WEST COAST DEEP SEA CRAB FISHERY MSC FULL-ASSESSMENT REPORT FINAL REPORT

Western Australian Fishing Industry Council (WAFIC) on behalf of:

Bosman Family Trust and the G. Bosman Superfund Panorama Management Pty Ltd H&P Kyros Pty Ltd, Graeme Pateman and Yennett Pty Ltd

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Glossary

AMM	Annual management meeting
CAES	Catch and effort statistics
CDR	Catch and disposal record
CI	Confidence interval
CITES	Conventional on International Trade in Endangered Species of Wild Fauna and Flora
CL	Carapace length
CPUE	Catch-per-unit-effort
CW	Carapace width
DPC	Daily patrol contact
EBFM	Ecosystem Based Fisheries Management
EEZ	Exclusive Economic Zone
EPA	Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
ERA	Ecological risk assessment
ESD	Ecologically sustainable development
ETP	Endangered, threatened and protected
DoF	Department of Fisheries (Western Australia)
DPaW	Department of Parks and Wildlife (Western Australia)
FMO	Fisheries and Marine Officer
FRDC	Fisheries Research and Development Corporation
FRMA	Fish Resources Management Act 1994
FRMR	Fish Resources Management Regulations
GCB	Gascoyne Coast Bioregion
GI	Growth increment
GLM	Generalised linear model
HIMI	Heard Island and McDonald Island
IFAAC	Integrated Fisheries Allocation Advisory Committee
IFM	Integrated Fisheries Management
IUU	Illegal, unreported and unregulated
LMS	Legal minimum size
LoW	Letter of warning
MCS	Monitoring control and surveillance
MFL	Managed fishing licence
NCB	North Coast Bioregion
NZ	New Zealand
OCP	Operational Compliance Plan
PI	Performance Indicator
RFBL	Recreational Fishing from Boat Licence
RMAD	Research, Monitoring and Development
RSD	Regional Services Division
SLA	Service level agreement
SOP	Standard operating procedure
TAC	Total allowable catch
UoA	Unit of Assessment

UoC	Unit of Certification
WA	Western Australia
WAFIC	Western Australian Fishing Industry Council
WAMSI	Western Australian Marine Sciences Institution
WCB	West Coast Bioregion
WCDSCMF	West Coast Deep Sea Crustacean Managed Fishery

1. Executive Summary

SCS Global Services (SCS) is an independent third party certification body that has undertaken the MSC assessment of the West Coast Deep Sea Crab Fishery in accordance with the MSC Principles and Criteria for sustainable fishing. The assessment complies with the MSC Certification Requirements v1.3 (January 2013) and the guidance to the Certification Requirements v1.3 (January 2013).

The team selected to undertake the assessment includes three team members that collectively meet the requirements for MSC assessment teams. These are:

- Mr. Alexander Morison, P1 Expert
- Dr. Sabine Daume, Team Leader, P2 Expert
- Ms. Mary Lack, P3 Expert

The team met with fishery representatives, scientists and stakeholders in Perth, Western Australia on 15th and 16th April, 2015. Documents were presented by fishery representatives and fisheries scientists. Client representatives were thorough in their approach and provided the assessment team with supporting documents. Where necessary, additional information was requested.

The assessment covers one Unit of Certification (UoC): Deep Sea Crab (*Chaceon albus*) caught by traps (pots).

The Unit of Assessment (UoA) does not extend to any other fisheries or fishing vessels.

The key strength of the fishery is that the potential impacts on habitats and the ecosystem is extremely limited, due to the use of a highly selective gear type and the fishery's small scale operations.

In this report, we provide the detailed rationales underpinning the proposed scores for each of the Performance Indicators (PIs) under Principle 1 (Stock status and Harvest strategy), Principle 2 (Ecosystem Impact) and Principles 3 (Governance, Policy and Management system) of the MSC Standard. No PIs failed to reach the minimum scoring level of 60 and the average scores for each Principle were above 80 (for more details see Section 6.2). These findings support the conclusion reached by the assessment team that the fishery is recommended for certification according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.

The report also explains why for some indicators the scoring guidepost of 80 was not met and conditions were imposed for PIs 1.2.1 (Harvest Strategy), 2.1.1 (retained species outcome) and 3.1.2 (Consultation, roles and responsibilities).

Please note that the scores presented below are in draft and may change due to comments and supporting evidence received by the client, peer reviewer or the public. No score is final until the final certification report containing the certification decision.

Actions are required by the client to comply with and close out the conditions set out in this report for those PIs which scored below 80. The client has proposed an action plan for meeting the conditions (for more details see Appendix 1.3).

2. Authorship and Peer Reviewers

Assessment Team:

The assessment team included one team leader (Dr Sabine Daume) and two independent fisheries experts (Mr Alexander Morison and Ms Mary Lack). As outlined below, the assessment team meets the requirements of the MSC Certification Requirements v1.3 (2013).

Dr Sabine Daume, SCS Global Services (SCS), Regional Director Australasia

Dr Daume is the Regional Director for the SCS Sustainable Seafood Program in Australasia, which covers MSC, ASC and Fisheries Improvement Programs. Since 2009, Dr Daume has led numerous MSC evaluation audits on behalf of SCS, including several large and controversial assessments, and several in Australia.

Dr Daume is a marine biologist with special expertise in the biology and ecology of exploited marine resources with a particular emphasis on invertebrates. Dr Daume has over 13 years' experience working closely with the fishing and aquaculture industry in Australia. She holds a PhD in marine biology from La Trobe University in Victoria, Australia and an MSc in Marine Biology and Marine Chemistry from Kiel University in Germany. Prior to joining SCS, Dr Daume worked as a Senior Research Scientist at the Research Division of the Department of Fisheries (DoF) in Western Australia. She has extensive experience working with diverse groups, often in remote marine environments. She has worked with industry personnel at all levels (divers, technicians, managers, executive officers) as well as policy makers and managers in government departments. Dr Daume led the Western Australian rock lobster, Heard Island and McDonald Islands (HIMI) icefish annual surveillance and re-assessment, HIMI toothfish assessment in 2011, Macquarie Island toothfish assessment in 2011, as well as numerous audits in USA, Canada, Mexico and Japan. Dr Daume has been trained by the MSC to use the Risk Based Framework (RBF) and the most recent MSC Certification Requirements (v1.3 Jan 2013). She is a certified lead auditor under the ISO 9001:2008 standard.

Alexander "Sandy" Morison – Morison Aquatic Sciences

Mr Morison is a consultant specializing in fisheries and aquatic sciences. He has over 30 years' experience in fisheries science and assessment at state, national and international levels and has held senior research positions for state and national organizations in Australia.

Mr Morison has participated as part of a team undertaking MSC pre-assessments for several fisheries and has been the Principle 1 expert for the MSC certification assessments or surveillance audits of assessments of the HIMI Icefish Fishery, the HIMI Toothfish Fishery, the Macquarie Island Toothfish Fishery, the Kyoto Danish Seine Fishery, the Western Australian Rock Lobster Fishery and the Lakes and Coorong Fishery. Mr Morison is also trained as a lead auditor for MSC assessments, including the use of the RBF. In other recent project work Mr Morison was engaged by the WA Fisheries Department to review an overview report on the biology and stock status of indicator species in the Gascoyne Coast Bioregion. He has undertaken work for the Australian Department of the Environment (and its predecessors) including an assessment of risks posed by fishing methods to the conservation values of proposed marine parks, refinement of the issues paper and recovery plan for freshwater sawfish, and facilitation of an Oceania regional workshop on countries' requirements for sharks and rays listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Mr Morison has also worked on an assessment of the ecological risks from Queensland's East Coast Trawl Fishery that looked at the full range of ecological components as well as a separate assessment of this fishery's vulnerability to climate change.

He has particular expertise with fish age and growth and has been involved in the development and implementation of harvest strategies for several fisheries. He has over 20 publications in peer-reviewed scientific journals (8 as Senior Author), 8 book chapters, and over 100 project reports, technical reports, client reports and papers in workshop and conference proceedings.

The above positions encompass experience with the assessment of invertebrate, chondrichthyan and teleost fisheries including commercial and recreational fisheries in freshwater, estuarine and marine habitats and fisheries operating in tropical, temperate and polar environments.

Mary Lack – Shellack Pty. Ltd.

Ms Lack has qualifications in agricultural and resource economics. She has over 25 years' experience in Australian and international fisheries management and has strong skills in fisheries management, governance and trade. She has been Director of Shellack Pty Ltd, a consulting company, based in Australia for the past 14 years. The company specializes in fisheries management and trade and works with government, non-government and intergovernmental organizations. She has chaired a number of Commonwealth Fishery Management Advisory Committees including those for the Bass Strait Scallop Fishery and for the Small Pelagic Fishery. In 2013-2015 she chaired the Expert Panel assessing the impact of large midwater trawl vessels in Australian waters. She is also a member of the New South Wales Structural Adjustment Review Committee, which is responsible for overseeing the implementation of a reform programme in New South Wales fisheries.

Mary's consultancy work has focused on sustainability issues, including quantifying and addressing illegal, unreported and unregulated (IUU) fishing, in Australian and high seas fisheries. This work has included undertaking, on behalf of the Commonwealth environment agency, assessments of various State-managed fisheries, including some Western Australian fisheries, against the Guidelines for the Ecologically Sustainable Management of Fisheries. Prior to working as a consultant, Mary worked in various senior fisheries management roles in the Australian Government including in multi-species trawl fisheries and longline and purse seine tuna fisheries.

Mary has been involved in MSC assessments for the past five years, with a focus on management and governance assessment (Principle 3) and has also acted as peer reviewer of MSC assessment reports. Mary's experience with MSC assessment in Australia relates to both Commonwealth and State-managed fisheries. She has conducted Principle 3 pre-assessments of Australia's Commonwealth-managed fisheries; assessments, re-assessments and surveillance audits of the HIMI Toothfish, HIMI Mackerel Icefish, and the Macquarie Island Toothfish fisheries. Recently, Mary was the Principle 3 assessor for the MSC assessment of the South Australian Lakes and Coorong Fishery. This experience has

provided her with an excellent understanding of the management, policy and governance issues that are likely to arise in Australian fisheries. Challenges relating to articulation and documentation of roles and responsibilities, research planning, evaluation of the management system, adequate monitoring, control and surveillance measures to detect and restrict IUU fishing and adequate participation of all sectors responsible for removals of the stock are common. Mary's experience with Australian fisheries and in MSC assessment places her in an ideal position to not only identify these issues but also know how such challenges can be addressed in order to meet the MSC requirements.

In addition to these assessment team members, Dr. Fay Helidoniotis contributed to writing certain sections of this report.

Peer Reviewers

<u>Richard Allen</u> – Fisheries Consultant

Richard Allen has 45 years of experience as a commercial fisherman, a representative of commercial fishermen, a fishery consultant, fishery conservationist, and as an active participant in the fishery management system. Mr. Allen holds an Associate in Science degree in Fisheries and Marine Technology, a Bachelor of Science degree in Natural Resource Development and a Master of Marine Affairs degree. Most recently, Allen returned to school and completed the course work for a Ph.D. in environmental sciences.

Mr. Allen began a parallel career in fishery consulting in 1972 with clients in the fishing industry, government and non-governmental organizations. He was a member of the New England Fishery Management Council from 1986 through 1995, and was a commissioner on the Atlantic States Marine Fisheries Commission from 1986 through 1997. Allen is a former member of the U.S. Department of Commerce National Sea Grant Review Panel, and served one term as its chairman. He has also served as a member of the U.S. Department of Commerce Marine Fisheries Advisory Committee.

Mr. Allen has also been an active fishery journalist, writing for Commercial Fisheries News and National Fisherman. He also compiled and edited the 1983 Atlantic Fisherman's Handbook. Allen was the recipient of the prestigious Pew Fellowship in Marine Conservation in 1998. He used his fellowship to translate an obscure lobster egg-per-recruit model into a user-friendly bio-economic model. Most recently, Allen has developed bio-economic models for the primary Cape Verdean fisheries as a consultant to the West African Fisheries Development Project. Commercial Fisheries News recently published Allen's "Searching for Tradition: a brief history of the New England groundfish fishery" as a 12-part series and as on online flip-book.

Dr. Ian Knuckey – Director of Fishwell Consulting

Ian is director of Fishwell Consulting, a company providing research and consulting services to encourage and promote sustainable fishing practices. Ian has a PhD in fisheries population dynamics and twenty five years of involvement in temperate and tropical fisheries including inshore and deepwater scalefish and shark fisheries. Ian has extensive experience with fisheries stock assessments and harvest strategies. He is the Chair of Australia's Northern Prawn Fishery Resource Assessment Group, Shelf Resource Assessment Group of the Southern and Eastern Scalefish and Shark Fishery (SESSF), and the Victorian Rocklobster Assessment Group. He is very experienced in the range of data collection and analysis techniques used for input into stock assessments and is the principal investigator of a number of programs to design and implement fishery independent surveys and scientific monitoring programs. Ian has had extensive experience in bycatch monitoring and analysis techniques and bycatch mitigation for trawl fisheries. Ian has conducted and been involved with a number of projects on the development and review of harvest strategies and their application to commercial fisheries, including the Commonwealth harvest strategy policy, the SESSF harvest strategy, the NPF harvest strategy, the small pelagic fishery and developing harvest strategies for data-poor fisheries.

3. Description of the Fishery

3.1 Unit(s) of Certification and Scope of Certification Sought

The fishery described in the unit of certification (see under 'a') is within scope of the MSC certification sought. The fishery does not engage in destructive fishing practices, violate any international agreements, and is not controversial in the international community.

a. The Unit of Certification for the assessment.

1 Unit of Certification			
Species	Crystal Crab (Chaceon albus)		
Geographical Area	Western Australian waters of the Indian Ocean and the Timor Sea north of 34° 24' S latitude to the Northern Territory border, on the seaward side of the 150 m isobath out to the extent of the Australian EEZ.		
Method of Capture	Traps		
Management System	The West Coast Deep Sea Crustacean Managed Fishery is subject to both input and output controls. Overall effort in the fishery is constrained by a cap on the number of licenses/vessels (limited entry), limits on fishing gear, and spatial closures inshore of the 150 m isobar. Fishery removals are managed via quota. Fishers are also not permitted to retain any berried female crabs or crabs under the minimum legal size limits.		
Client Group	Western Australia Fishing Industry Council, Inc. on behalf of: Bosman Family Trust & the G. Bosman Superfund, Panorama Management Pty Ltd, Graeme Pateman, H & P Kyros Pty Ltd and Yennet Pty Ltd		

b. There are no other eligible fishers – all fishers are included in the Unit of Certification.

3.2 Overview of the Fishery

The information in this section has been largely drawn from How *et al.* (2015) except where otherwise indicated. More detail on the species and the fishery are provided in How *et al.* (2015).

3.2.1 Fishery Development and Current Activities

Interest in establishing commercial fishing operations for giant (*Pseudocarcinus gigas*) and champagne (*Hypothalassia acerba*) crabs in Western Australia (WA) began in the 1960s, but significant catches of these deep sea crabs have only been reported from the late 1980s onwards. Champagne crabs were extensively targeted for three years between 1997 and 1999; however, a decline in the abundance of champagne crabs in 1999 has led to the targeting of crystal crabs (*Chaceon albus*) in waters deeper than 500 m since this time (DoF 2003).

