenous aboriginal people are recognised in the management system. 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.

<sup>38</sup> <http://www.sat.justice.wa.gov.au>

<sup>39</sup> [http://www.courts.dotag.wa.gov.au/C/courts\\_history.aspx](http://www.courts.dotag.wa.gov.au/C/courts_history.aspx)

<sup>40</sup> [http://www.slp.wa.gov.au/legislation/statutes.nsf/main\\_mrtitle\\_918\\_homepage.html](http://www.slp.wa.gov.au/legislation/statutes.nsf/main_mrtitle_918_homepage.html)

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. Therefore, 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 meets SG 60, SG 80 and SG 100.

## References

The Offshore constitutional settlement. Available at  
<https://www.ag.gov.au/Internationalrelations/InternationalLaw/Pages/TheOffshoreConstitutionalSettlement.aspx>

The EPBC Act

(file:///C:/Users/richa\_000/Desktop/Dropbox/WA%20MSC%20Exmouth/P3.1/Legislation/ENVIRONMENT%20PROTECTION%20AND%20BIODIVERSITY%20CONSERVATION%20ACT%201999.html)

Fisheries Resources Management Act, 1994

Public Sector Management Act, 1994

Aboriginal Heritage Act of 1972

The Aboriginal Land Act 1978

Franklyn QC (2003).

## Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |  |
|---------------------------|--|
| Draft scoring range       | ≥80  |
| Information gap indicator | Sufficient information is available to score |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

## PI 3.1.2 – Consultation, roles and responsibilities

| PI 3.1.2      |                            | The management system has effective consultation processes that are open to interested and affected parties<br>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties |   |   |
|---------------|----------------------------|--|---|---|
| Scoring Issue |                            | SG 60  | SG 80   | SG 100  |
| <b>a</b>      | Roles and responsibilities |  |   |   |
|               | 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 well understood for 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 well understood for all areas</b> of responsibility and interaction. |
|               | Met?                       | <b>Yes</b>   | <b>Yes</b>  | <b>Yes</b>  |
| Rationale     |                            |  |   |   |

There is explicit definition of the role of the Federal (AFMA) and State level of fisheries management. Critically, this includes clearly stating where overall responsibility for fisheries is divided between state and Commonwealth according to the Offshore Constitutional Settlement.

Within DPIRD WA, there is explicit definition and understanding of the roles of research, enforcement and management policy teams. The executive structure of the department brings all key aspects of fisheries management, such as research, policy, compliance & enforcement under a single dedicated department umbrella. This increases clarification of roles and responsibilities. The roles of other departments such as Department of the Environment are also explicitly defined and it is understood how these relate to each other.

The functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction and meet SG 60, SG 80 and SG 100.

|           |                        |   |  |   |
|-----------|------------------------|---|--|---|
| <b>b</b>  | Consultation processes |   |  |   |
|           | Guide Post             | The management system includes consultation processes that <b>obtain 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 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 seek and accept</b> relevant information, including local knowledge. The management system demonstrates consideration of the information and <b>explains how it is used or not used</b> . |
|           | Met?                   | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>  |
| Rationale |                        |   |  |   |

Section 65 of the FRMA sets out the legislative consultation requirements the Minister must adhere to when amending an existing management plan. Section 65 has 'natural justice' origins, in that a person whose rights may be about to be affected should have an opportunity to be heard before any adverse action / impact is given effect.

The statutory consultation function is presently conducted by WAFIC on behalf of the Department under the SLA, and when required, delegated to the relevant associations. This process of consultation via the two peak agencies appears Any update of evidence to have been regular and effective at engagement with stakeholders in the commercial and recreational sectors, but not in the ENGO sector.

DPIRD have also strengthened consultation to include participation on key fisheries policy matters and initiatives. The Department of Fisheries has created a public comment space on its website. This allows all interested and affected parties to view information and make submissions on draft documents released for public comment for specified periods of time. Key stakeholders are invited directly to provide comment through this forum.

The public consultation space can be accessed at the following web address:  
<http://www.fish.wa.gov.au/About-Us/Public-Comment/Pages/default.aspx>, This shows all of the documents currently open for public comment.

There is a process that allows other organisations to provide submissions, and engage directly.

Evidence does show consideration of the information obtained from stakeholders that respond. Therefore, the consultation process meets the SG 60, SG 80 and SG 100 requirements.

| Participation |            |  |  |   |
|---------------|------------|--|--|---|
| c             | Guide Post |  | The consultation process <b>provides opportunity</b> for all interested and affected parties to be involved. | The consultation process provides <b>opportunity and encouragement</b> for all interested and affected parties to be involved, and <b>facilitates</b> their effective engagement. |
|               | Met?       |  | <b>Yes</b>   | <b>Yes</b>  |
| Rationale     |            |  |  |   |

The existing system for consultation includes both statutory and non-statutory opportunities for interested stakeholders to be involved in the management system. Opportunities for stakeholder input are provided through calls for submissions on Fisheries Management Papers (see above reference to the public consultation space), and through expert reference groups which are open to stakeholders. To ensure coverage and engagement during the consultation period with stakeholders and the wider community, the Department uses a variety of processes including: Management meetings, Direct consultation in writing; Press releases; newspaper, radio and television interviews; information posted on the Department's website information; inviting stakeholders to sit on tasked working groups, scientific reviews / workshops, risk assessments and management reviews.

Specific to the EGPMF and SBPMF fisheries, an engagement process is in place to facilitate non-fisher stakeholder consultation processes. These include an Annual Management Meeting between the Department, WAFIC and industry.