In 2003, management arrangements for deep sea crabs were formalised by the introduction of the West Coast Deep Sea Crustacean (Interim) Managed Fishery Management Plan. The Plan limited fishing activity to seven permit holders, with effort divided into five zones along the west coast. Fishers were only permitted to operate in specific zones, with one or two fishers permitted to operate in each zone. Between 2003 and 2007, catches of crystal crabs were maintained around 200 tonnes (t) annually, with a peak of 227.5 t in 2007.

In 2008, a quota system was introduced with an annual total allowable catch (TAC) set at 140 t for crystal crabs. How et al. (2015) report that this TAC was set using a precautionary approach, but during the site visit it was indicated that the level was selected during negotiations with industry and was set with the intention that adjustments would occur following considerations of trends in indicators. Fishing zones were removed when quota was introduced, meaning that fishers were no longer restricted to specific areas. Consequently, fishing effort is no longer spread along the entire west coast but has become concentrated in a few areas (Figure 1). Data from voluntary logbooks (which are more detailed than the mandatory monthly returns) show that the fishery has recorded catch across 177 10'x10' blocks with 113 blocks recording catch during the period 2003-2012 (which was selected as the reference period for the harvest strategy). In 2014, catch was recorded from only 53 blocks, which represents 30% of the historical extent of the fishery. This was a slight increase from 2013 when only 35 (20%) blocks recorded catch due to some exploratory fishing by one vessel in 2014.

The fishery transitioned from an interim to a fully-managed fishery on January 1st, 2013 with the introduction of the *West Coast Deep Sea Crustacean Managed Fishery Management Plan 2012* (the Management Plan; DoF 2012d). The Management Plan is made under the Western Australian *Fish Resources Management Act 1994* (FRMA).

The TAC for crystal crabs has remained at 140 t since its introduction in 2008, and an annual combined quota of 14 t was introduced for giant and champagne crabs under the new (current) management plan. There are currently seven license holders in the WCDSCMF, with the units spread evenly across the licenses and fully-transferable between licence holders. Currently, the quota is consolidated on three vessels.

Two of the licensees fish within the Gascoyne Coast Bioregion (GCB) and catch approximately 90% of the TAC. This region has the greatest area of depths between 500 – 800 m along the WA coast, which is the target depth for crystal crabs (Melville-Smith *et al.* 2007). One vessel also operates off the Perth metropolitan region and only fishes for a few months per year, primarily targeting crystal crabs but also fishing for giant crabs on occasion.



Figure 1. Location of effort for crystal crabs (line start GPS location) from volunteer logbook (black dots) and the associated 10' x 10' blocks in which catch was recorded (left) since it began (1999-2014) (centre) during the harvest strategy reference period (2003-2012) and (right) 2014. Note a small amount of fishing occurs off Fremantle but is not recorded by volunteer logbook (Source: How et al. 2015).

3.2.2 Species

Crystal crabs are the target species in the WCDSCMF and form over 90% of the total catch. Other retained species in the fishery are giant crabs and champagne crabs. Catch history data and composition is provided in **Error! Reference source not found.** Since the introduction of quota in 2008, neither of these retained species has comprised more than 5% of the total catch.

3.2.3 Fishing Methods and Gear

Fishers in the WCDSCMF are only permitted to fish using traps. Currently, fishers use moulded plastic rock lobster traps with a 5 - 10 kg flat piece of metal wired to the base of the trap to act as ballast. It is a legislated requirement that each trap has two escape gaps (294×54 mm) to allow undersized crabs to escape (Figure 2).

Traps are operated in long-lines, which have between 80 and 150 traps attached to a main line marked by a weighted float at each end. There is little movement of the traps once they are in contact with the benthos. The traps at each end of the lines are heavier, with additional ballast to 'anchor' the ends of the line. The rope used to connect the traps in a line is positively buoyant and is not in contact with the benthos. This prevents any damage that may occur from rope movement across the benthos such as occurs from 'anchor scaring' in seagrass meadows. The traps soak for three to seven days before retrieval and approximately 400 – 500 traps are pulled per day (DoF 2003, 2009a).



Figure 2. Deep sea crustacean vessel "Napoleon" alongside the Denham fisherman's jetty (top) and Crab traps used by fishers in the WCDSCMF.

The WCDSCMF is open to fishing all year; however, most fishing effort is focused between January and June, when weather conditions are typically more favourable. Greater concentration of fishing effort

also tends occur around the Chinese New Year (January/February) due to market demand. Traps remain in the water throughout the year and are only retrieved to collect the catch and for rebaiting. On some occasions traps can be left in the water for between 10 - 14 days if weather conditions are unfavourable for fishing. Depending on where they are operating, most fishers tend to spend around 12 hours steaming to the fishing grounds, leaving in the late afternoon and retrieving the traps at first light.

Traps are retrieved using a hydraulic winch, and crabs are removed by hand, placed on a sorting tray, sexed and measured. The claws of the crabs are bound to their bodies using a cable tie to minimise the risk of injury to both fishermen and other crabs. Legal-sized crabs are placed in a 5° C brine holding tank for transport back to port. Any undersize crabs, berried females or other unwanted animals are returned to the water as soon as possible. Retrieved traps are re-baited and stacked at the back of the vessel. Once all traps have been retrieved from one longline, the traps are reset before the next longline is retrieved. Due to the low productivity of the fishery, fishermen typically re-set traps on different ground to where they were retrieved.

Fishers generally spend two days retrieving traps before returning to port where they are met by a processor with a refrigerated truck to transport the catch. Catches are unloaded from the vessel and weighed before being transported to a processing facility, where they are re-weighed. In accordance with the management plan the weight of landed catch is recorded in triplicate in a catch disposal record (CDR) form before being dispatched to the processor. Comparison of landed weights and processor weights is used for validation of catch by DoF.

Data from voluntary logbook returns indicate that there is seasonality to the capture of berried females, which is consistent at all depths (Figure 3). Peak catch rates of berried females occur from September to December, with the highest catch rates in the 600-649 m depth category. Catch rates in the adjacent depths categories (550-599 and 650-659 m) are similar to each other, but lower than that of the 600-649 m depth category.



Figure 3. Number of berried female per traplift by month and depth category (Source: How et al. 2015).

More details on management of the fishery are provided in Section 3.5 Management System Background below.

3.2.4 Catch and Effort

While interest in deep sea crab fishing started in the 1960s, significant catches were only reported from the 1980s onwards. Initially landings were dominated by champagne crabs, although catches were relatively low - generally less than 10 t annually (Table 1; Figure 4). Catches of champagne crabs in recent years have been low, with less than 1 t retained in 2012 and zero retained in 2013 and 2014.



Figure 4. Catch of deep sea crustacean species; crystal (black), champagne (blue) and giant crab (red) in the WCDSCMF 1989 – 2014 (Source: How et al. 2015).

Commercial fishing interests in crystal crabs started in the late 1990s, with catches around 200 t per annum in 2001 – 2007. The introduction of the TAC in 2008 has led to catches of crystal crabs stabilising at around 140 t per annum (Table 1, Figure 4).

The first landings of giant crabs were in 1994; however, catches of this species have always been minimal. From 1989 all giant crab landings were less than 3 t per annum, with no catch reported for the majority of years (Table 1).

Year	Crystal crab (t)	Champagne crabs (t)	Giant crabs (t)
1989	0.0	0.2	0.0
1990	0.0	1.27	0.0
1991	0.0	5.1	0.0
1992	0.0	9.8	0.0
1993	0.0	7.3	0.0
1994	0.0	11.0	2.3
1995	0.0	2.8	0.0
1996	0.0	1.4	1.0
1997	0.7	30.9	0.4
1998	7.1	45.6	0.0
1999	24.8	32.4	0.1
2000	143.3	12.4	0.9
2001	212.8	0.1	0.0
2002	205.4	0.0	0.0
2003	196.4	0.1	0.0
2004	225.8	0.3	0.0
2005	201.8	0.0	0.0
2006	185.6	2.2	0.0
2007	227.1	0.0	0.0
2008	139.1	0.0	0.0
2009	138.5	5.2	0.0
2010	138.7	6.3	0.1
2011	139.7	5.5	0.0
2012	138.7	0.0	0.8
2013	139.5	0.0	0.0
2014	139.8	0.0	1.5

Table 1. Annual catches (tonnes) of crystal, champagne and giant crabs from 1989 – 2014 (from How et al. 2015).

Catch and effort statistics for the fishery highlight the expansion of fishing activities from 1996 and the impact of interim management in 2003, which led to a progressive decline in the number of traplifts (Figure 5a). With the changes in management and the removal of zones in 2008 there has also been a spatial contraction of fishing effort to the waters off the mid-west WA coast between 24 and 27° S (**Error! Reference source not found.**), as documented via volunteer logbooks. There has also been a reduction in the number of blocks (10' x 10') fished, from a high of 113 in 2003 to 53 in 2014 (Figure 5).



Figure 5. a) Fishing effort in traplifts (x 1000) and b) spatial extent of fishing (10 x 10 NM blocks) for crystal crabs. First dotted line represents the introduction of zones to the fishery (2003), where the second signifies the removal of zones and the introduction of quota (2007/08). Limit and threshold lines denote reference levels of habitat and ecosystem performance indicators. Overall fishery extent is all (10 x 10 NM) blocks where catch has been recorded in the fishery (Source: How *et al.* 2015).

As well as a spatial contraction of fishing effort there has also been a change in the depths fished (Figure 6). Since 2000, fishing has moved into progressively shallower waters; mean depth in 2000 was 678 m, compared with 603 m in 2014.



Figure 6. Mean depth (± 95% CI [grey shading]) of fishing effort for crystal crabs. Numbers indicate the number of lines fished. First dotted line represents the introduction of zones to the fishery (2003), where the second signifies the removal of zones and the introduction of quota (2007/08) (Source: How *et al.* 2015).

The mean soak time (period traps were left between being set and retrieved) has also changed substantially over the development of the fishery. In 1999, traps were typically pulled after approximately two days. From 2000, there was a clear change to leaving traps for five to eight days. Since 2004, soak time has continued to increase from an average of 4.7 days to 7.6 days in 2014 (Figure 7).



Figure 7. The mean soak time (in days, \pm SE) by year from the volunteer logbook program. First dotted line represents the introduction of zones to the fishery (2003), where the second signifies the removal of zones and the introduction of quota (2007/08) (Source: How *et al.* 2015).

3.3 Principle 1: Target species background

3.3.1 Taxonomy, distribution and stock structure

The target species for the fishery under assessment is crystal crab (*Chaceon albus*), a decapod crustacean of the Geryoniidae family (Ng et al. 2008; Figure 8). This species was previously classified as *C. bicolor* (Wadley & Evans 1991) which has shorter and stouter walking legs as well as being paler in colour (Davie *et al.* 2007).

Crystal crab has a geographical distribution restricted to WA waters. They occur on the continental shelf at depths of 300 – 1200 m. On the west coast of WA crystal crabs are caught primarily in depths of 500 – 800 m, although they are found over a broader range on the south coast of WA (i.e. 400 – 900 m depths; Melville-Smith *et al.* 2007). The habitat within these depth ranges are generally sand/mud or broken shell (Wadley & Evans 1991; Jones & Morgan 1994).

Most of the catch of crystal crab is from a small geographic area and management treats the stock as a single unit. Little is known about the stock structure of crystal crab on the west or south coast of WA but How *et al.* (2015) report that linkages between stocks on the west and south coast are unknown, therefore they may be separate stocks. A tagging study found that the majority of crabs of both sexes moved less than 50 km between release and recapture, even after three and four years at large; that only ~2% of the crabs that were recaptured moved more than 100 km; and that because of the amount of movement relative to the size of the fishing zones, there were few crabs that were recorded as being tagged in one zone and moving to another (Melville-Smith *et al.* 2007).



Figure 8. Image of a crystal crab (Chaceon albus) (Source: How et al. 2015).

3.3.2 Biology

Commercial catch records indicate that males are larger than females and the commercial catch is dominated by males with the legally-retainable catch (> 103 mm CL [120 mm CW]) of males being 5.5 times that of legally-retainable females (**Error! Reference source not found.**).



Figure 9. Size structure of males (blue), non-berried females (red) and berried females (black) by 1 mm CL length class in the WCDSCMF. Horizontal dashed line represents legal minimum size (DoF unpublished data).

Chaceon species in other parts of the world have shown a gradient of size or sex ratio with depth, and a decline in the proportion of undersize crystal crabs is apparent in depths < 600 m (Figure 10). Male crabs are also larger in the shallower water and mean size decreases with increasing depth (Figure 10). A similar pattern is not clearly evident in females.



Figure 10. Size structure of males (blue), non-berried females (red) and berried females (black) by 1 mm CL length class, for each depth category in the WCDSCMF. Mean size for each sex category is indicated on plot in corresponding colour. Vertical dashed line represents legal minimum size (DoF unpublished data).

How *et al.* (2015) report that there is only weak seasonality in the reproductive cycle of crystal crabs on the lower west coast of WA and that there is no information on the larva duration for crystal crab.

Size at maturity (CL_{50}) of female crystal crabs has been estimated at 90.5 mm CL (89.7 – 91.2 mm CL, 95% confidence interval [CI]). Ovigerous or egg remnant females had a mean CL of 108.2 mm (91 – 140 mm C [95% CI]; Smith et al. 2004). This is above the legal minimum size (103 mm CL) but may also represent an underestimate of the size of female maturity (Smith et al. 2004).

Male crystal crabs attain physiological sexual maturity (CL_{50}) at 94.3 mm CL (95% CI 93.7 – 94.9 mm CL), with 95% male maturity at 99.9 mm CL (98.2 – 101.6 mm CL). Sperm limitation is not believed to be a

factor with the male legal minimum size above the size at maturity so that males are mature for around 2 years before they recruit to the fishery.

Fecundity on crystal crabs ranged from 15 592 (CL = 98 mm) - 288 512 (95% CI = 133 mm), with a mean of 192 070 (95% CI ± 33 640). This is significantly less than other local deep sea crab species (e.g. champagne crab) and may be a result of continued spawning and the lack of need to maximise egg production at a particular time.

The growth rate of crystal crabs was studied by Melville-Smith *et al.* (2007) using information from tag returns. Growth increments were consistent across the range of sizes sampled, with females increasing in size by 10-15 mm CL per moult increment (size range 90-110 mm CL). Males increased by 15-20 mm CL for a moult increment across sizes of 90-120 mm CL. As this is consistent across a range of sizes, it did result in a decreasing percentage growth increment (GI %) with size, though male GI % was greater than for females. Growth increments for males were then used to provide an estimate of age at maturity (12 years), age at legal size (14 years) and maximum age (25-30 years).

No dietary studies have been conducted on crystal crabs, however studies from deep sea crabs species from the same family (Geryonidae) indicate that this species is likely to be highly opportunistic in its feeding habits, adopting strategies of both an active carnivore and a scavenger. Crystal crabs are likely to be low in the food chain of these deep water ecosystems.

How *et al.* (2015) and Melville-Smith *et al.* (2007) report that there are no estimates of natural mortality for the crystal crab. Nevertheless the estimated maximum ages reported could be used to estimate natural mortality levels.

3.3.3 Stock assessment and stock status

There are no estimates available of stock size, but three indicators from the fishery are used in the annual stock assessment process to evaluate trends in the status of the crystal crabs stock:

- the standardised catch rate of legally-retainable crystal crabs (males and non-berried females with a carapace length greater than 103 mm) which is used as an indicator of the legallyretainable biomass (Figure 11);
- the standardised catch rate of berried female crystal crabs, which is used as an indicator of the spawning biomass (Figure 12a); and,
- the standardised catch rate of undersized crystal crabs, which is used as an indicator of recruitment (Figure 12b).

Data from other sources are also examined as part of a weight-of-evidence assessment of the status of the crystal crab stock including from Commercial Monitoring, Processor Returns and Volunteer Logbooks.

The catch rate standardisation models have been refined over the development of the fishery to incorporate additional information as it has become available. The current models include six factors as explanatory variables: year, month, vessel, depth, soak time and latitude. The data are obtained from statutory catch and effort returns, as well as detailed additional information from volunteer logbooks that are currently being completed for over 90% of the landed catch on a line-by-line basis.

The standardised catch rate of legally-retainable crystal crabs is within the target range and since 2010 has remained relatively high with the 2014 catch rate of 2.31 kg/traplift being toward the upper target range level of 2.54 kg/traplift (Figure 11).

The standardised catch rate of breeding females has been relatively stable (Figure 12a). Over the last three seasons it has ranged from a high of 3.46 (in 2012) to 3.08 crabs/traplift in 2014. This catch rate is still well above the threshold reference point of 1.74 crabs/traplift.

Assuming that the standardisation has accounted for the most important factors that are contributing to the year to year variation in these indicators, then they provide evidence that the stocks remain at productive levels. On occasions, the year-to-year variability in both these indicators is greater than is attributable to any potential changes in stock size, which shows that they do not precisely track the status of the relevant stock components. How *et al.* (2015) report that there has also been an increase in the mean size of retained males and increasing dominance of larger sizes in the processor size grades and contend that the increasing sizes of captured crabs (and the maintenance of high catch rates) indicate that the stock is not being over-fished. The CPUE indicator provides the stronger evidence of this as there are several possible interpretations of the size trends, some of which are not supportive of good stock status (such as that they may reflect changes to discard practices or declining recruitment).



Figure 11. Standardised catch per unit effort (± 95 CI) since 2000 for crystal crabs. Area between vertical dashed lines indicate period when management required fishing in all zones. Horizontal lines represent the limit (red) and threshold (orange) reference points. The target range is the green hashed area and is bounded by the threshold and upper target reference points for crystal crabs in the fishery (Source: How *et al.* 2015).



Figure 12. Standardised annual mean catch rate of (a) berried female and (b) undersized crystal crabs (\pm 95% CI) and their respective threshold reference points. The first dotted line represents the introduction of zones to the fishery (2003), where the second signifies the removal of zones and the introduction of quota (2007/08) (Source: How *et al.* 2015).

The CPUE for undersized crabs has generally declined over the reported time series but the current catch of undersized crabs is 3.42 crabs/traplift which is well above the selected threshold level of 2.57 crabs/traplift. (Figure 12b). How *et al.* (2015) suggested that the shift to shallower depths has contributed to this decline. Depth, however, is included as a factor in the CPUE standardization and the differences in size composition with depth are minimal (Figure 10). The causes of this decline are under investigation (How *et al.* 2015). The decline at least suggests that recruitment may be more variable than has been anticipated by the description of crystal crab as being a "long-lived, deep-water species with stable recruitment". The fishery has only been operating since 2000, which is a relatively short time for a species that is estimated to live to 25-30 years and takes 14 years to reach legal size. Therefore, we consider that the decline in CPUE for undersized animals, which began in 2003 (with one year of higher catch rates in 2005) is unlikely to be an effect of the fishery on recruitment, and to be part of the natural variability.

Overall, we agree with the conclusions of How et al. (2015) that spawning stock of crystal crabs in the WCDSCMF is highly likely to be above the level that would sustain the maximum biological productivity of the stock (i.e. $>B_{MSY}$) and above the point of recruitment impairment.

The other indicator that is tracked for the fishery is the level of the retained catch. In 2014, the catch of crystal crabs was 139.8 t, indicating that the 140 t TAC was effectively met i.e. > 90% of the TAC caught (Figure 13). The TAC has been met each year since it was introduced in 2008.



Figure 13. Annual catch (tonnes) of crystal crabs relative to the target (140 t TAC) and threshold (126 t) reference points (Source: How *et al.* 2015).

3.3.4 Harvest Strategy

The west coast deep sea crustacean resources harvest strategy has evolved over the development of the fishery. The following sections provide an overview of the current harvest strategy for which more detail is contained in DoF (2015a). This is intended to remain in place for five years from 2015 to 2020, after which it will be reviewed but may be subject to earlier review and amendment if appropriate.

Two primary and two secondary indicators are used to assess the status of crystal crabs with empirical reference points and harvest control rules derived from these assessment indicators (Table 2 and Figure 14**Error! Reference source not found.**). The primary performance indicators of catch rate of crystal crabs and catch are considered the most important indicators of stock status.

If all primary and secondary performance indicators are at target levels no management action is required. Triggering the threshold levels for either of the primary indicators will result in immediate reduction of the TAC in order to reduce exploitation levels on the stock. Secondary performance indicators provide additional evidence of stock status and help inform the magnitude of the management response required. In the event that target levels for both primary performance measures are met, falling below the threshold levels of one or both of the secondary performance indicators triggers a review to assess the cause of the variation. If either primary performance indicator is below the threshold level, the status of secondary performance indicators will be used to determine whether a minor (0 - 20%) or major (20 - 50%) reduction in TAC is required. If the catch rate of legal sized crabs (a

primary performance indicator) is below the limit level, it will automatically trigger a major reduction in TAC to reduce exploitation levels on the stock.

We note that the rules outlined in the text in Table 2 do not specify what is intended to happen if the primary CPUE indicator is above target levels. The decision tree (Figure 14), however, shows that an increase in the TAC of up to 10% would be considered in such a case. This is not contradictory to the text version, and an increase in the TAC is a logical response when an indicator is on the positive side of a target, but it is an undesirable inconsistency between the two representations of the harvest control rules.

<u>Recommendation 1</u>: That the tabular description of the harvest control rule and outcomes shown in the decision tree are fully aligned with each other.



⁺ The extent of TAC reduction will be determined by the extent to which the indicator has breached the threshold or limit reference point

Figure 14. Harvest control rule decision tree for the crystal crab stock. Source: West Coast Deep Sea Crustacean Resources Harvest Strategy 2015 – 2020.

Table 2. Harvest strategy performance indicators, reference levels and control rules for the west coast crystal crab stock.

Performance Indicators	Reference Levels	Control Rules
 Primary Annual commercial catch of crystal crab. Standardised commercial catch rate of legally- retainable crystal crab. 	<pre>Target: TAC is achieved (≥ 90% caught); Catch rate of legally-retainable crabs is ≥ 1.34 and < 2.54 kg/traplift; and Catch rates of sublegal crabs <u>and</u> berried females are ≥ 2.57 and 1.74 crabs/traplift, respectively</pre>	No management action required.
 Secondary Standardised commercial catch rate of sublegal crystal crab. Standardised commercial catch rate of berried female crystal crab. 	Threshold: TAC is not achieved (< 90% caught); Catch rate of legally-retainable crabs is ≥ 1.07 and < 1.34 kg/traplift ; or Catch rate of sublegal crabs <u>or</u> berried females is < 2.57 and 1.74 crabs/traplift, respectively	If \geq 90% of the TAC is caught <u>and</u> the catch rate of legally-retainable crabs is within or above the target range, <u>but</u> catch rates of either sublegal or berried female crabs <u>are</u> <u>not</u> , a review is triggered to assess causes of variation and appropriate management response initiated. If < 90% of the TAC is caught ** <u>or</u> the catch rate of legally-retainable crabs is below the threshold (but above the limit) <u>and</u> catch rates of both sublegal and berried female crabs are <u>above</u> the threshold, the TAC will be reduced by up to 20%. If < 90% of the TAC is caught ** <u>or</u> the catch rate of legally-retainable crabs is below the threshold (but above the limit) <u>and</u> catch rate of legally-retainable crabs is below the threshold (but above the limit) <u>and</u> catch rates of either sublegal or berried female crabs is <u>below</u> the threshold, the TAC will be reduced by 20 – 50%.
	Limit: Standardised commercial catch rate of legally-retainable crabs is <1.07 kg/traplift	The TAC will be reduced by 50 – 100%.

A TAC of 140 t was in place from when the fishery became quota managed in 2008 until 2014 but the TAC was increased to 154 t in 2015 (Western Australian Government Gazette, 2015). The basis for this TAC increase is discussed below under the heading 'Recent Application of the Harvest Control Rule'. These levels are well below the catch sustained by the fishery before it became quota-managed, and is intended to maintain the stock at levels above B_{MSY} . The target range is 126 to 140 t. The threshold level is set as the lower end of the target range at 126 t. How et al. (2015) cite Melville-Smith et al. (2007) in support of the view that catches of this level are not only sustainable but precautionary. Melville-Smith *et al.* (2007) produced a preliminary estimate of unfished biomass of 1,200 t based on the first four

years of reliable catch and effort data. Subsequently, Melville-Smith *et al.* (2007) suggested that this estimate appeared 'conservative' (p 72) but still concluded that the "Best estimates of the long term sustainable yield from this fishery is 30-90 t, which is substantially less than the 200 t landings of the last five years, or the 140 t TAC proposed for the fishery in the future" (p 78). As noted earlier, during the site visit it was indicated that the level of the current TAC was selected during negotiations with industry and was set with the intention that adjustments would occur following considerations of trends in indicators. Nevertheless, we consider that the trends in the indicators over a much longer period than the four years used for that early analysis, support the view that the stock has not been substantially depleted, and are good evidence that catches up to a TAC of 154 t are consistent with a B_{MSY} target.

The reference levels associated with the mean annual standardised commercial catch rate of legallyretainable crystal crabs have been identified based on the reference period from 2003 to 2012, a period of stable catch rates with no evidence of impaired recruitment. The upper bound of the target range is 2.54 kg/traplift, which is 1.1 times the mean standardised catch rate during this reference period. The lower bound of the target range has been identified as the threshold level and is 1.34 kg/traplift. This was the lowest 95% confidence interval (CI) for the standardised catch rate during the reference period (Figure 11). The limit reference point is further defined as the value 20% below the threshold reference point (i.e. 0.8*Threshold) and is 1.07 kg/traplift.

The rationale for the choice of the limit reference point is not readily apparent in How et al. (2015) or DoF (2015a) and is set relatively close to the threshold which defines the lower boundary to the target range. The proximity of the two reference points means that there is the potential for the indicator to move quite quickly from being within the acceptable range to below the limit. Previous inter-annual changes in the indicator have been greater than the difference between threshold and limit levels, so it may happen within a single year. There is also the possibility that even if the indicator is still within the target range, that the stock is in fact below the limit reference point. The reported error bars for CPUE have so far been smaller than the difference between the threshold limit levels, but this only measures the statistical error of the estimate and does not account for any error in the ability of the indicator to track biomass. As noted above, the year-to-year variability in indicators is greater than is attributable to any potential changes in stock size, which shows that they do not precisely track the status of the relevant stock components. Some form of testing of the harvest strategy may be needed to evaluate the likelihood of such a situation occurring.

For standardised catch rates of legally-retainable crystal crabs, an upper target level has also been identified as reference point for the social and economic objective of the fishery (see DoF 2015b for details).

Two secondary performance indicators are also used to assess the fishery's performance in meeting long-term management objectives for crystal crabs. These indicators are the mean annual standardised catch rates of (1) berried female and (2) undersized crystal crabs. Similar to legally-retainable crystal crabs, the reference period for both indicators is from 2003 to 2012. These indicators provide information on spawning stock biomass and recruitment levels of crystal crabs, respectively. Threshold levels of 2.57 and 1.74 crabs/traplift have been identified for undersized and berried female crystal crabs, respectively. These levels are the minimum value of standardised catch rates of during the reference period with 95% certainty (Figure 12). No limit reference levels have been set for these indicators.

The use of empirical catch and catch rate-based reference points in the WCDSCMF is in line with the Department's *Harvest Strategy Policy* (DoF 2015b) and is consistent with the monitoring and assessment procedures in place and the nature and scale of the fishery.

In addition to the harvest control rules, a number of additional management measures and instruments of implementation limit exploitation of the crystal crab stock (Table 2). How et al. (2015) state that these measures, including condition and size limits for crystal crabs, gear controls and spatial closures, can be amended as necessary to ensure the harvest strategy is achieving its objectives and that additional options may also be implemented should they be required.

Recent application of the Harvest Control Rule

An increase in the TAC for crystal crabs was approved in August 2015. This increase was supported by the Research Division on the basis that "An updated assessment including a preliminary estimate of the 2014 stock indicators (one trip return pending) saw the primary indices of annual catch (Figure 1a) above the threshold, and standardised catch rate of legal crabs (Figure 1b) above the upper target reference point. The secondary indices of the standardised catch rate of breeding female (Figure 1c) and undersize crab (Figure 1b) are both above their threshold reference points, though there has been a declining trend with both of these secondary indices over recent years." (J. How, DoF, *in litt*. 31 March 2016). This advice, and the figures to which it refers, are reproduced in Appendix 6.

Subsequently, however, it was discovered that the target range used to support this position used the reference period 2003-2008 whereas the Harvest Strategy uses a reference period of 2003-2012 which results in a higher target. If the correct reference period and target had been used, the indicator would have been within the target range and not above it, and a TAC increase would not have been indicated. The Department has acknowledged that "using the appropriate reference period in conjunction with the Harvest Strategy and Decision Rules (HSDR) would have technically resulted in no increase to the TAC". Such errors in the implementation of a harvest strategy are clearly not desirable and have the potential to prevent the fishery achieving the stated objectives but in this case had only a minor effect that did not affect the sustainability of the fishery.

In reviewing the above advice, we also noted that the time series of CPUE provided for berried females and under-sized animals, which are secondary indicators for the Harvest Strategy, differ from those provided in How et al. (2015) and provided above (Figure 12). Although both series show similar trends, and it is to be expected that such time series will vary as they get updated, the differences indicate that there has been an important change to the way that this series has been represented. There may have been a simple re-scaling of the CPUE index but such changes create uncertainty for interpretation and comparisons over time and are to be avoided.

<u>Recommendation 2</u>: That the indicators used as performance measures in the harvest strategy be consistently calculated and reported.

As noted above, there is also an inconsistency between the tabular and diagrammatic representations of the Harvest Control Rules. The tabular form does not provide for TAC increases whereas the flow diagram indicates that an increase of up to 10% would be considered where the primary indicator was above the target range. This provided the basis for the increase in the TAC from 140 t to 154 t enacted in 2015, albeit from an incorrectly calculated target range.

3.3.5 Information and Monitoring

An extensive range of fishery-dependent data has been collected on crystal crabs throughout the history of the fishery, with some datasets extending back to the commencement of the fishery in the early 2000s. These data include information on size composition of landings, detailed effort and discarding, as well as environmental conditions (Table 3).

Data type	Analyses and purpose	Areas of collection	Frequency of collection	History of collection
Catch and effort statistics (CAES)	Catch rate of legal-sized crystal crabs	Whole fishery	By month	Since 1990
Catch and Disposal Records (CDR)	Catch rate of legal-sized crystal crabs	Whole fishery	By trip	Since 2008
Volunteer logbook	Catch rate of legal, berried female and undersized crystal crabs. Information on fine-scale distribution of effort, e.g. spatial, vertical (depth), temporal	> 90% of catch	By line (3 – 4 lines per day)	Since 1999
Processor unloads	Grade/size composition of whole catch	Two major processors	By trip	Since 2006
Commercial monitoring surveys	Catch composition and tagging	Predominantly GCB	Approx. four trips per year	Since 2000
Remote monitoring	Catch, discards, size composition, sex and crab condition	Whole fishery	In development	
Environmental Monitoring	Changes in the environment that may impact on catch rates or biology	Locations within the GCB	Hourly	Since March 2012
Targeted research projects	Fisheries biology of deep sea crustaceans, development of volunteer logbooks, depletion study, stock assessment, abundance estimation	Whole fishery	Opportunistically (Three under- taken so far)	2000 – 2014

Table 3. Summary of current research and monitoring activities for the WCDSCMF.