The Department has established the key contacts within these stakeholder groups to develop processes for opportunity to be involved in or informed of management decisions where relevant. Fishery-specific stakeholder lists are available, listing the 'area of interest' and 'level of interest'. The governing bodies of the State Marine Park and World Heritage Areas relevant to both fisheries (Conservation and Parks Commission, The Department of Biodiversity, Conservation and Attractions (DBCA), the two World Heritage Advisory Committees), and the Shires of Shark Bay and Exmouth have been identified as key (non-fisher) stakeholders affected by the EGPMF.

A number of discussions are held regularly with staff relevant to the governing bodies of the relevant State Marine Park and World Heritage Areas (DBCA & DoF, 2015) to develop strategies for better collaboration and communication with these key stakeholders going forward.

A fishery-specific communication protocol was adopted by DPIRD and DBCA (DBCA & DoF, 2016) to provide for two-way communication and sharing of information to support effective management of prawn trawling activities within and adjacent to the Shark Bay and Ningaloo Marine Parks and Muiron Islands Marine Management Area. The scope of this protocol includes the Exmouth Gulf and Shark Bay Prawn trawl fisheries; and the Shark Bay and Ningaloo Marine Parks and Muiron Islands Marine Management Area. Over time the scope of this communication protocol may develop to address communication and information

sharing for a range of commercial and recreational fisheries management issues relevant to the Gascoyne marine reserve network, and Shark Bay and Ningaloo Coast World Heritage Areas.

The Department now attends the joint Ningaloo Coast and Shark Bay World Heritage Advisory Committee meeting to brief the committees regarding the management of the SBPMF, EGPMF, and discuss ongoing communication with these committees.

The trawl team liaises with Recfishwest during the fishing seasons to discuss priorities and in-season fishing arrangements that may be of interest to recreational fishers.

#### References

Western Australian Fishing Industry Council Inc., <http://www.wafic.org.au/> Recfishwest, <http://www.recfishwest.org.au/>

DoF, Letters to WAFIC, STBOA of 15 August, 2014

DoF, 2016i, Guideline for stakeholder engagement on aquatic resource management- related processes (Fisheries Occasional Publication No. 131) (the Guideline) in September 2016.

DPIRD, 2019, EGPMF Summary of Consultation 2019/20.

DBAC & DoF Communication Protocol: Shark Bay/Ningaloo Marine Parks & Exmouth Gulf/Shark Bay Prawn Trawl Fisheries, 2016.

#### Draft scoring range and information gap indicator added at Announcement Comment Draft Report

|                           |                                 |
|---------------------------|---------------------------------|
| Draft scoring range       | ≥80                             |
| Information gap indicator | Sufficient information to score |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

### PI 3.1.3 – Long term objectives

| 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  |
| a             | Objectives |  |   |   |
|               | 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?       | <b>Yes</b>   | <b>Yes</b>  | <b>Yes</b>  |

#### Rationale

The WA Government has set a long-term overarching objective that is underpinned by the principle of social and environmental responsibility *to ensure that economic activity associated with aquatic resources is managed in a socially and environmentally responsible manner for the long-term benefit of the State*. This objective is explicit in both fisheries legislation and management policy.

The stated objectives of the WA Fisheries Resources Management Act (1994) are to develop and manage fisheries and aquaculture in a sustainable way; and to share and conserve the State's fish and other aquatic resources and their habitats for the benefit of present and future generations. The Act also incorporates the precautionary approach.

Objectives are also explicitly stated in the DPIRD Strategic Plan 2018 – 2021. These objectives are listed as: Sustainable fisheries management - WA benefits from sustainable fisheries that support and optimise social, economic and environmental outcomes; and 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 Western Australian Government is committed to the concept of ESD, which seeks to integrate short- and long-term economic, social and environmental effects in to all decision-making. The key principles of ESD are implicitly contained in the objectives of the FRMA, and the Department's ESD Policy (Fletcher 2002). Prescribed and implemented actions by DoF include identifying issues; determining the importance of each of these issues using risk assessment; completing suitably detailed reports; and compiling sufficient background material to put these reports into context.

In addition, the management of the fisheries by the Department of Fisheries (WA) is bound by higher level objectives set out in both national (Commonwealth) and International Legislation, most specifically the precautionary approach and the ecosystem approach to fisheries management.

Evidence that the formulation and implementation of long-term objectives are explicit and required by management policy are exhibited in various performance assessments including: effectiveness and efficiency indicators to show the extent to which the Department achieved its goal of conserving and sustainably developing the State's aquatic resources (the Department's *Annual Report*.) The *Strategic Plan 2018 - 2021* sets out the strategies and key deliverables and Divisions of the Department that are responsible for delivery. Each of WA's main commercial fisheries has been assessed using the *Australian National ESD Framework for Fisheries*, and it is now an integral part of the stock sustainability assessment process for all fisheries in WA. For the purposes of the wildlife trade provisions of Part 13A of the EPBC Act (i.e. to be exempt from export controls for native species harvested in a fishery), management agencies must demonstrate that fisheries management regimes comply with the objectives of ESD. Performance against social and economic objectives is measured regularly. Commercial fisheries' gross value of production and rates of employment are reported annually in the *Status Reports of the Fisheries and Aquatic Resources of WA: the State of the Fisheries*.



WA fisheries assessments are conducted against the Commonwealth Guidelines which outline specific principles and objectives designed to ensure a strategic and transparent way of evaluating the ecological sustainability of fishery management arrangements. Management arrangements demonstrate a precautionary approach, particularly in the absence of information. Evidence of the application of the precautionary approach to fisheries management is provided in management responses as and when the stock falls below the Target reference Point, restricting the trawl footprint and the implementation of Bycatch Reduction Devices, despite low risk to bycatch species. 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 evidence provided demonstrates that there are 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. Therefore the SG 60, SG 80 and SG 100 requirements are met.

## References

WA Fisheries Resources Management Act (1994)

DPIRD Strategic Plan 2018 – 2021

([https://dpird.wa.gov.au/sites/default/files/Strategic\\_intent\\_trifold\\_FINAL\\_web.pdf](https://dpird.wa.gov.au/sites/default/files/Strategic_intent_trifold_FINAL_web.pdf))

State of the Fisheries report ([https://dpird.wa.gov.au/sites/default/files/Strategic\\_intent\\_trifold\\_FINAL\\_web.pdf](https://dpird.wa.gov.au/sites/default/files/Strategic_intent_trifold_FINAL_web.pdf))

DPIRD, EGPFM Fisheries Management Plan 2015-2019

DPIRD, Annual report (<https://dpird.wa.gov.au/sites/default/files/2019-10/DPIRD%20Annual%20Report%202019%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, doi: 10.1093/icesjms/fsu142

### Draft scoring range

>80

Information gap indicator

**Information is sufficient to score**

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

Overall Performance Indicator score

Condition number (if relevant)



## PI 3.2.1 – Fishery-specific objectives

| 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   |  |   |
|---|------------|--|--|---|
| Scoring Issue   |            | SG 60  | SG 80  | SG 100  |
| <b>a</b>  | Objectives |  |  |   |
|   | 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 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. | <b>Well defined and measurable short and long-term objectives</b> , 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?       | <b>Yes</b>   | <b>Yes</b>   | <b>Yes</b>  |
| Rationale   |            |  |  |   |
| <p>Long and short-term specific objectives are documented in the <i>EGPMF Harvest Strategy 2014 – 2019</i> (DPIRD, 2018) and <i>EGPMF Bycatch Action Plan 2014 – 2019</i> (BAP; DoF 2014a). The EGPMF has a long-term management objective, which is demonstrably consistent with achieving outcomes expressed by MSC Principle 1, <i>to maintain spawning stock biomass of each target species (brown tiger and western king prawns) at a level where the main factor affecting recruitment is the environment</i>. Both the harvest strategy and BAP contain a range of strategies that are monitored to ensure the short-term objectives are being met consistently. These are supported by defined and measurable performance indicators, management reference levels and control rules for the target species as well as retained, bycatch and ETP species, habitats and ecosystems. The standard of available information has been strengthened for bycatch, ETP and habitats. These support the monitoring of performance indicators.</p> <p>The long-term management objectives which are demonstrably consistent with achieving the outcomes expressed by MSC Principle 2, are defined in the Bycatch Action Plan (BAP): To maintain spawning stock biomass of each retained species at a level where the main factor affecting recruitment is the environment; to ensure fishery impacts do not result in serious or irreversible harm to bycatch species populations; to ensure fishery impacts do not result in serious or irreversible harm to ETP species populations; to ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function; and to ensure the effects of fishing do not result in serious or irreversible harm to ecosystem processes. These are supported by defined and measurable performance indicators, management reference levels, control rules and proposed additional activities.</p> <p>Management outcomes are also provided in the Annual Report (DPIRD, 2019) and reports on recommendations in the Strategic Assessment report to DoE, 2015.</p> <p>SG 60, and SG 80 and SG 100 requirements are met.</p> |            |  |  |   |
| References  |            |  |  |   |
| DPIRD, Annual report , 2019, Available at <a href="https://www.dpird.wa.gov.au/sites/default/files/2019-10/DPIRD%20Annual%20Report%202019%20-%20PDF.pdf">https://www.dpird.wa.gov.au/sites/default/files/2019-10/DPIRD%20Annual%20Report%202019%20-%20PDF.pdf</a>   |            |  |  |   |
| DPIRD, the EGPMF Harvest Strategy 2014 – 2019 (DPIRD, 2018)   |            |  |  |   |
| DPIRD, The EGPMF Bycatch Action Plan 2014 – 2019 (DPIRD 2014).  |            |  |  |   |
| DoE, Assessment of the Western Australian Exmouth Gulf Prawn Managed Fishery, February 2015, Available at <a href="https://www.environment.gov.au/marine/fisheries/wa/exmouth-gulf-prawn">https://www.environment.gov.au/marine/fisheries/wa/exmouth-gulf-prawn</a>   |            |  |  |   |
| <b>Draft scoring range</b>  |            |  | <b>&gt;80</b>  |   |

|  |   |
|--|---|
| Information gap indicator  | <b>Sufficient information available</b> |
| <b>Overall Performance Indicator scores added from Client and Peer Review Draft Report</b> |   |
| Overall Performance Indicator score  |   |
| Condition number (if relevant)   |   |