Licensees involved in fishing operations or the master of every licensed fishing boat are legally required to submit accurate and complete catch and effort returns on forms approved by the Department. This information has been collected by the Department since 1990 in the form of statutory monthly catch and effort (CAES) logbook returns (see Appendix C). These returns record monthly catch totals (to the nearest kilogram [kg]) for each retained species, monthly effort (total days fished), estimates of daily

effort (e.g. trap lifts per days, average hours fished per day) and spatial information (by CAES block, 60 x 60 nm).

Since the introduction of quota, masters of licensed fishing boats and fish processors have also been required by law to submit more-detailed CDRs. This information is used for monitoring within-season quota levels and has been collected by the Department since 2008. Masters of licensed fishing boats are required to fill out Part A of a CDR upon completing a trip.

Volunteer logbooks also provide a very valuable data source for the management of the fishery (see Appendix D). These logbooks are used to record effort, location, depth, soak time and catches on a lineby-line basis, providing data on the major factors for which the catch rate is standardised. Volunteer research logbooks began in 1999 and have generally been filled out by most of the fishers in the fishery. The logbooks have historically been completed by most vessels actively fishing crystal crabs. Currently they are being returned by two of the three boats fishing (representing > 90% of the total catch).

On-board (observer) monitoring of commercial catches by Departmental staff was initiated in 2000. During monitoring trips, members of the Department's Research Division make detailed records of the target catch (retained and discarded) and non-retained catch ('bycatch'), as well as environmental conditions and fishing activities. This information provides a secondary data source against which the data from the volunteer logbooks can be validated. Catch monitoring and tagging are conducted on at least four trips each year. Attempts are made to representatively sample each vessel and region that is fished within any given year.
3.4 Principle 2: Ecosystem Background

This section draws heavily on information provided in How et al. (2015).

3.4.1 Aquatic ecosystem, status and features as well as critical environments

The WCDSCMF operates off the west coast of Western Australia (WA), on the seaward side of the 150 m isobath out to the extent of the Australian Exclusive Economic Zone (EEZ; 200 nm boundary). The fishery covers three WA management bioregions¹: North Coast, Gascoyne Coast and West Coast (How *et al.* 2015); however, the majority of fishing activities are centred in the Gascoyne and West Coast Bioregions.



Figure 15. Location and boundaries of Western Australian bioregions and the WCDSCMF (Source: How *et al.* 2015).

The North Coast Bioregion (NCB) extends from just south of Onslow (114° 50' E) to the Northern Territory border. The NCB has a unique combination of features that distinguish it from other marine regions around Australia, including a wide continental shelf, very high tidal regimes, high cyclone

¹ A 'bioregion' refers to an area defined by common oceanographic characteristics in its marine environment and/or by climate/rainfall characteristics in its inland river systems (CoA 2006).

frequency, unique current systems, warm oligotrophic surface waters and unique geomorphological features (Brewer *et al.* 2007). Ocean temperatures in the NCB range between 22° C and 33° C with localised higher temperatures in coastal waters, particularly along the Pilbara coastline. Fish stocks in the NCB are entirely tropical (Fletcher & Santoro 2014).

The Gascoyne Coast Bioregion (GCB) extends from the NCB boundary at Onslow to north of Kalbarri (27° 00' S). The GCB represents a transition between the fully tropical waters of the NCB and the temperate waters of the southwest region. The waters off the GCB are strongly influenced by the southward-flowing Leeuwin Current, a shallow, narrow (less than 300 m deep and 100 km wide) current that transports warm, low-nutrient water from the tropics southward. Although the Leeuwin Current flows year-round, it is strongest in the Austral autumn/winter (April to August). The current is variable in strength from year-to-year and is related to El Niño-Southern Oscillation (ENSO) events in the Pacific Ocean (Fletcher & Santoro 2014). The subsurface Leeuwin Undercurrent flows beneath the Leeuwin Current in the opposite direction along the west coast. The majority of fishing effort in the WCDSCMF has been concentrated in the GCB since 2011.

The West Coast Bioregion (WCB) extends form 27° 00′ S to the southern coast at 115° 30′ E. Water temperatures range between 18° C and 24° C, which is higher than would be expected for waters at these latitudes and is largely due to the Leeuwin Current, which transports warm tropical water southward along the edge of the continental shelf. Fish stocks in the WCB are mainly temperate, becoming more tropical in the northern areas (Fletcher & Santoro 2014). WCDSCMF fishing effort in the WCB has declined significantly since 2011, and presently there is only one licensee operating in this area.

Crystal crabs are a deep-water species occurring on the continental shelf at depths of 300 –1200 m. On the west coast of WA crystal crabs are caught primarily in depths of 500 – 800 m, although they are found over a broader range on the south coast of WA (i.e. 400 – 900 m depths; Melville-Smith *et al.* 2007. The habitat within these depth ranges are generally sand, mud, or broken shell (Wadley & Evans 1991; Jones & Morgan 1994).

The coastal and oceanic waters off Western Australia are characterised by low nutrients, in comparison to the west coasts of other continents such as South Africa and South America (Waite *et al.* 2007). Productivity, especially in the deeper waters, is low, and associated ecosystems are not likely to show high diversity.

Broad scale mapping indicates that deep water habitats off the GCB, where the majority of fishing in this fishery occurs, are relatively featureless (Brewer *et al.* 2007). Benthic environments are fairly uniform due to the lack of geomorphological heterogeneity and hard substrates for sessile benthic invertebrates and are dominated by fine particulate matter deposited from the water column and fine shelf sediments. Communities of infauna and epifauna are likely to be sparse (Brewer *et al.* 2007). Sediments at depths greater than 300 m are likely to be mostly mud, with macrobenthic fauna decreasing with increasing depth (Levings *et al.* 2001).

The location (longitude and latitude) of fishing activities is reported in voluntary daily logbooks and statutory CDRs and is used to monitor fishing location.

3.4.2 Retained, bycatch, and endangered threatened and protected species

Bycatch consists of the incidental catch of non-target species that may or may not be landed. Under MSC Guidelines (CR v. 1.3, GCB 3.8.2), the discarded species are designated "bycatch" (PI 2.2.1 - 2.2.3) while the species that are retained for sale or are required to be kept due to management arrangements are considered "retained" (PI 2.1.1 - 2.1.3). Species that are caught or affected by the fishery that are considered endangered, threatened or protected are considered separately (PI 2.3.1 - 2.3.3). Seabirds and marine mammals are covered under those PIs.

The SG 60 and SG 80 in the DAT refer to "main" species in the retained species and "main" species in the bycatch. Main species are those that comprise 5% or more of the total catch by weight or if the species is particularly vulnerable. The SG 100 considers all species regardless of the percent of the total catch. Prior to scoring Principle 2, the Assessment Team decided whether a species would be considered a "main" retained species or "main" bycatch species.

In an MSC assessment, the bait used in the fishery – if caught by the same fishermen or bought from other sources – is considered "retained" and assessed as part of the retained species PIs (CR v1.3). Species that are not caught in the fishery, but are used as bait or species that may be affected indirectly by the fishery are also considered and discussed in Principle 2 PI rationales for "retained species" (CR v1.3, CB 3.5.5). Deep sea crab is fished by baited pots, which could also capture a range of other species. However, as the fishery is conducted at great depth, all other catch is very limited.

Retained Species

Crystal crabs are the target species in the WCDSCMF and form over 90% of the total catch. Therefore, there is little retained or bycatch in the fishery. Other retained species are giant crabs and champagne crabs. Catch history data and composition are provided above in Section 0. Since the introduction of quota in 2008, neither of these species has comprised more than 5% of the total catch (Table 4).

Giant crabs are distributed between WA and Tasmania and there are seven managed fisheries that capture this endemic species, across the different states. Across the jurisdictions these fisheries are: Tasmania (Giant Crab Fishery), Victoria (Giant Crab Fishery), South Australia (Northern Zone Giant Crab Fishery), and WA (South Coast Crustacean Managed Fishery (SCCMF)) and the WCDSCMF. Giant crab is considered to be a single biological stock from WA to Tasmania because the species occurs in a continuous distribution across the range. The larval distribution is around 50 days, with larval release occurring along the edge of the continental shelf which is a high current area and will facilitate dispersal. Giant crabs are typically found in depths of 18 to 550 m.

The Status of Key Australian Fish Stocks Reports (Hartmann *et al.* 2014) classified giant crabs to be in a transitional-depleting phase based on declining catches in Tasmania and Victoria. For the purposes of MSC assessment giant crabs has been considered as a main retained species due to its vulnerable status following MSC guidance (CR v1.3, GCC2.4.0.4).

Champagne crabs are also an endemic species distributed between Kalbarri and the Eucla in WA at depths of 90 to 310 m. There are currently two managed fisheries that target this species – the WCDSCMF and the SCCMF.

Giant and champagne crabs have a combined annual TAC in the WCDSCMF of 14 t, with the annual catch of each species closely monitored through statutory catch and disposal records. Small amounts of these species are retained each year, with 1.5 t of giant crabs and no champagne crabs retained in 2014.

Catches of each of these species are monitored and assessed as part of the west coast deep sea crustacean resources harvest strategy (DoF 2015a), with the total annual catch of each species used as a performance measure.

Across Australia the giant crab stock is classified as vulnerable (Hartmann *et al.* 2014) due to decreasing catches in Tasmania and Victoria. Management authorities in these states have reduced the TAC progressively over several years with the aim of increasing abundance and catch rates. The WCDSCMF has a marginal contribution to the total catch of giant crabs within Australia. In 2014 the total annual catch in the WCDSCMF was 1.5 t and the total catch across all states was around 35-40 t. Due to its vulnerability giant crab will be considered as a "main" retained species in this MSC assessment.

Champagne crabs have not been strongly targeted for the past 15 years and there have been no catches reported for the last three years. Due to the low catch rates and minimal contribution from other fisheries this species will be considered as a minor species for the MSC assessment.

		Proportion (%) of Total Catch				
Year	Total Catch (t)	Crystal Crabs	Champagne Crabs	Giant Crabs		
1989	0.2	0.0 %	100.0 %	0.0 %		
1990	0	0.0 %	0.0 %	0.0 %		
1991	5.1	0.0 %	100.0 %	0.0 %		
1992	9.8	0.0 %	100.0 %	0.0 %		
1993	7.3	0.0 %	100.0 %	0.0 %		
1994	13.3	0.0 %	82.7 %	17.3 %		
1995	2.8	0.0 %	100.0 %	0.0 %		
1996	2.4	0.0 %	58.3 %	41.7 %		
1997	32	2.2 %	96.6 %	1.3 %		
1998	52.7	13.5 %	86.5 %	0.0 %		
1999	57.3	43.3 %	56.5 %	0.2 %		
2000	156.6	91.5 %	7.9 %	0.6 %		
2001	212.9	100.0 %	0.0 %	0.0 %		
2002	205.4	100.0 %	0.0 %	0.0 %		
2003	196.5	99.9 %	0.1 %	0.0 %		

Table 4. Annual catch composition in the WCDSCMF since 1989.

2004	226.1	99.9 %	0.1 %	0.0 %
2005	201.8	100.0 %	0.0 %	0.0 %
2006	187.8	98.8 %	1.2 %	0.0 %
2007	227.1	100.0 %	0.0 %	0.0 %
2008	139.1	100.0 %	0.0 %	0.0 %
2009	143.7	96.4 %	3.6 %	0.0 %
2010	145.1	95.6 %	4.3 %	0.1 %
2011	145.2	96.2 %	3.8 %	0.0 %
2012	139.5	99.4 %	0.0 %	0.6 %
2013	139.5	100.0 %	0.0 %	0.0 %
2014	141.3	98.9 %	0.0 %	1.1 %

Bait

Bait information is currently available for the vessel targeting crystal crab. Blue mackerel (*Scomber australasicus*) and hoki (*Macruronus novaezelandiae*) are the dominant species used, accounting for 83% and 22% of bait used in the fishery over the last five seasons respectively. Both bait species comprise more than 5% (29% and 8% respectively) of the total crystal crab catch by weight, and therefore will be considered "main" retained species following MSC guidance (Table 5). The majority of bait is sourced from managed fisheries in New Zealand with established commercial TACs. Impacts of this fishery on the New Zealand (NZ) stocks of blue mackerel and hoki are likely to be minimal. Both the blue mackerel and hoki fisheries are managed with input and output controls. Recent assessments of these fisheries by the NZ Department of Fisheries consider both of these fisheries to currently be within biologically-based limits (Ministry for Primary Industries, 2014). The NZ hoki fishery has been certified as sustainable under the MSC standard since 2001.

Small quantities of Western Australian herring (*Arripis georgianus*) (6%) and pilchards (*Sardina pilchardus*) (4%) are also used for bait in the fishery. Pilchards are managed by the Department with a TAC and current catches are within biologically-based limits. WA herring stocks are currently in recovery due to poor recruitment and overfishing in recent years (Fletcher and Santoro 2014). In 2014 the Department implemented management measures to assist recovery by reducing the recreational bag limit and closing the South Coast Gillnet fishery. In 2013 around 300 t of herring were caught in the commercial sector of the fishery, and it is unlikely the quantities of bait used in the WCDSMF will hinder stock recovery. Small amounts of jack mackerel (1%; *Trachurus declivis*) are also used as bait. Western Australian herring, only 2% of the total catch by weight, will be considered as a main species due to the species poor stock status, and pilchards (~1% of total catch by weight) will be considered as minor retained species for the purpose of this assessment.

Small amounts of tuna (~1%; Scombridae), orange roughy (~0.2%; *Hoplostethus atlanticus*), and jack mackerel (0.2%; *Trachurus declivis*) have also been used in the last five years (2010 – 2015; Table 5). Some Orange roughy stocks in New Zealand are depleted, and it is unknown which tuna species are used, but the tuna was sourced from Thailand. Both species have not been used as bait in recent years (2014-2015). In 2013 tuna made up >5% of the total crystal crab catch by weight and due to its uncertainty will be treated as a "main" retained species following MSC guidance (Table 5).

Year	Bait Type	Bait Source	Total Bait Used	Catch (kg)	Effort (potlifts)	Conversion Rate	Usage Rate (kg bait /potlift)
2010	Blue Mackerel	New Zealand	34065				
2010	Hoki	New Zealand	8880				
2010	Total		42945	113510	84348	0.38	0.51
2011	Blue Mackerel	New Zealand	33360				
2011	Hoki	New Zealand	11780				
2011	Orange Roughy	New Zealand	1000				
2011	Tuna	Thailand	1020				
2011	Total		47160	115218	60483	0.41	0.78
2012	Blue Mackerel	New Zealand	34675				
2012	Hoki	New Zealand	9640				
2012	Jack Mac	New Zealand	1000				
2012	Tuna	Thailand	1020				
2012	Total		46335	103215	56142	0.45	0.83
2013	Blue Mackerel	New Zealand	33605				
2013	Hoki	New Zealand	5760				
2013	Tuna	Thailand	6140				
2013	Total		45505	107903	59164	0.42	0.77
2014	Blue Mackerel	New Zealand	13000				
2014	Herring	Albany	13932				
2014	Hoki	New Zealand	13600				
2014	Pilchards	Albany	9288				
2014	Total		49820	101494	59415	0.49	0.84
2015	Blue Mackerel	New Zealand	43600				
2015	Hoki	New Zealand	16200				
2015	Total		59800	116121	83388	0.51	0.72

Table 5. Type, source and amount of bait used by fishers targeting crystal crab in the WCDSCMF, with associated catch and effort used in the calculation of conversion and usage rates.