## PI 3.2.2 – Decision-making processes

| 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                         |  |  |
|---|---|---|--|--|
| Scoring Issue   |   | SG 60   | SG 80  | SG 100   |
| <b>a</b>  | Decision-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?  | <b>Yes</b>  | <b>Yes</b>   |  |
| Rationale   |   |   |  |  |
| There is an established decision making process in place comprising annual and in-season consultation and decision-making that may result in measures to meet short-term (operational) objectives (driven by the control rules contained in the current Harvest Strategy); In-season consultation and decision-making that is designed to meet the economic objective to provide the fishery with the opportunity to optimise economic returns (cooperative framework); and longer-term consultation and decision-making that results in new measures and strategies to achieve the long term fishery-specific management objectives (i.e. changes to the management framework). Therefore, both SG 60 and SG 80 have been met. |   |   |  |  |
| <b>b</b>  | Responsiveness of decision-making processes |   |  |  |
|   | 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 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 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?  | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>   |
| Rationale   |   |   |  |  |
| The decision making process for the EGPMF is consistent with those for the broader management system and responds to the defined harvest and bycatch management strategies, which respond to research, outcome evaluations and monitoring programmes. Annual actions are reviewed by DPIRD in the Annual Program Summary Report.  |   |   |  |  |
| Specific and relevant issues may be evaluated through a number of mechanisms that take account of the wider implications of decisions, including establishment of a tasked working group; external / expert workshops (e.g. ecological risk assessments); and / or internal workshops (e.g. harvest strategy development, ecological and compliance risk assessments). Therefore, SG 60, SG 80 and SG 100 have been met.  |   |   |  |  |
| <b>c</b>  | Use of precautionary approach               |   |  |  |
|   | Guide post                                  |   | Decision-making processes use the precautionary  |  |

|  |      |   |  |
|--|------|---|--|
|  |      | approach and are based on best available information. |  |
|  | Met? | Yes   |  |

#### Rationale

The control rules incorporate a precautionary approach to the decision-making process by requiring a review when the target reference level is not met. This ensures that any warning signs are recognised and investigated / addressed in their early stages. The frequency of evaluation (both annually and in-season) and review means that management action to investigate and, where required, alleviate adverse impacts on stocks is always taken before the performance indicators reach the limit reference level.

The application of the EBFM provides a good tool to assess the relative risks to bycatch, ETP species and habitats, initiating when appropriate, actions to deal with at risk species and assemblages. Examples of precautionary actions include the implementation of BRDs, irrespective of the low risks shown to teleost and invertebrate species. Since there is strong evidence of precautionary actions covering both P1 and P2 management issues, the SG of 80 has been met.

#### Accountability and transparency of management system and decision-making process

|          |            |  |  |  |
|----------|------------|--|--|--|
| <b>d</b> | Guide post | Some information on the fishery's performance and management action is generally available on request to stakeholders. | <b>Information on the fishery's performance and management action is available on request,</b> 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 comprehensive information on the fishery's performance and management 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

DPIRD provides a comprehensive range of formal reports which confirm fishery performance and how management has responded to findings from recommendations emerging from research, monitoring, evaluation and review activity. These include: *The Annual Status Report of the Fisheries and Aquatic Resources of Western Australia: the State of the Fisheries*; The EGPMF Management Plan (available on the State Law Publisher's website via a link from the Department's website); CEO notices regarding opening and closing the fishery; *The EGPMF Harvest Strategy 2014 – 2019* (DPIRD, 2018), which provides information on all completed and proposed research relating to the EGPMF and the associated ecosystem; *The EGPMF Bycatch Action Plan 2014 – 2019* (DoF 2014a); and outcomes of management decisions, research and studies (e.g. Fisheries Management Papers, Fisheries Research Reports and Occasional Papers). Therefore, both SG 80 and SG 100 have been met.

#### Approach to disputes

|          |            |   |   |   |
|----------|------------|---|---|---|
| <b>e</b> | 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 | 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. |
|----------|------------|---|---|---|

|  |      |                                 |     |     |
|--|------|---------------------------------|-----|-----|
|  |      | sustainability for the fishery. |     |     |
|  | Met? | Yes                             | Yes | Yes |

**Rationale**

The comprehensive decision making and consultation processes in place proactively avoid legal disputes. Extensive consultation brings key stakeholders into the process, leading to participatory decision making that minimizes the likelihood of legal action.

Whilst there have been no legal disputes applicable to the EGPMF, other fishery specific disputes demonstrate that the decisions of the SAT and the Courts are binding on the Department and must be implemented. Therefore, SG 60, SG 80 and SG 100 have been met.

**References**

DPIRD, Exmouth Prawn Managed Fishery Season Report, 2013 (2018/19). Available at

[https://www.fish.wa.gov.au/Documents/sofar/status\\_reports\\_of\\_the\\_fisheries\\_and\\_aquatic\\_resources\\_2018-19.pdf](https://www.fish.wa.gov.au/Documents/sofar/status_reports_of_the_fisheries_and_aquatic_resources_2018-19.pdf)

DPIRD, EGPMF Management Plan, 2015-2019

DPIRD, Bycatch Action Plan, 2014-2019

DPIRD, The EGPMF Harvest Strategy 2014 – 2019

DPIRD Annual Program Summary, 2019/20

DPIRD, Skippers Briefing Package, 2-14 Exmouth Gulf Prawn Managed Fishery: Guide to Management Areas, All positions relating to GDA 94

Kangas M, Sporer, E., O'Donoghue., Hood, S. (2008), Comanagement in the Exmouth Prawn Fishery with Comparison to the Shark Bay Prawn Fishery, DoF

CEO notices regarding opening and closing the fishery.

|                            |                                 |
|----------------------------|---------------------------------|
| <b>Draft scoring range</b> | >80                             |
| Information gap indicator  | Information sufficient to score |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

### PI 3.2.3 – Compliance and enforcement

| PI 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 80  | SG 100   |
| <b>a</b>  | MCS implementation |   |  |  |
|   | 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?               | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>   |
| Rationale   |                    |   |  |  |
| <p>Relevant management measures include a limited entry licensing system, effort restrictions, gear controls, including bycatch reduction devices, closed seasons and fishing day caps, spatial and temporal closures and reporting systems.</p> <p>The Department's Operations and Compliance Division (OCD) delivers the departments compliance services for commercial fisheries. The Monitoring actions are supported by Fisheries and Marine Officers based in Exmouth, mobile patrols to implement surprise inspections as well as regular land, air and sea inspections.</p> <p>All vessels are fitted with Automatic Location Receivers which allows for VMS position tracking. All licensed fishing vessels are required to submit complete catch returns which are cross checked and validated against processing records.</p> <p>The control system is supported by an Operational Compliance Plan and Risk Assessment. Monitoring of the effectiveness of the compliance system incorporates 'the weight of evidence' evaluation approach which demonstrates a high degree of effectiveness of the system applied.</p> <p>The compliance system is further supported by an educational program conducted by OCD, but also in cooperation with the DBAC. OCD also operates a Fishwatch system.</p> <p>Self-monitoring by industry whilst at sea, or through parent company VMS tracking further underlines the comprehensiveness of the enforcement system in place.</p> <p>Regulatory and self regulatory actions, along with comprehensive resourcing of assets demonstrate that an effective compliance system is in place. Therefore, SG 60, SG 80 and SG 100 have been met.</p> |                    |   |  |  |
| <b>b</b>  | Sanctions          |   |  |  |
|   | 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 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?               | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>   |
| Rationale   |                    |   |  |  |
| <p>There is an explicit and statutory sanction system in place, which includes application of a range of enforcement measures commensurate with the offences identified. These include warnings, prosecutions and cumulative 'black marks' leading to licence suspension. There is also a procedure in place for dealing with serious offences using the Department's Prosecution Advisory Panel to determine whether recommendations are appropriate and within the public interest.</p>   |                    |   |  |  |

The penalties applied are commensurate with the value of the illegal fish caught and the type of illegal activity identified.

The industry itself applies a bonus system to compliant skippers.

Evidence suggests that the sanctions to deal with non-compliance exist, are consistently applied when required and demonstrably provide effective deterrence. Therefore, the guideposts for SG 60, SG 80 and SG 100 have been met.

| Compliance |            |   |  |   |
|------------|------------|---|--|---|
| <b>c</b>   | Guide post | Fishers are <b>generally 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 of confidence</b> that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery. |
|            | Met?       | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>  |

#### Rationale

The Department measures compliance outcomes by estimating compliance and non-compliance rates. The average compliance rate for the EGPMF between 2014/2015 and 2019/20 was estimated at 98.7% (DPIRD OCD, 2020), with no prosecutions recorded on the EGPMF in the last 5 years.

The industry provides daily catch data to research and compliance, which is supported by data on unloads to processing plants. MG Kailis operates its own disciplinary procedures in the event of any probable non-compliance actions.

There is very strong evidence that fishers systematically comply with the regulatory system and continually provide relevant information. Therefore SG 60, SG 80 and SG 100 have been met.

| Systematic non-compliance |            |  |  |  |
|---------------------------|------------|--|--|--|
| <b>d</b>                  | Guide post |  | There is no evidence of systematic non-compliance. |  |
|                           | Met?       |  | <b>Yes</b>   |  |

#### Rationale

Based on the weight-of-evidence approach detailed above and the long-term compliance rate, there is no evidence of systematic non-compliance by the licensees and skippers in the EGPMF, nor is there evidence that the existing (negligible) level of non-compliance in the past five years is a risk to target prawn stocks or ecosystem components. SG 80 has been met.

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DPIRD (2019/202), Operational Compliance Plan, Gascoyn Bio Region, Exmouth Gulf, Operations and Compliance Division

DPIRD, (2014c) Risk Assessment (Internal document).

DPIRD/DBCA, Collaborative Operational Plan 2019/2020

|                           |   |
|---------------------------|---|
| Draft scoring range       | <b>≥80</b>                                |
| Information gap indicator | <b>Information sufficient to score PI</b> |

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

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |



### PI 3.2.4 – Monitoring and management performance evaluation

| PI 3.2.4   |                                 | There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives<br>There is effective and timely review of the fishery-specific management system |  |   |
|--|---------------------------------|---|--|---|
| Scoring Issue  |                                 | SG 60   | SG 80  | SG 100  |
| <b>a</b>   | Evaluation coverage             |   |  |   |
|  | 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?                            | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>  |
| Rationale  |                                 |   |  |   |
| <p>As part of the Department's risk-based planning cycle, the current the EGPMF management systems are reviewed annually in the Program Summary by the Aquatic Resource Management Division. This process identifies any potential risks which are reviewed and addressed.</p> <p>The statutory management framework is reviewed when there is evidence to support statutory changes to the longer-term management measures or to implement new longer-term measures.</p> <p>Regular reviews through the Annual Program Summary and the higher level Research Strategic Plan, also reviewed annually, may trigger an immediate review of the EGPMF research priorities at any time. The five-year cycle review and risk assessment may also trigger a review of the research plan.</p> <p>The EGPMF Harvest Strategy and Bycatch Action Plan are subject to regular internal review, and the cyclical 5 year plans are followed by consultation with the licensee and other stakeholders.</p> <p>Annual evaluation of the performance of the fishery against the reference levels contained in the harvest strategy is the main mechanism used to evaluate the fishery-specific management system. An internal review of one or more parts of the management system is triggered if annual (or in-season) performance evaluation against the operational (short-term) objectives indicates the potential need for a management response (i.e. when below the target level).</p> <p>Any results arising from the research plan are generally externally peer reviewed, and always internally peer reviewed prior to publishing.</p> <p>The Supervising Scientists group manages the peer review process of all fisheries, including with external reviewers.</p> <p>An internal review of the external ESD risk assessment for Western Australian Fisheries was completed in 2015 (Fletcher, 2015).</p> <p>Monitoring and evaluation against ESD performance measures is undertaken annually and reported in <i>Status Report of the Fisheries and Aquatic Resources of Western Australia: the State of the Fisheries</i>.</p> <p>The evidence suggests that the fishery has in place mechanisms to evaluate all parts of the management system. Therefore the scoring guidance for SG 60, SG 80 and SG 100 has been met.</p> |                                 |   |  |   |
| <b>b</b>   | Internal and/or external review |   |  |   |
|  | Guide post                      | The fishery-specific management system is subject to <b>occasional internal</b> review.   | The fishery-specific management system is subject to <b>regular internal and occasional external</b> review. | The fishery-specific management system is subject to <b>regular internal and external</b> review.     |
|  | Met?                            | <b>Yes</b>  | <b>Yes</b>   | <b>Yes</b>  |
| Rationale  |                                 |   |  |   |