Bycatch Species

There are very low levels of bycatch in this fishery (How *et al.* 2015). Data from on-board monitoring by Departmental research staff (observers) and remote on-board surveillance cameras indicated fifteen incidences of bycatch (e.g. discarded catch other than totally-protected crabs) in almost 4,700 traplifts that were observed between 2010 and 2014. The few species that were caught included deep sea sharks, finfish, Western rock lobster, sea lice, molluscs, octopus, spider crabs and other deep sea crabs. The

fishery has extremely low levels of bycatch. None of the species are likely to be regarded as a "main" bycatch species following MSC guidance CR v1.3 due to their level of catch; however, deep sea sharks were considered as "main" bycatch species due to their vulnerability.

Traps are also designed to reduce bycatch through the use of mandatory escape gaps. The loss of commercial traps and the potential for ghost fishing is low for WCDSCMF, as the traps are set in longlines and are clipped together. Bottom currents are not very strong at the depths fished, and the chances of losing one, or a whole line, of traps is very low.

Fishers are encouraged to report all bycatch in voluntary logbooks, with additional bycatch information collected during periodic on-board monitoring trips undertaken by Departmental staff. Additional bycatch information has also been obtained through the use of a remote on-board camera deployed on two commercial crab vessels, which account for over 90% of the landed catch. Risk assessment outcomes of all species assessed are used to measure fishery performance.

ETP Species Overview

Endangered, threatened and protected (ETP) species in WA are protected by various international agreements and national and state legislation. International agreements include:

- Convention on the Conservation of Migratory Species of Wild Animals 1979 (Bonn Convention);
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- The Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment 1974 (JAMBA)2;
- The Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment 1986 (CAMBA)
- The Agreement between the Government of Australia and the Government of the Republic of Korea on the Protection of Migratory Birds 2007 (ROKAMBA); and
- Any other international agreement, or instrument made under other international agreements approved by the Environment Minister.

Primary pieces of national and Western Australian legislation include the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the *Western Australian Wildlife Conservation Act 1950* (WC Act) and the WA FRMA.

Various whale species are likely to be encountered throughout the waters of the fishery. Blue and sperm whales are often observed well offshore, and migrating humpback whales can be seen approximately 10 - 20 km from the shoreline (Shaw 2000). Dolphins and dugongs are abundant in more coastal areas but are likely to migrate onto the shelf at times and may be important tertiary and primary consumers (respectively) in this area (Brewer *et al.* 2007). Loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*) and hawksbill (*Eretmochelys imbricata*) turtles can also be encountered in coastal areas, along with various sea snakes, including the critically endangered short-

nosed sea snake, *A. apraefrontalis*. Whale sharks (*Rhincodon typus*) and manta rays are abundant in the Ningaloo region, although their occurrence offshore is not well documented (Brewer et al. 2007). Grey nurse sharks (*Carcharias taurus*) and white sharks (*Carcharodon carcharias*) also occur in these waters.

In Western Australia, all whaler sharks (Family Carcharhinidae), including the dusky shark *Carcharhinus obscurus*, are "Totally protected Fish in the South Coast and West Coast regions" (schedule 2 Part 2 Division 2 of the Fish Resources Management Regulations 1995).

Fishers are required to report all interactions with ETPs on monthly CAES returns. Additional information on ETP interactions is also provided through observer monitoring activities. The Department of Parks and Wildlife (DPaW) are responsible for attending to stranding and entanglements of ETPs. If an ETP species is entangled in fishing gear DPaW notify the Department that the event has taken place. At the conclusion of every year DPaW forwards a summary of ETP interactions with fishing gear to the Department of Fisheries.

Interactions with ETPs occur indirectly via entanglement in the ropes attached to pots (e.g. turtles and cetaceans). The fishery operates in offshore areas where the majority of ETPs are not found. It is likely that main impact of crab fishing will be from interactions such as boat strikes and/or entanglement with ropes/lines (see below). Given the very few vertical lines (< 25) in the water (which are the source of entanglements along the WA coast), the likelihood of entanglements with whales is low. Furthermore, the use of relatively heavy ropes spaced a long distance apart and low fishing effort, significantly reduces the risk of entanglement in this fishery.

The likelihood of vessel strike is also minimal given the fishery consists of only two full time and one part time vessel.

The 2003 risk assessment concluded that this fishery was of negligible risk to whale and dolphin species because of the extremely low potential for interactions, as well as the fact that no interactions had been reported at that stage. Based on the life history of the species, long lived and low productivity, the PSA rated the risk to humpback whales as medium.

3.5 Principle 3: Management System Background

This section draws heavily on information provided in How *et al.* (2015).

3.5.1 Area and jurisdiction

The WCDSCMF operates off the west coast of Western Australia (WA), on the seaward side of the 150 m isobath out to the extent of the Australian EEZ from the Northern Territory/WA border in the north, to Cape Leeuwin (34° 24' S latitude) in the south. The fishery extends across three bioregions – the North Coast, Gascoyne Coast and West Coast (see Figure 15). Fishing effort in the WCDSCMF has been concentrated in the Gascoyne region (particularly south of Exmouth) since 2011 with the removal of fishing zones which had previously restricted licenses to operating in certain areas along the coast.

Under the *Offshore Constitutional Settlement* (see Brayford & Lyon 1995), WA retains control of crustacean resources out to the 200 nm limit of the EEZ and therefore the WCDSCMF falls entirely within the management jurisdiction of the WA Government.

3.5.2 Non-fishery users and activities

Recreational fishing, marine based tourism and commercial shipping occur throughout the North Coast, Gascoyne Coast and West Coast Bioregions. However, recreational fishing is unlikely to overlap with the WCDSCMF due to offshore nature of the deep sea crustacean fishery.

The major ports within the WCSDCMF area are Fremantle, Bunbury, Geraldton, Dampier, Port Headland and Broome. In the Gascoyne Coast Bioregion (GCB), where the majority of WCDSCMF fishing effort is focused, commercial and recreational fishing vessels utilise the Carnarvon Boat Harbour; however, shipping activity is generally low in the GCB.

Offshore oil and gas is a large and growing industry in the northern part of Western Australia with multiple projects in various stages of development, production and exploration. These activities are generally north of Exmouth and are unlikely to overlap with the WCDSCMF. However, an oil spill did occur in the Northern Bioregion (see Figure 15) in 2009. This prompted the development of a long-term environmental monitoring program to understand the impact of the spill on the marine environment.

3.5.3 Recognised interest groups and consultation

The recognised interest groups in the WCDSCMF are:

- DoF;
- The Western Australian Fishing Industry Council (WAFIC), representing the interests of commercial fishers;
- Recfishwest, representing the interests of recreational fishers;
- Representatives from the conservation sector, including the Conservation Council of Western Australia and WWF;
- Organisations/institutions undertaking research relevant to the deep-sea environment off WA (e.g. oil and gas sector) and any protected species (e.g. the Department of Parks and Wildlife, Western Australia (DPaW));
- Companies exploring the area for other commercial investment opportunities;

- The Australian Fisheries Management Authority, which manages other fisheries operating in the area;
- Investors, banking representatives, boat brokers, etc.;
- Fish processors, retailers and consumers; and
- The wider community.

The broad framework for stakeholder consultation for WA fisheries is described in Figure 16.



Figure 16. Broad fisheries management consultation framework in WA (Source: How et al. 2015).

The WA Minister for Fisheries and DoF are responsible for advising licensees, WAFIC and Recfishwest of Ministerial/Departmental decisions that are the subject of a consultation process.

The WA Government formally recognises WAFIC and Recfishwest as the key sources of coordinated industry advice for the commercial and recreational sectors, respectively (DoF 2012a). The Department or Minister may seek and provide advice directly through these peak bodies and/or sector associations. WAFIC and Recfishwest undertake the statutory consultation functions, such as those associated with developing and amending management plans, on behalf of DoF under service level agreements (SLAs).

They have direct input into the annual planning and priority setting process used to determine management, compliance, research and other priorities.

WAFIC is the peak industry body representing professional fishing, pearling and aquaculture enterprises, as well as processors and exporters in WA. WAFIC works in partnership with the WA Government to set the direction for the management of commercial fisheries in WA. In relation to WAFIC's consultation role, the Department provides annual funding to WAFIC, equivalent to 0.5% of WA commercial fishing gross value of production (based on a three year average), plus a pro-rata amount equivalent to 10% of water access fees paid by aquaculture and pearling operators.

WAFIC's responsibilities 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 the 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 by engaging, facilitating and consulting, as necessary (e.g. WAFIC representatives attend WCDSCMF AMMs to advocate on behalf of commercial fishers);
- Providing representation of commercial fishing interests on fisheries management and Ministerial committees, as required;
- Documenting priority issues for commercial fishing interests (by 30 March) each year to DoF;
- Providing feedback to DoF on proposed deliverables and budget priorities for expenditure of the Fisheries Research and Development account;
- Engaging with Recfishwest and other appropriate parties with a view to identifying joint priorities and solutions to issues of shared concern; and
- Engaging in promotion, education and awareness of key sustainability messages consistent with best practice fisheries management and the objectives of the FRMA².

Recfishwest is an incorporated association and receives 15% of the revenue raised from recreational fishing licence fees to advocate for and represent the recreational fishing sector. Key roles undertaken by Recfishwest include undertaking consultation on management reforms, advocating for the sector on issues of significance, education, and overseeing recreational fishing initiatives. Recfishwest's peak body operations and its representation role include:

- Effective representation of the WA recreational fishing community;
- Provision of professional advice to Government on issues affecting recreational fishing;
- Coordination of recreational fishing stakeholder views on management proposals;
- Advice on use of the Recreational Fishing Account; and
- Assistance with education of fishers and promotion of responsible fishing.

Recfishwest's monthly electronic newsletter reaches over 32,000 recreational fishers, keeping subscribers up to date with recreational fishing initiatives, research results and issues affecting the recreational fishing sector.

² Available at http://www5.austlii.edu.au/au/legis/wa/consol_act/frma1994256/

DoF holds AMMs with fishery licensees to discuss research, management, compliance and other specific issues affecting the fishery. These meetings are usually held at the start or the end of the licensing year and are attended by DoF personnel, WAFIC and licence holders, but are also open to other stakeholder groups such as Recfishwest, processors, universities, other government departments, the conservation sector and the general public following "appropriate consultation with industry" (How *et al.* 2015).

DoF encourages stakeholder engagement in regard to proposed management changes through processes including the release of fisheries management papers, direct consultation in writing, press releases, newspaper, radio and television interviews, use of the Department's website, and invitations to sit on tasked working groups or to participate in scientific reviews, workshops, risk assessment processes and management reviews.

3.5.4 Objectives

The FRMA specifies the long-term objectives of DoF and how these are to be achieved, as follows:

- 1. 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.

- 2. Those objects will be achieved by these means, in particular:
 - (a) conserving fish and protecting their environment;

(b) ensuring that the impact of fishing and aquaculture on aquatic fauna and their habitats is ecologically sustainable and that the use of all aquatic resources is carried out in a sustainable manner;

(c) enabling the management of fishing, aquaculture, tourism that is reliant on fishing, aquatic ecotourism and associated non-extractive activities that are reliant on fish and the aquatic environment;

(d) fostering the sustainable development of commercial and recreational fishing and aquaculture, including the establishment and management of aquaculture facilities for community or commercial purposes;

(e) achieving the optimum economic, social and other benefits from the use of fish resources;

(f) enabling the allocation of fish resources between users of those resources, their reallocation between users from time to time and the management of users in relation to their respective allocations;

- (g) providing for the control of foreign interests in fishing, aquaculture and associated industries;
- (h) enabling the management of fish habitat protection areas and the Abrolhos Islands reserve.

The West Coast Deep Sea Crustacean Resources Harvest Strategy 2015-2020 (DoF 2015a) outlines the long- and short-term fishery-specific management objectives for the WCDSCMF. The long-term objectives for the fishery focus on ensuring ecological sustainability and are specified in the harvest strategy as:

1) To maintain spawning stock biomass of the target species (i.e. crystal crabs) at a level where the main factor affecting recruitment is the environment;

- 2) To maintain spawning stock biomass of each retained (non-target) species at a level where the main factor affecting recruitment is the environment;
- 3) To ensure fishing impacts do not result in serious or irreversible harm³ to bycatch species populations;
- 4) To ensure fishing impacts do not result in serious or irreversible harm to ETP species populations;
- 5) To ensure the effects of fishing do not result in serious or irreversible harm to habitat structure and function; and
- 6) To ensure the effects of fishing do not result in serious or irreversible harm to ecological processes.

These objectives are operationalised as short-term (annual) objectives through PIs that can be measured and assessed against pre-defined reference levels so as to ascertain actual performance. The short term objectives for the WCDSCMF are provided in Table 6.

Table 6. Short-term ecological objectives for the WCDSCMF (Source: How et al. 2015).

Component	Short-term Operational Objectives
Target species	 ≥ 90% of the TAC is caught annually;
	• Catch rate of legally retainable crystal crabs is within the target range (and above the threshold); and
	 Catch rate of undersized crystal crabs and berried female crabs is above the threshold level
Retained (non-target) species	• The catch of champagne crabs is \leq 6.3 t; and
	• The catch of giant crabs is ≤ 0.8 t.
Bycatch (non-ETP) species	 Fishery impacts expected to generate an acceptable risk level (i.e. moderate risk or lower) to bycatch species populations.
Endangered, threatened and protected (ETP) species	 Less than three interactions with any particular ETP species in a year; and
	• Fishing impacts expected to generate an acceptable risk level, e.g. moderate risk or lower.
Habitats	• The area fished is \leq 125 blocks and
	 Annual fishing effort is ≤ 169 000 traplifts
Ecosystem	• Fishing impacts on ecological processes are at an acceptable risk level, e.g. moderate risk or lower; and
	 Fishing impacts on each ecological resource/asset is at an acceptable risk level, e.g. moderate risk or lower.

As noted above, one of the long-term objectives of the FRMA is to achieve optimum economic, social and other benefits from the use of fish resources for both stakeholders and the wider WA community. The long-term social and economic objective for the WCDSCMF is to "provide flexible opportunities to

³ The WCDSCMF harvest strategy notes that serious or irreversible harm relates to a change caused by the fishery that fundamentally alters the capacity of the component to maintain its function or to recover from the impact.

ensure fishers can maintain or enhance their livelihood, within the constraints of ecological sustainability" (DoF 2015a).

3.5.5 Decision making processes

Decisions about management of the WCDSCMF are driven by two main processes:

- annual decision-making processes that may result in measures to meet the short-term fishery objectives (driven by the control rules contained in the harvest strategy (DoF 2015a)).
- longer-term decision-making processes that result in new measures and/or strategies to achieve the long-term fishery objectives (i.e. changes to the management system) (How *et al.* 2015).