The stock assessment and research framework for the EGPMF was externally reviewed by Malcolm Haddon (Marine Research Laboratory Tasmanian Aquaculture and Fisheries Institute, University of Tasmania) during a two day workshop undertaken in November 2012. As a result of the workshop, the annual survey methodology for the EGPMF was reviewed and amended in 2013. An external science review was conducted by Malcolm Haddon<sup>41</sup> in April 2019 for the Shark Bay prawn and scallop fisheries. The findings of this review had some relevance to the EGPMF in terms of feedback regarding prawn survey programs (Patrick Cavalli, DPIRD, prese. Comm. February. 2020.). The EGPMF's export accreditation (and therefore its entire fishery specific management system) is externally reviewed (re-assessed) every five years by the Commonwealth DoE.

Compliance systems have been externally reviewed by the Western Australian Auditor General's, and response actions determined (Green et al. 2009). As part of a commitment to reviewing the framework of WA's Compliance system, the Department also participated in a national study in measuring fisheries compliance outcomes (Price, et al, FRDC 2014). This includes a review of methodologies to assess effectiveness of compliance programs and measure compliance outcomes; a survey on aspects relating to output and outcome indicators collected by a limited sample of fisheries compliance agencies; and a workshop process. Workshop participants included AFMA, Fisheries (Victoria), Primary Industries (South Australia), the University of Maryland and DPIRD (WA).

The EGPMF's TED system was reviewed by NOAA in 2016. MG Kailis has also engaged an independent advisor, Dr John Wakeford, to provide advice on ongoing improvements relating to bycatch and TEP interactions (George Kailis, pers comm. February 2020).

The comprehensive range of internal and external performance reviews, along with their regularity, demonstrates that SG 60, SG 80 and SG 100 have been met.

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|                            |   |
|----------------------------|---|
| <b>Draft scoring range</b> | >80                                     |
| Information gap indicator  | <b>Sufficient information available</b> |

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

<sup>41</sup> Haddon, M, Shark Bay Trawl Fisheries Science Review, September 2019

|                                     |  |
|-------------------------------------|--|
| Overall Performance Indicator score |  |
| Condition number (if relevant)      |  |

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## 10 Appendices

### 10.1 Assessment information

#### 10.1.1 Previous assessments – delete if not applicable

The report shall include:

- A brief summary of any previous full assessments of the client operations, noting that these are available on the MSC website.
- Details of any conditions that were closed at or between the previous surveillance audits and this assessment, with justification for closing the conditions.
- A summary of previous conditions.

Reference(s): FCP v2.1

**Table 23 – Summary of previous assessment conditions**

| Condition   | PI(s)  | Year closed                           | Justification  |
|---|--|---------------------------------------|--|
| Insert condition number and summary   | Insert PI  | State year of closure, if applicable. |  |
| Condition 1:<br>Demonstrate that target reference points for Brown Tiger prawns are consistent with BMSY or a surrogate.  | 1.1.2 Limit and target reference points are appropriate for the stock<br>c. The target reference point is such that the stock is maintained at a level consistent with BMSY or some measure or surrogate with similar intent or outcome.   | January 2019                          | DPIRD developed a model-based approach to assess the key prawn stocks. provided a weight of evidence approach summarizing work undertaken to support that the target and limit reference points are appropriate. |
| Condition 2:<br>Demonstrate that target reference points for Western King Prawns are consistent with BMSY or a surrogate. | 1.2.1 Limit and target reference points are appropriate for the stock<br>c. The target reference point is such that the stock is maintained at a level consistent with BMSY or some measure or surrogate with similar intent or outcome.   | January 2019                          | DPIRD developed a model-based approach to assess the key prawn stocks. provided a weight of evidence approach summarizing work undertaken to support that the target and limit reference points are appropriate. |
| Condition 3: Provide sufficient data to detect any increase in risk to main bycatch species                               | 2.2.3 Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch<br>d. Sufficient data continues to be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy). | January 2018                          | The Department implemented the plan to regularly review bycatch data from 2016   |
| Condition 4:<br>Demonstrate that direct   | 2.3.1 The fishery meets national and international requirements for the  | January 2018                          | The Department and client demonstrated a high degree of certainty determine with a   |



|  |   |              |  |
|--|---|--------------|--|
| effects are highly unlikely to create unacceptable impacts to ETP species, with emphasis on sea snakes and sawfish.  | <p>protection of ETP species<br/>The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species</p> <p>b. Direct effects are highly unlikely to create unacceptable impacts to ETP species.</p>  |              | high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species (SG 100). New information provided allowed for the ETP outcome status to be rescored at SG 80.   |
| <p>Condition 5: Provide sufficient information to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species. Provide relevant information sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species, especially sea snakes and sawfish.</p> | <p>2.3.3 Relevant information is collected to support the management of fishery impacts on ETP species, including:</p> <ul style="list-style-type: none"> <li>• Information for the development of the management strategy;</li> <li>• Information to assess the effectiveness of the management strategy;</li> </ul> <p>and</p> <ul style="list-style-type: none"> <li>• Information to determine the outcome status of ETP species.</li> </ul> <p>a. Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.</p> <p>b. Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species.</p> | January 2018 | <p>The Department and client have successfully completed the actions including:</p> <p>Reviewing current level of industry knowledge and reporting for sea snake and sawfish.</p> <ul style="list-style-type: none"> <li>• Developing educational material and learning opportunities (ETP species guide, broader workshop, additional materials etc).</li> <li>• Provide a draft ETP species guide</li> <li>• Develop of SF and SS safe handling procedures to ensure fisher and ETP well- being.</li> <li>• Sea snake ID and live training workshop(s) on-site</li> <li>• Provision of training to Departmental staff</li> <li>• Review of whether educational materials and SS workshop are fit-for-purpose and revise material as appropriate.</li> <li>• Development of framework for regular annual training.</li> </ul> |
| <p>Condition 6: Provide sufficient data to allow the nature of the impacts of the fishery on habitat types to be identified and provide reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.</p> <p>Collect sufficient data to detect any increase in risk to habitat.</p>   | <p>2.4.3 Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types</p> <p>b. Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.</p> <p>c. Sufficient data continues to be collected to detect any increase in risk to habitat (e.g. due to changes in the</p>   | January 2019 | <p>DPIRD completed a review of habitat areas as identified from analysis of the broader-scale ground-truthing. validated benthic habitat map against which to examine the extent of trawling. This provided the basis for assessing the risk level for key habitats.</p>   |

|  |   |              |   |
|--|---|--------------|---|
|  | outcome indicator scores or the operation of the fishery or the effectiveness of the measures.)   |              |   |
| Condition 7:<br>Demonstrate that the consultation process provides opportunity for all interested and affected parties to be involved. | <p>3.1.2 The management system has effective consultation processes that are open to interested and affected parties.</p> <p>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</p> <p>c. The consultation process provides opportunity for all interested and affected parties to be involved</p> | January 2017 | Milestones 1, 2, and 3 were met in the 2015/2016 year, which satisfied the scoring requirement ' <i>The consultation process provides opportunity for all interested and affected parties to be involved</i> '. |

## **10.2 Evaluation processes and techniques**

### **10.2.1 Site visits**

The report shall include:

- An itinerary of site visit activities with dates.
- A description of site visit activities, including any locations that were inspected.
- Names of individuals contacted.

Reference(s): FCP v2.1 Section 7.16

### **10.2.2 Stakeholder participation**

The report shall include:

- Details of people interviewed: local residents, representatives of stakeholder organisations including contacts with any regional MSC representatives.
- A description of stakeholder engagement strategy and opportunities available.

Reference(s): FCP v2.1 Section 7.16

### **10.2.3 Evaluation techniques**

The report shall include:

- Justification for how public announcements were developed.
- Methodology used, including sample-based means of acquiring a working knowledge of the management operation and sea base.
- Details of the scoring process e.g. group consensus process.
- The decision rule for reaching the final recommendation e.g. aggregate principle-level scores above 80.

If the RBF was used for this assessment, the report shall include:

- The justification for using the RBF, which can be copied from previous RBF announcements, and stakeholder comments on its use.
- The RBF stakeholder consultation strategy to ensure effective participation from a range of stakeholders including any participatory tools used.
- A summary of the information obtained from the stakeholder meetings including the range of opinions.
- The full list of activities and components that have been discussed or evaluated in the assessment, regardless of the final risk-based outcome.

The stakeholder input should be reported in the stakeholder input appendix and incorporated in the rationales directly in the scoring tables.

Reference(s): FCP v2.1 Section 7.16, FCP v2.1 Annex PF Section PF2.1

## 10.3 Peer Review reports

### To be drafted at Public Comment Draft Report

The report shall include unattributed reports of the Peer Reviewers in full using the relevant templates. The report shall include explicit responses of the team that include:

- Identification of specifically what (if any) changes to scoring, rationales, or conditions have been made; and,
- A substantiated justification for not making changes where peer reviewers suggest changes, but the team disagrees.

Reference(s): FCP v2.1 Section 7.14

## 10.4 Stakeholder input

To be drafted at Client and Peer Review Draft Report

To be completed at Public Certification Report

The CAB shall use the stakeholder input template to include all written stakeholder input during the stakeholder input opportunities and provide a summary of verbal stakeholder input received during the site visit. Using the stakeholder input template, the team shall respond to all written stakeholder input identifying what changes to scoring, rationales and conditions have been made in response, where the changes have been made, and assigning a 'CAB response code'. The team may respond to the verbal summary.

Reference(s): FCP v2.1 Section 7.15

## 10.5 Conditions – delete if not applicable

### To be drafted from Client and Peer Review Draft Report

The report shall document all conditions in separate tables. The CAB shall include rationale for exceptional circumstances in the summary of conditions in the Client and Peer Review Draft Report and all subsequent reports.