The harvest strategy guides management responses in the event that a short-term objective is not met (i.e. the PI is not maintained above the threshold reference level following an annual assessment). The harvest strategy is intended to make the decision-making considerations and processes for the management of aquatic resources publicly transparent and provide a basis for informed dialogue on management actions with resource users and other stakeholders. The harvest strategy control rules provide guidance for decision-making under the FRMA by the Minister for Fisheries, the Chief Executive Officer (CEO) of DoF or other delegated decision makers.

Where a PI is below the threshold level but above the limit level the harvest control rules require either a management review or specific changes to the TAC. The outcomes from the previous season's assessment against the defined reference levels (including any additional reviews undertaken as described above) are provided to industry by DoF at the AMM. It is at this stage that any issues arising from the annual evaluation of the fishery's performance are discussed. Where sustainability is considered to be at risk, changes to the management arrangements are discussed with the licensees, with appropriate changes implemented for the following fishing season.

There is also an established decision-making process in place to ensure the long-term management objectives are met. This process is triggered primarily as a result of analysing longer-term patterns or trends in the annual fishery performance. Variations in the operating environment caused by other factors (e.g. environmental conditions, market forces, fishing behaviour, conflicts with other user groups, marine planning, etc.) can also trigger an investigation and discussion that may lead to more-permanent changes (i.e. lasting more than one season) in the management system.

Longer-term changes are often implemented in legislation. The decision-making process that results in changing legislation involves a high level of consultation with industry and other stakeholders that may be affected by the change. In developing management options, consultation is undertaken with affected parties and relevant experts through a number of mechanisms, including:

- Directly in writing;
- At licensee meetings;
- At internal workshops, e.g. harvest strategy development, compliance risk assessments;
- Through the establishment of a tasked working group; and/or
- As part of external/expert workshops (e.g. an ecological risk assessments).

These forums are used to work through options for addressing emerging issues and provide the opportunity for decision-makers to consider advice from all interested stakeholders. Comments provided during this process also allow managers to take into account the broader implications of management options.

Following this consultation process, any new proposed management measures or strategies that require changes to legislation or publication are provided to the statutory decision maker (usually the CEO of DoF or the Minister) by the relevant Departmental aquatic management staff.

For example, at the 2014 AMM, licensees requested that the Department review the existing TAC for crystal crabs, with the view of increasing the TAC by 10% (as per the Harvest Strategy control rules related to achieving the economic objective for the fishery). Following the formal request by licensees, the Department's research division provided advice to the managers regarding the sustainability of the increase. As a result, following a formal consultation process, the management plan was amended to reflect a new TAC of 154 t of crystal crabs per annum.

3.5.6 Fleet and access rights

In 2003, management arrangements for deep sea crabs were formalised by the introduction of the West Coast Deep Sea Crustacean (Interim) Managed Fishery Management Plan. The Plan limited fishing activity to seven permit holders, with effort divided into five zones along the west coast. Fishers were only permitted to operate in specific zones, with one or two fishers permitted to operate in each zone. Between 2003 and 2007, catches of crystal crabs were maintained at around 200 t annually, with a peak of 227.5 t in 2007.

In 2008, a quota system was introduced with an annual TAC set at 140 t for crystal crabs. This TAC was set using the precautionary approach, as the species is known to be slow to mature and long-lived (Melville-Smith et al. 2007). Fishing zones were removed when quota was introduced, meaning that fishers were no longer restricted to specific areas. Consequently, fishing effort is no longer spread along the entire west coast but rather, is concentrated in a few areas.

The fishery transitioned from an interim to a fully-managed fishery on 1 January 2013. The TAC for crystal crabs remained at 140 t from 2008 to 2014. As noted above, this was increased to 154 t in 2015. A combined TAC of 14 t remains in place for giant and champagne crabs.

There are currently seven license holders in the WCDSCMF, with the quota units spread evenly across the licenses and fully-transferable between licence holders. Currently, the quota is consolidated onto three vessels.

Two of the licensees fish within the GCB and catch approximately 90% of the TAC. This region has the greatest area of depths between 500 – 800 m along the WA coast, which is the target depth for crystal crabs (Melville-Smith *et al.* 2007). One vessel also operates off the Perth metropolitan region, primarily targeting crystal crabs but also fishing for giant crabs on occasion.

Fishers in the WCDSCMF are only allowed to use traps. The operation of these traps is described in Section 3.4 above.

The WCDSCMF is open to fishing for the entire year; however, most fishing effort is focused between January and June, when weather conditions are typically more benign. Greater concentration of fishing effort also tends occur around the Chinese New Year (January/February) when there is strong market demand.

3.5.7 Regulation of fishing

The WCDSCMF is managed by DoF under the following legislation:

- the FRMA;
- Fish Resources Management Regulations 1995 (FRMR); and
- The West Coast Deep Sea Crustacean Managed Fishery Management Plan 2012.

Fishers must also comply with the requirements of the:

- The Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act);
- Western Australian Marine Act 1982; and
- Wildlife Conservation Act 1950 (Western Australia).

The FRMA provides the overarching legislative framework to implement the management arrangements for the WCDSCMF and contains the head powers to determine a management plan (section 54). WA management plans are subsidiary legislation which set out the operational rules that control managed commercial fishing activities. The management plan provides the power to issue and restrict the number of authorisations, to set the capacity of the fishery and to regulate other conditions and grounds relating to fishing.

The FRMR contain a number of requirements pertaining to all commercial fisheries in WA. For example, regulation 64 requires commercial fishers to submit mandatory catch returns in the form approved for that fishery.

The WCDSCMF Management Plan provides the framework for the management measures for the fishery. The Plan imposes the following restrictions on commercial operators.

- Fishery Boundaries and Closed Areas: The WCDSCMF boundaries include all WA waters of the Indian Ocean and the Timor Sea north of 34° 24' S latitude (to the Northern Territory border), on the seaward side of the 150 m isobath out to the extent of the EEZ.
- Limited Entry: As a managed fishery, access to the deep sea crustacean resource is limited to fishers holding a Managed Fishery Licence (MFL) issued pursuant to the Management Plan.
- Fishery Capacity: The maximum quantity of crystal crab that may be taken from the fishery during any licence period is 154 000 kg whole weight (7000 quota units). The maximum quantity of champagne and giant crabs combined that may be taken from the fishery during any licence period is 14 000 kg whole weight (700 quota units).

- Allocation of Units: Class A units confer an entitlement (under the authority of an MFL) to take an amount (kg) of crystal crab from the waters of the fishery in a licensing period, while Class B units confer an entitlement to take an amount (kg) of champagne crab and giant crab from the waters of the fishery in a licensing period. The licensing period runs from January 1st to December 31st annually.
- Gear/Method Restrictions: A person fishing in the fishery is only permitted to use a fish trap. The traps must comply with the following restrictions:
 - Have an internal volume that is less than 0.257 m³; and
 - Have two escape gaps, with each gap being (as nearly as practicable) rectangular in shape and when measured internally are \geq 294 mm in length by 54 mm in height.

Traps may be set individually or in a series joined by a line underwater, unless that fish trap or series is attached by a line to a surface float that:

- \circ Is \geq 150 mm diameter; and
- $\circ~$ Is branded or stamped with the initial letter and licensed fishing boat number of the boat that is being used to fish.
- Other Species Restrictions: On becoming aware of the taking of a rock lobster (*Jasus* or *Panulirus* spp.) or a finfish, a person or master of the boat must release the lobster or finfish back to the sea within five minutes of being brought onto the boat and before any other fish trap is pulled. When fishing in the waters of the fishery east of 126° 58' E, any scampi (Family Nephropidae) or white tailed bug (*Ibacus* spp.) brought on board must be released back to the sea within five minutes of being brought on board the boat and before any other fish trap is pulled.
- Specification of Port Areas: All crustaceans or bycatch⁴ are to be unloaded from a boat at the following specified port areas: Darwin, Broome, Port Hedland, Port Walcott (Port Samson), Port of Dampier, Beadon Creek (Onslow), Exmouth, Point Quobba (Blowholes), Carnarvon, Denham, Kalbarri, Port Gregory, Geraldton, Port Denison, Jurien Bay, Bunbury, Fremantle, Hamelin Bay and Augusta.
- Specification of Approved Fish Processors: All crustaceans or bycatch taken under the authority of a WCDSCMF MFL must be sold or transferred to an approved fish processor⁵.
- Reporting: All fish must be landed whole. Within 90 minutes of landing ashore, the master of the boat must accurately determine, and report to DoF within 48 hours:
 - o The number of containers which contain crustaceans or bycatch; and
 - The total gross weight of both the container and the crustaceans or bycatch being held in the container.

⁴ Under the Management Plan to mean: "any species of fish other than a crustacean or a finfish (other than baitfish) taken by a person fishing in the fishery under the authority of a licence."

⁵ As determined by the CEO via the WCDSCMF Notice of Approved Processors.

In addition to providing the unit allocations, an MFL also lists the name, registration number and length of the licensed fishing boat that may be used by the licence holder to operate in the fishery. There are currently three conditions listed on each licence that is permitted to operate in the fishery:

- Condition No. 16: Not to engage in fishing between Pt. Maud and Tantabiddi Well;
- Condition No. 17: The crew of this vessel shall not live ashore at the Abrolhos Islands; and
- Condition No. 18: No river or estuarine fishing.

A summary of the control measures in place in the WCDSCMF is provided in Table 7.

Measure	Description	Instrument
Limited entry	A limited number (7) of Managed Fishery Licences are permitted to operate in the WCDSCMF.	WCDSCMF Management Plan
Fishery Capacity	The maximum quantity of crystal, champagne and giant crabs that can be removed from the fishery annually is limited by their TAC.	WCDSCMF Management Plan
Allocation of Units	Class A units entitle fishers to retain an amount (kg) of crystal crabs; Class B units entitle fishers to retain an amount (20 kg) of champagne and/or giant crabs.	WCDSCMF Management Plan
Spatial closures	Fishers are not permitted to fish landward of the 150 m isobath.	WCDSCMF Management Plan
Gear controls	Fishers are only permitted to use fish traps with an internal volume less than 0.257m ³ and two escape gaps	WCDSCMF Management Plan
Minimum size limits	The legal minimum size limits in place for crystal, champagne and giant crabs is greater than the size at maturity for both males and females.	FRMR
Protection of berried females	Female crabs that are actively breeding ('berried') are required to be returned to the sea.	FRMR
Species restrictions	Fishers are not permitted to retain rock lobster or finfish throughout the entire fishery area or scampi or white tailed bug east of 126° 58' E	WCDSCMF Management Plan
Reporting	All fishers are required to provide catch and effort statistics (CAES) returns to the Department's research branch. All fishers are required to provide CDR forms to the Department within 48 hours of landing catch.	FRMR WCDSCMF Management Plan
Specification of Port Areas and Approved Fish Processors	All catches must be unloaded at approved port areas. All catches must be sold or transferred to an approved fish processor.	WCDSCMF Management Plan/Notice of Approved Processors

Table 7. Control measures and instruments of implementation in the WCDSCMF (source: How *et al.* 2015).

3.5.8 Review of management plan

Neither the FRMA nor the WCDSCMF Management Plan provide for the review of the management plan. However, there are mechanisms in place for monitoring and evaluating the performance of various aspects of the management system of the WCDSCMF.

Evaluation of the management system occurs by way of the following:

- 1. Strategic Planning and Risk Assessments
 - Fish Plan (an internal Department high-level operational management planning document) is reviewed annually in conjunction with WAFIC and Recfishwest.
 - An internal Department strategic management planning meeting is held annually prior to AMMs to discuss the issues of importance to the management of the fishery. Such reviews may identify management or compliance projects or may indicate the need for major changes to the management system.
 - An internal Department strategic research planning meeting is held at least annually.
 - Ecosystem-based Fisheries Management (EBFM) risk assessments are undertaken every year in the Status Reports of the Fisheries and Aquatic Resources of Western Australia: the state of the fisheries (e.g. Fletcher & Santoro 2014).
 - Internal Department compliance risk assessment meetings are held annually.
 - Internal Department committees that convert Department and stakeholder (WAFIC and Recfishwest) priorities into operational deliverables set within the budget context.
- 2. Review Workshops
 - AMMs are held with all WCDSCMF licence holders to discuss current research programs, management changes and future research needs. Additional meetings may also be held, on an as needs basis, throughout the year to address specific issues or initiatives.
 - Where appropriate, research workshops are held with stakeholder groups.
- 3. An annual evaluation of the performance of fisheries is undertaken by Departmental research, management and compliance staff, with outcomes used to assess the extent to which the management system has met both the long- and short-term objectives of the fisheries.
- 4. To evaluate how well the Department is meeting the overarching long-term objectives, performance against its key performance indicators is measured annually, with results published in the Department's *Annual Report* to Parliament (see, for example, DoF 2014).
- 5. Performance against fishery-specific short-term (operational) objectives for WCDSCMF is measured annually using the performance indicators, reference levels and management control rules that are explicitly identified in the harvest strategy (DoF 2015a).
- 6. The harvest strategy will be reviewed in 2020 however, the documents may be subject to further review and amended as appropriate within the five year period as further relevant information becomes available (e.g. new research, risk assessments, expert advice, etc.).

- 7. The fishery has been subject to assessment against the Commonwealth EPBC Act's *Guidelines for the Ecologically Sustainable Management of Fisheries*⁶ in 2003, 2007, 2009 and 2013.
- 8. There have been a number of reviews of the legislative framework (Act and regulations) under which the WCDSCMF operates. Additional reviews have focused on the effectiveness of compliance/enforcement.
- 9. Stakeholder and community satisfaction with the Department's fisheries management processes is reviewed annually and outcomes published in the *Annual Report*.

3.5.9 Monitoring, control and surveillance

DoF's Regional Services Division (RSD), comprising around 170 staff, delivers the Department's compliance and educational services for commercial fishing, with the support of the Communications and Education Branch. Regional compliance staff are also supported by other areas of the Department including the Serious Offences Unit, the Fisheries Intelligence Unit, the Compliance Statistics Unit, the Prosecutions Unit and the Strategic Policy Section of the RSD. The monitoring, control and surveillance (MCS) system for the WCDSCMF is administered by the Department's RSD through an Operational Compliance Plan (OCP) for the minor fisheries of the West Coast Bioregion.

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 WCDSCMF is considered as part of the WCB for compliance purposes, and compliance and community education services can be delivered by Fisheries and Marine Officers (FMOs), Community Education Officers and associated management and administrative support staff based at the Busselton, Bunbury, Mandurah, Rockingham, Fremantle, Hillarys, Lancelin, Jurien, Dongara and Geraldton offices, statewide mobile patrol units and officers aboard the large, ocean-going patrol vessels PV Houtman and Walcott.

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.

FMOs undertake regular land, air and sea patrols using a compliance delivery model supported by a risk assessment process and associated operational planning framework. Services provided by the landbased officers include processing inspections, landing and gear inspections, licensing checks, wholesale/retail checks and sea-based patrols utilising vessels ranging in size from five to 12 metres. They also provide support to seagoing personnel and provide a wide variety of educational and extension services through formal and informal media to commercial fishers, fishing related operations

⁶ Available at <u>http://www.environment.gov.au/resource/guidelines-ecologically-sustainable-management-fisheries</u>

(e.g. wholesale, retail, and processors), other resource management agencies and community members (Fletcher & Santoro, 2014).