For reassessments, the CAB shall note:

- If and how any of the new conditions relate to previous conditions raised in the previous assessment or surveillance audits.
- If and why any conditions that were raised and then closed in the previous assessment are being raised again in the reassessment.
- If any conditions are carried over from a previous assessment, including an explanation of:
  - Which conditions are still open and being carried over.
  - Why those conditions are still open and being carried over.
  - Progress made in the previous assessment against these conditions.
  - Why recertification is being recommended despite outstanding conditions from the previous assessment.
- If any previous conditions were closed after the 4<sup>th</sup> Surveillance Audit and reassessment site visit (i.e. in Year 5), including the rationale for re-scoring and closing out of the condition.

Reference(s): FCP v2.1 Section 7.18

**Table X – Condition 1**

|                           |   |
|---------------------------|---|
| Performance Indicator     |   |
| Score                     | <i>State score for Performance Indicator</i>  |
| Justification             | <i>Cross reference to page number containing scoring template table or copy justification text here. If condition relates to a previous condition or one raised and closed in the previous assessment include information required here</i> |
| Condition                 | <i>State condition</i>  |
| Milestones                | <i>State milestones and resulting scores where applicable</i>   |
| Consultation on condition | <i>Include details of any verification required to meet requirements in FCP v2.1 7.19.8</i>   |

## 10.6 Client Action Plan

### To be added from Public Comment Draft Report

The report shall include the Client Action Plan from the fishery client to address conditions.

Reference(s): FCP v2.1 Section 7.19



## 10.7 Surveillance

### To be drafted from Client and Peer Review Draft Report

The report shall include the program for surveillance, timing of surveillance audits and a supporting rationale.

Reference(s): FCP v2.1 Section 7.28

**Table X– Fishery surveillance program**

| Surveillance level | Year 1                          | Year 2                          | Year 3                          | Year 4  |
|--------------------|---------------------------------|---------------------------------|---------------------------------|---|
| e.g. Level 5       | e.g. On-site surveillance audit | e.g. On-site surveillance audit | e.g. On-site surveillance audit | e.g. On-site surveillance audit & re-certification site visit |
|                    |                                 |                                 |                                 |   |

**Table X – Timing of surveillance audit**

| Year   | Anniversary date of certificate | Proposed date of surveillance audit | Rationale   |
|--------|---------------------------------|-------------------------------------|---|
| e.g. 1 | e.g. May 2018                   | e.g. July 2018                      | e.g. Scientific advice to be released in June 2018, proposal to postpone audit to include findings of scientific advice |
|        |                                 |                                     |   |

**Table X – Surveillance level rationale**

| Year  | Surveillance activity | Number of auditors  | Rationale  |
|-------|-----------------------|---|--|
| e.g.3 | e.g. On-site audit    | e.g. 1 auditor on-site with remote support from 1 auditor | e.g. From client action plan it can be deduced that information needed to verify progress towards conditions 1.2.1, 2.2.3 and 3.2.3 can be provided remotely in year 3. Considering that milestones indicate that most conditions will be closed out in year 3, the CAB proposes to have an on-site audit with 1 auditor on-site with remote support – this is to ensure that all information is collected and because the information can be provided remotely. |
|       |                       |   |  |



## 10.8 Harmonised fishery assessments – delete if not applicable

To be drafted at Announcement Comment Draft Report stage

To be completed at Public Certification Report stage

Harmonisation is required in cases where assessments overlap, or new assessments overlap with pre-existing fisheries.

If relevant, in accordance with FCP v2.1 Annex PB requirements, the report shall describe processes, activities and specific outcomes of efforts to harmonise fishery assessments. The report shall identify the fisheries and Performance Indicators subject to harmonisation.

Reference(s): FCP v2.1 Annex PB

**Table X – Overlapping fisheries**

| Fishery name   | Certification status and date | Performance Indicators to harmonise   |
|--|-------------------------------|---------------------------------------|
| All other Western Australia managed fisheries will be considered for P3 Governance and Policy harmonisation. Further details to be provided following the site visit |                               | 3.1.n Governance and Policy component |
|  |                               |                                       |
|  |                               |                                       |
|  |                               |                                       |

**Table X – Overlapping fisheries**

| Supporting information  |                     |
|---|---------------------|
| <ul style="list-style-type: none"> <li>- Describe any background or supporting information relevant to the harmonisation activities, processes and outcomes.</li> </ul> |                     |
|   |                     |
| Was either FCP v2.1 Annex PB1.3.3.4 or PB1.3.4.5 applied when harmonising?  | <b>Yes / No</b>     |
| Date of harmonisation meeting   | <b>DD / MM / YY</b> |
| If applicable, describe the meeting outcome   |                     |
| <ul style="list-style-type: none"> <li>- e.g. Agreement found among teams or lowest score adopted.</li> </ul>   |                     |
|   |                     |

**Table X – Scoring differences**

| Performance Indicators (PIs) | Fishery name | Fishery name | Fishery name | Fishery name |
|------------------------------|--------------|--------------|--------------|--------------|
| <b>PI</b>                    | <b>Score</b> | <b>Score</b> | <b>Score</b> | <b>Score</b> |
| <b>PI</b>                    | <b>Score</b> | <b>Score</b> | <b>Score</b> | <b>Score</b> |
| <b>PI</b>                    | <b>Score</b> | <b>Score</b> | <b>Score</b> | <b>Score</b> |

#### Table X – Rationale for scoring differences

If applicable, explain and justify any difference in scoring and rationale for the relevant Performance Indicators (FCP v2.1 Annex PB1.3.6)

If exceptional circumstances apply, outline the situation and whether there is agreement between or among teams on this determination

## 10.9 Objection Procedure – delete if not applicable

### To be added at Public Certification Report stage

The report shall include all written decisions arising from a ‘Notice of Objection’, if received and accepted by the Independent Adjudicator.

Reference(s): FCP v2.1 Annex PD