The Department conducts compliance risk assessments every 1 - 2 years in major fisheries or those perceived to be at high risk and every 3 - 5 years in minor fisheries such as the WCDSCMF. The risk assessment process is normally undertaken by Departmental management staff, field-based FMOs and researchers, but where appropriate may also involve commercial and recreational fishers, fish processors and representatives from other interested stakeholder groups. The risk assessment process feeds into an OCP⁷, which provides the formal framework for the delivery of specific compliance services that remove or mitigate those 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 Fish Plan. The risk assessment process can be triggered by the introduction of new supporting legislation⁸ in a fishery/resource or the identification of any new major issues that would require RSD 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, market changes, intelligence or an upward trend in noncompliance.

There are broadly three levels of compliance risk assessment and associated planning and monitoring undertaken by the RSD. The WCDSCMF undergoes Level 1 compliance risk assessment, planning and monitoring, with a local annual review and update of compliance assessment and associated compliance strategies, manuals and procedures. This is usually undertaken by the relevant Compliance Manager, in consultation with the Regional Manager, Regional Fisheries and Management Officer, and Supervising Fisheries and Marine Officers, with a focus on a preparing annual work programs and taking into account minor or local changes affecting the fishery.

Within the Midwest region of the WCB, separate risk assessments and OCPs are developed for (1) the West Coast Rock Lobster Managed Fishery and (2) all other commercial fisheries combined. The WCDSCMF is included in the 'Commercial, Other' risk assessments and OCP, which covers all commercial managed fishery activities conducted within the lands and waters of the Midwest region between the Zuytdorp Cliffs to Wedge Island (i.e. where the majority of the commercial fishing activities of the WCDSCMF take place). The most recent combined risk assessment undertaken for these fisheries in the Midwest region was conducted in June 2012. A new compliance risk assessment will be conducted in 2015.

The Regional Office of the Department relevant to the WCDSCMF is located at Geraldton, and staff located at this office provide the primary on-ground compliance and educative delivery for the fishery. In addition to regional compliance staff, there are a number of units within the Department that support the delivery of compliance outcomes, including the Patrol Boat Business Unit, Serious Offences Unit, Fisheries Intelligence Unit, Compliance Statistics Unit, Prosecutions Unit, and the Strategic Policy Section of the Regional Services Branch.

⁷ By their nature, OCPs contain sensitive information and are only made available to authorised compliance personnel.

⁸ Supporting legislation refers to legislation that would allow non-compliance with the management framework to be detected and prosecuted with a reason chance of securing a conviction.

The primary monitoring activity in the WCDSCMF relates to the reporting and validation of crystal, champagne and giant crab catches for quota-monitoring purposes. The licensee and/or the master of every licensed fishing boat in the WCDSCMF is required (under regulation 64 of the FRMR) to submit accurate and complete catch and effort returns on forms approved by the Department. Historically, catch has been reported in monthly CAES returns; however, with the move to a quota-managed fishery in 2008, more-detailed CDRs were introduced for compliance purposes.

Under the management plan, the master of an authorised boat must accurately determine:

- a) The number of containers that contain crustaceans or other permitted retained species⁹; and
- b) The total gross weight of the container and the crustaceans/other species being held in the container.

Once the catch has been landed ashore, the master of the boat must then sign and specify in a CDR (in triplicate) accurate details of:

- The place, time and date of the landing of the crustaceans/other species;
- The name, licence number and business address of the approved processor to whom the crustaceans/other species have been or are to be consigned;
- The species and weight of any crustaceans/other species which is being retained for personal use;
- The name and business address of the person who is to transport the crustaceans/other species;
- The number of containers in which the crustaceans/other species is consigned;
- The determination of the net weight of each species of crustacean and each other species;
- The name of the master of the authorised boat and details of the licence under the authority of which the crustaceans/other species were taken; and
- The total individual amount of crystal crab, champagne crab and giant crab taken under the authority of the licence during the period for which is has been granted.

An original copy of the CDR must be attached to the catch at the place of landing prior to consignment¹⁰. A separate CDR must be completed for each species. The triplicate copies of each completed CDR must be provided to an office of the Department (within 48 hours of landing). All crustaceans/other species caught in the WCDSCMF must be taken to an approved fish processor. As per the management plan, a processor who has received any crustacean or other species taken from the WCDSCMF must immediately accurately determine the total weight of each species. Once the processor has determined the weight of each species, they must also submit a written record of that weight to the Department (within 24 hours).

As fishers are permitted to operate along the entire west coast of WA, the master of the vessel and fish processors generally provide their records to the nearest local Departmental offices (e.g. Denham,

⁹ Defined as 'bycatch' in the 2012 management plan.

¹⁰ Each occasion in which crustaceans/other species are transported from the place of landing is considered a separate consignment, with a separate CDR completed for each consignment.

Carnarvon, or Fremantle). Both electronic and hard copies of the records are provided to the relevant RSD staff at the Geraldton office.

The weights provided in the CDR copies and those provided by the processors are compared for each consignment. Should a discrepancy between the weight received for any species and the weight specified on the accompanying CDR occur, the Department's staff are required to notify a Fisheries Officer immediately (except where the discrepancy in weight determined by the processor for a species is less than 10% of the weight specified on the CDR for that species).

It is the total amount of crystal, champagne or giant crabs which have been reported by the approved processor in relation to a licence, together with any amount reported as retained for personal use, that is used by the Department to determine the total weight of fish taken under the authority of a licence for quota monitoring purposes.

FMOs deliver compliance activities directed at commercial fisheries in the Midwest region via:

- Wholesale/retail inspections targeting records and catch;
- Boat inspections to detect bycatch and off-quota product;
- Attending industry meetings;
- Intel-driven investigations;
- Land patrols, including opportunistic inspections of catch, licenses and bycatch;
- Sea patrols;
- Processor inspections; and
- Road-side check points (in collaboration with the WA Police) for protected fish species (e.g. undersize or berried females).

Surveillance activities, including licences and gear checks, in the WCDSCMF are undertaken by FMOs during in-port inspections.

FMOs 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.

Compliance activities undertaken during patrols are recorded and reported by FMOs using a daily patrol contact (DPC) form. These forms provide managers with information about:

- The number of field contacts made, which provides a context for the number of offences detected and reported. This includes random contacts and offences from random inspections;
- The number of targeted¹¹ contacts made, which provides information on the effectiveness of the intelligence gathering capacity at identifying 'targets';

¹¹ 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.

- 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 to 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) and unattended gear checks (e.g. traps). Contact details for the WCDSCMF are provided in Table 8.

			Year		
Vessel	2010	2011	2012	2013	2014
Vessel 1					1
Vessel 2		1			
Vessel 3	1		1	1	
Grand Total	1	1	1	1	1

Table 8. Contact details for the WCDSCMF for 2010 – 2014 (Source: How *et al.* 2015).

The DPC form also includes a section to record details of individual commercial vessel inspections/checks. These inspections may involve:

- Inspection of all fishing gear;
- Inspection of all authorizations; and
- Inspection of freezers and fish on board the boat.

DoF has also implemented an initiative called Fishwatch¹², 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.

There is an explicit and statutory sanction framework that is applied should a person contravene legislation relevant to the WCDSCMF. Sanctions to deal with non-compliance are listed in the FRMA and FRMR and can be severe, consisting of:

- Significant monetary penalties;
- Licence cancellations or suspensions;
- A reduction in trap number of over use (over-potting); and
- Confiscation of gear and catch.

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 and where it is, a prosecution brief is prepared by the FMO and submitted to their supervisor. Based on the *Prosecution*

¹² <u>http://www.fish.wa.gov.au/About-Us/Contact-Us/Pages/Fish-watch.aspx</u>

Guidelines, there are four tiers of enforcement measures applied by FMOs when an offence is detected in the fishery including:

- Infringement warnings;
- Infringement notices ;
- Letters of warning (LoW); and
- Prosecutions.

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. 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.

There have been few offences detected in the WCDSCMF in the last ten years (Table 9). Note the data provided here indicate offences that resulted in an outcome in-line with the enforcement measures described above.

Year	Infringement Warnings	Infringement Notices	Letters of Warning	Prosecution Briefs
2009				3*
2010				
2011	1	1**		
2012			1	
2013				
2014				

Table 9. Summary of detected offences in the WCDSCMF from 2009 – 2014 (Source: How et al. 2015).

*While prosecution briefs were prepared these infringements were not prosecuted.

**Fine was unpaid and additional penalties applied.

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 —
- Number of offences and successful prosecutions (dependent on whether compliance is undertaken in a random or targeted manner);
- 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).

3.5.10 Research plan

The current research plan for the WCDSCMF is detailed in the Research, Monitoring and Development (RMAD) Plan (DoF 2012b). The RMAD Plan provides a mechanism to identify and track any major gaps in knowledge, resources and expertise, which assists in capacity planning, future funding applications and planning in a broader context. The RMAD Plan is developed by scientists, managers and stakeholders who are involved across stock status, ecology, governance, policy and compliance.

The RMAD Plan forms part of the planning cycle for determining research, monitoring and assessment needs for a fishery/asset and specifically outlines the historical, current and proposed activities that will support the collection and analysis of data to assist the Department to meet the objectives of the FRMA over a five year period (currently 2011/12 to 2015/16). The RMAD Plan specifically outlines the activities that are currently planned or have already been identified that directly contribute to the effective management of the aquatic resources of WA. Consequently, it includes research, monitoring and assessment activities being done by other agencies that have been identified as being directly relevant to the fishery, sector, asset or issue. The focus of monitoring, assessment or research activities currently being undertaken within each of the sectors documented in the RMAD Plan have been the result of deliberations and discussions by internal Departmental committees and, for some sectors, with direct input from relevant industry/sector bodies (e.g. industry, advisory groups). There are four main ways that issues that require the development of further monitoring and research projects are identified:

- Existing monitoring that identifies issues that arise in the fishery (e.g. not achieving operational objectives; these can also be issues identified by stakeholders or researchers);
- Results of other research, management or compliance projects or investigations;
- Expert workshops (including risk assessments) and peer-reviews of aspects of research and management; and
- Industry liaison.

Once an issue or risk has been identified, an expert group or workshop may be established to review the available information and make recommendations regarding what research should be undertaken and, in many instances, help develop an appropriate research framework. The management actions in DoF's Fish Plan and the Research Strategic Plan inform the fishery-specific research plan to ensure that there is a coherent and strategic approach to research.

Given the diverse levels of risk and differing relative community values associated with each of the various assets, there are large differences in the level of research, monitoring and assessment activities planned among the different fisheries and ecosystems. These differences also reflect differential levels of ongoing information required to enable each of the current management processes to operate effectively and generate acceptable, cost effective outcomes.

The WCDSCMF is considered to be a moderate risk to west coast crustacean stocks, with the majority of research focused on crystal, champagne and giant crabs. As outlined in the WCDSCMF Research Plan (pp. 61 – 63 of the RMAD Plan) biological information has been collected through a number of projects funded by the Fishery Research and Development Corporation (FRDC), which have resulted in publications on crystal crabs (Melville-Smith *et al.* 2007), champagne crabs (Smith *et al.* 2004) and giant crabs (Levings *et al.* 2001). Ongoing research and monitoring is currently undertaken through fishers' monthly catch and effort returns data, which is used to inform annual stock assessments for these species. The WCDSCMF is scheduled to undergo a science review during the 2015/16 financial year to reassess the validity of the current stock assessments.

There is no ongoing research identified as part of the WCDSCMF Research Plan for bycatch, ETP species and benthic habitats, as the fishery is considered to be a low risk to these components. Additionally, no other fishery impacts had been identified at the time of publication of the RMAD Plan that warranted further research.

The status and progress of activities required under the WCDSCMF research plan are closely monitored by departmental research staff to ensure that actions are being undertaken within the designated timeframes. Any issues around milestones, monitoring, reporting, resourcing, etc., relevant to the plan are discussed with departmental management staff as they arise. Additionally, the Research Division's Supervising Scientists meet fortnightly to raise any issues, which may include concerns around the timing of delivery of research programs/information.

The results arising from projects outlined in the WCDSCMF research plan are made publicly available in a timely manner on the department's website¹³ in the form of FMPs, Fisheries Research Reports and Fisheries Occasional Papers. The outcomes of monitoring and research undertaken in accordance with the RMAD Plan are also reported in the annual *Status Report of the Fisheries and Aquatic Resources of Western Australia: the state of the fisheries* (e.g. Fletcher & Santoro 2014).

¹³ <u>http://www.fish.wa.gov.au/About-Us/Publications/Pages/default.aspx</u>

4. Evaluation Procedure

4.1 Harmonised Fishery Assessment

The WCDSCMF targets crystal crab. The targeted stock has not been the subject of another MSC assessment and there is no requirement for harmonisation of the Principle 1 and Principle 2 outcomes of the WCDSCMF with any other fishery. However, the WCDSCMF shares a management system with the MSC-certified Western Australia Rock Lobster Fishery, the Exmouth Gulf Prawn Trawl and Shark Bay Prawn Trawl Fisheries, as well as the West Coast Estuarine Managed Fishery (Area 2: Peel Harvey Estuary) & The Peel Harvey Estuary Blue Swimmer Crab Recreational Fishery, which are currently undergoing MSC assessment. Harmonisation is, therefore, required with the Governance and Policy PIs (3.1.1-3.1.4).

SCS is the CAB for the Western Australia Rock Lobster Fishery and the West Coast Estuarine Managed Fishery (Area 2: Peel Harvey Estuary) & The Peel Harvey Estuary Blue Swimmer Crab Recreational Fishery. SCS has recently harmonized the scoring of PI 3.1.2 for the Western Australia Rock Lobster Fishery with the draft scoring for the Exmouth Gulf Prawn Trawl and Shark Bay Prawn Trawl Fisheries following a request for harmonisation by the CAB, MRAG Americas.

In scoring the Governance and Policy PIs for the WCDSCMF, SCS has considered the scoring for the Western Rock Lobster Fishery and the West Coast Estuarine Managed Fishery (Area 2: Peel Harvey Estuary) & The Peel Harvey Estuary Blue Swimmer Crab Recreational Fishery. SCS has also considered the scores for PIs 3.1.1 to 3.1.4 contained in the PCRs released for the Exmouth Gulf Prawn Trawl Fishery and the Shark Bay Prawn Trawl Fisheries (MRAG Americas, Inc. 2015a and 2015b). SCS' scores for PIs 3.1.1 – 3.1.4 for the WCDSCMF were consistent with those for the Western Australia Rock Lobster Fishery, as well as the West Coast Peel Harvey Estuarine Fishery. This includes the harmonised scoring of PI 3.1.2, for the Exmouth Gulf Prawn Trawl and Shark Bay Prawn Trawl Fisheries as well, and did not necessitate further harmonization with MRAG Americas.

4.2 Assessment Methodologies

All aspects of the assessment process were carried out under the auspices of SCS Global Services, an accredited MSC certification body, and in direct accordance with MSC requirements using the MSC Certification Requirements (CR v1.3, January 2013). For this report the MSC Full Assessment Reporting Template v1.3 was used. The Default Assessment Tree (CR v1.3) was not altered. The risk based framework was not used for the assessment of this fishery. In order to ensure a thorough and robust assessment process, and a process in which all interested stakeholders could and would participate, SCS provided opportunities for input at all stages of the assessment process, whether required or not by MSC procedures. The general steps followed were:

Announcement of assessment and Team Selection (February - March 2015)

At this first step of the assessment process, SCS sought input from interested parties. SCS sent out an advisory through direct email and posting on select web sites requesting comment on the nominations of persons capable of providing the expertise needed in the assessment. No stakeholder submissions

were received regarding the initial nomination. The team was confirmed with an announcement that was posted on the MSC website on March 12th, 2015.

Setting Performance Indicators and Scoring Guideposts (March 2015)

The SCS assessment team met by conference call and determined that the default criteria of the CR v1.3 was adequate for the assessment and posted notice of its use to the MSC website (17th March 2015) to allow stakeholders to provide comments. No comments were received regarding the use of the default assessment tree and the assessment tree was confirmed on April 16th, 2015.

Input on Fishery Performance (March – April 2015)

SCS requested that the applicants compile and submit written information to the assessment team illustrating the fishery's compliance with the required PIs. At the same time, SCS requested that stakeholders submit their views on the fishery management system's functions and performance.

Meetings with industry, managers, and stakeholders (April 2015)

SCS planned for an onsite meeting and conducted meetings with industry, fishery managers, and fishery scientists in Perth, Western Australia. Stakeholders were invited to meet with the assessment team. Additional documentation was requested from the client and the management agency after the meeting.

Scoring fishery (April and October-November 2015)

The assessment team met on April 16th, 2015 in order to determine some preliminary scores using the required MSC methodology and the default assessment tree, without any direct input from the client group or stakeholders.

Drafting report (May - November 2015)

The assessment team in collaboration with the lead assessor, Dr. Sabine Daume drafted the report in accordance with MSC required process.

Selection of peer reviewers (November 2015)

SCS, as required, released an announcement (10 December 2015) of potential peer reviewers soliciting comment from stakeholders on the merit of the selected reviewers. No negative stakeholder comments were received and two peer reviewers were confirmed on the 28 January 2016. The peer review was conducted during February 2016.

Release of Public Comment Draft Report (21 April 2016)

SCS released this draft report for public comment, soliciting stakeholder response through posting on the MSC website and direct email to known potential stakeholders.

Release of this Final Report (26 May 2016)

SCS releases the final report with the team recommendation for a 15 working day objection period. Stakeholders will be informed through posting on the MSC website and direct email to known stakeholders.

Release of the Public Certification Report with Certification Decision (TBA)

4.3 Evaluation Processes and Techniques

4.4.3 Site Visits

The sites and people chosen for visits and interviews were based on the assessment team's need to acquire information about the management operations of the fishery under assessment. Agencies and their respective personnel responsible for fishery management, fisheries research, fisheries compliance, and habitat protection were identified and contacted with the assistance of the client group and stakeholders.

An Audit Plan was provided to the client, fisheries management and scientists before the meetings. Meetings took place on April 15th - 16th, 2015 with the representative for the Fishery, as well as scientists and managers involved in the fishery (see Table 10). Necessary documents were presented by the client to SCS prior and during the meetings. Follow up emails were send to request additional information after the meeting.

Name	Affiliation	Role
Sandy Morison	Morison Aquatic Sciences, SCS	Assessment Team Member
Sabine Daume	SCS Global Services (SCS)	Team Leader
Mary Lack	Shellack Pty Ltd, SCS	Assessment Team Member
Glen Bosman	Commercial fisher	Client representative
Neil Dorrington	Commercial fisher	Client representative
Guy Leyland	WAFIC	Client representative
Felicity Horn	WAFIC	Client representative
Lynda Bellchambers	WA Department of Fisheries	Research
Kendra Travaille	WA Department of Fisheries	Research
Alastair Harry	WA Department of Fisheries	Research
Martin Holtz	WA Department of Fisheries	Management
Tim Nicholas	WA Department of Fisheries	Management
Kim Walshe	WA Department of Fisheries	Management
Kim Nardi	WA Department of Fisheries	Management
Mick Kelly	WA Department of Fisheries	Compliance
Nick Caputi	WA Department of Fisheries	Research
Fiona Webster	WA Department of Fisheries	Research
Jason How	WA Department of Fisheries	Research
Matt Watson	MSC	Observer

Table 10. Assessment Meeting Attendees and Organisations.

4.3.1 Consultations

With the help of the client and Department of Fisheries as well as WAFIC staff, SCS compiled a list of stakeholders that have previously engaged in MSC assessments in the region and sent out separate emails to inform them about the scheduled onsite meeting. Apart from the people interviewed during the site visit (identified above) there were no additional interviews conducted. Stakeholders did not reply to any invitation to meet and did not submit any written comments before or after the onsite visit.

4.3.2 Evaluation Techniques

One of the most significant and difficult aspects of the MSC certification process is ensuring that the assessment team gets a complete and thorough grounding in all aspects of the fishery under evaluation. In even the smallest fishery, this is no easy task as the assessment team typically needs information that is fully supported by documentation in all areas of the fishery from the status of stocks, to ecosystem impacts, through management processes and procedures.

Under the MSC program, it is the responsibility of the applying organizations or individuals to provide the information required proving the fishery or fisheries comply with the MSC standards. It is also the responsibility of the applicants to ensure that the assessment team has access to any and all scientists, managers, and fishers that the assessment team identifies as necessary to interview in its effort to properly understand the functions associated with the management of the fishery. Last, it is the responsibility of the assessment team to make contact with stakeholders that are known to be interested, or actively engaged in issues associated with fisheries in the same geographic location.

In addition to information provided by the client (particularly How *et al.* 2015) and information gained during the site visit, the assessment team gathered information using a range of methods. The website of the DoF (www.fish.wa.gov.au) was a key source of documentation about the target species and other retained species.

Stakeholders were informed primarily via announcements posted on the MSC website, as well as direct email outreach.

Scoring was completed by consensus through team meetings, exchanging rationales, and draft scoring by email and report sharing.

Table 11. Scoring elements.

Component	Scoring elements	Main/not main	Data-deficient or
Target species	Crystal crab (Chaspan albus)	N/A	Not data deficient
Pataina di ana si s		IN/A	Not data deficient
Retained species	Giant crab (<i>Pseudocarcinus gigas</i>)	main	Not data deficient
	Champagne crab (Hypothalassia acerba)	not main	Not data deficient
Retained species (Bait)	New Zealand blue mackerel (Scomber australasicus)	main	Not data deficient
	New Zealand hoki (<i>Macruronus</i> novaezelandiae)	main	Not data deficient
	Western Australian herring (Arripis georgianus)	not main	Not data deficient
	Western Australian pilchards (Sardina pilchardus)	not main	Not data deficient
	Jack mackerel (Trachurus declivis)	not main	Not data deficient
Bycatch	Deep sea sharks	main	Not data deficient
	Western rock lobster	not main	Not data deficient
	Sea lice	not main	Not data deficient
	Spider crabs	not main	Not data deficient
	Octopus	not main	Not data deficient
ETP	Whales	N/A	Not data deficient
	Dolphins	N/A	Not data deficient
	Dugongs	N/A	Not data deficient
	Turtles	N/A	Not data deficient
	Sea snakes	N/A	Not data deficient
	Whale sharks	N/A	Not data deficient
	Manta rays	N/A	Not data deficient
Habitats	Mud-sand in deep water	N/A	Not data deficient
	Rocky and unconsolidated sediment	N/A	Not data deficient
	habitat with some benthos		
Ecosystems	Interaction of fishery with ecosystem	N/A	Not data deficient
	structure and function		

5. Traceability

5.1 Eligibility Date

The target eligibility date for product from the fishery to bear the MSC label is the date of certification (estimated 20th June 2016).

5.2 Traceability within the Fishery

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

All 7 licensees are included in the unit of certification with 5 consolidated quota holders operating 3 vessels in the fishery (see table below). The major ports within the fishery are Fremantle, Bunbury, Geraldton, Dampier, Port Hedland and Broome. In the Gascoyne Coast Bioregion, where the majority of fishing effort is focused, commercial fishing vessels utilise the Carnarvon and Denham Boat Harbour (DoF 2014).

Licence Number	Registration	Boat Name
WCCL2899	LFBG124	NAPOLEON
WCCL2900	LFBF312	TOYOSAKA MARU
WCCL2901	LFBF312	TOYOSAKA MARU
WCCL2902	LFBG124	NAPOLEON
WCCL2903	LFBE46	WAVE ACTION
WCCL2904		
WCCL2905		

Table 12. Licence numbers and vessel names operating in the WCDSCMF fishery.

5.2.1 Robustness of the management systems related to traceability

All licence holders are included in the fishery and mandatory catch and disposal records (CDRs) are in place. There is no at sea processing and no trans-shipment in the fishery; therefore, there is very little opportunity for substitution of certified with non-certified product. The risk of vessels fishing and landing catch from outside the permitted fishing area is low due to compliance checks which are appropriate for the size and scale of the fishery.

All product is landed at Fisheries approved landing ports, and all product landed by individual license holders is transported in company owned and operated vehicles to processing facilities where it is sold.

This provides a robust paper trail in relation to traceability to ensure only certified product can enter certified supply chains.

5.3 Eligibility to Enter Further Chains of Custody

Ownership does not change during transport, therefore Chain of Custody (CoC) starts at the processing facility or at the first point of sale which are only local markets. Product may then enter further CoC.

The eligible points of landings are ports in Fremantle, Bunbury, Geraldton, Dampier, Port Hedland and Broome in Western Australia, with some focus at the boat harbor ramps in Carnarvon and Denham where most of the fishing activity is occurring.

6. Evaluation Results

6.1 Principle Level Scores

Table 13. Final Principle Scores

Principle	Score
Principle 1 – Target Species	81.3
Principle 2 – Ecosystem	89.0
Principle 3 – Management System	95.4

6.2 Summary of scores

Principle	Component	Wt	PI	Performance Indicator (PI)	
		(L2)	No.		Score
One	Outcome	0.5	1.1.1	Stock status	90
			1.1.2	Reference points	80
			1.1.3	Stock rebuilding	N/A
	Management	0.5	1.2.1	Harvest strategy	70
			1.2.2	Harvest control rules & tools	80
			1.2.3	Information & monitoring	80
			1.2.4	Assessment of stock status	80
Two	Retained	0.2	2.1.1	Outcome	70
	species		2.1.2	Management	85
			2.1.3	Information	80
	Bycatch	0.2	2.2.1	Outcome	100
	species		2.2.2	Management	95
			2.2.3	Information	80
	ETP species	0.2	2.3.1	Outcome	95
			2.3.2	Management	90
			2.3.3	Information	80
	Habitats	0.2	2.4.1	Outcome	100
			2.4.2	Management	90
			2.4.3	Information	80
	Ecosystem	0.2	2.5.1	Outcome	100
			2.5.2	Management	95
			2.5.3	Information	95
Three	Governance	0.5	3.1.1	Legal & customary framework	100
	and policy		3.1.2	Consultation, roles & responsibilities	75
			3.1.3	Long term objectives	100
			3.1.4	Incentives for sustainable fishing	100
	Fishery	0.5	3.2.1	Fishery specific objectives	100
	specific		3.2.2	Decision making processes	95
	svstem		3.2.3	Compliance & enforcement	100
	,		3.2.4	Research plan	100
			3.2.5	Management performance evaluation	90

6.3 Summary of Conditions

Table 14. Summary of Conditions

Condition number	Condition	Performance Indicator	Related to previously raised condition? (Y/N/N/A)
1	By the 3rd surveillance audit, provide evidence that the harvest strategy for crystal crab is achieving its objectives.	1.2.1	N/A
2	By the third annual surveillance audit the client shall provide evidence that all retained species including giant crab and bait species with particular concern are highly likely to be within biologically-based limits.	2.1.1	N/A
3	By the 1st surveillance audit DoF to demonstrate that consultation processes have been amended to provide opportunity for all interested and affected parties to be involved.	3.1.2	N/A

Recommendation 1 (1.2.2): That the tabular description of the harvest control rule and outcomes shown in the decision tree are fully aligned with each other.

Recommendation 2 (1.2.2): That the indicators used as performance measures in the harvest strategy be consistently calculated and reported.

6.4 Determination, Formal Conclusion and Agreement

The assessment team recommended that the fishery as defined by the Unit of Certification in section 3.1 be awarded MSC-endorsed certification based on MSC Certification Requirements v1.3. This is based on the fact that no Performance Indicator falls below the required SG60 and also that the average score for each Principle is above 80. This decision is now available for stakeholders engaged in the assessment process to submit a supported objection if there is dissatisfaction with this determination. The objection period is 15 United Kingdom working days from the publication of this report.

(REQUIRED FOR PCR) - pending

1. 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.
References

Baker, C., Potter, A., Tran, M. and Heap, A.D., (2008). Geomorphology and Sedimentology of the Northwest Marine Region of Australia. Geoscience Australia, Record 2008/07. Geoscience Australia, Canberra. 220pp.

Brayford, H. and Lyon, G. (1995). Offshore Constitutional Settlement 1995. Fisheries Management Paper 77, WA Department of Fisheries, Perth.

Brewer, D; Lyne, V; Skewes, T & Rothlisberg, P (2007) Trophic systems of the North West Marine Region. CSIRO, Cleveland: Department of the Environment and Water Resources.

Barnette, MC 2001. A review of the fishing gear utilized within the Southeast Region and their potential impacts on essential fish habitat. NOAA Technical.

Currie, DR and Ward, TM 2009. South Australian Giant Crab (*Pseudocarcinus gigas*) Fishery. Fisheries Research Report for PIRSA. South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication No F2007/000698-2. Sardi Research Report Series 345.

Davie, P.J.F., Ng, P.K.L, Dawson, E.W. (2007). A new species of deep-sea crab of the genus *Chaceon* Manning & Holthuis, 1989 (Crustacea: Decapoda: Braychyura: Geryonidae) from Western Australia. *Zootaxa* 1505:51-62.

Department of Fisheries (2003). Application to Environment Australia on the West Coast Deep Sea Crab Interim Managed Fishery against the Guidelines for the Ecologically Sustainable Management of Fisheries for initial listing on Section 303DB of the Environment Protection and Biodiversity Act 1999. Department of Fisheries, Western Australia. 81 p. Retrieved from http://www.environment.gov.au/system/files/pages/27a598b0-725f-4fe0-b888ceec113eb956/files/application.pdf

Department of Fisheries (2009a). Application to the Department of the Environment, Water, Heritage and the Arts on the Western Australian West Coast Deep Sea Crustacean Interim Managed Fishery (WCDSCIMF) against the Guidelines for the Ecologically Sustainable Management of Fisheries. Perth, WA. 10 p. Retrieved from www.environment.gov.au/system/files/pages/.../submission-dec09.rtf

Department of Fisheries (2009b). Integrated Fisheries Management Government Policy. Retrieved from http://www.fish.wa.gov.au/Documents/ifm/IFMGovtPolicy_2009.pdf

Department of Fisheries (2009c). Strategic Plan 2009-2018 (Phase 3 2013-2015). Retrieved from: http://www.fish.wa.gov.au/Documents/corporate_publications/strategic_plan_2009-2018_phase3.pdf

Department of Fisheries (2012a). *A Resource-Based Management Approach for Recreational Fishing in Western Australia 2012 - 2017*. Fisheries Management Paper No. 252. Department of Fisheries, WA. Retrieved from http://www.fish.wa.gov.au/Documents/management_papers/fmp252.pdf.

Department of Fisheries (2012b). *Research, Monitoring, Assessment and Development Plan 2011 – 2012*. Fisheries Occasional Paper No. 106. Department of Fisheries WA. Retrieved from http://www.fish.wa.gov.au/Documents/occasional_publications/fop106.pdf.

Department of Fisheries. (2012c). Western Australian Government Fisheries Policy Statement March 2012. Department of Fisheries, WA, 12 pp. Retrieved from http://www.fish.wa.gov.au/Documents/corporate_publications/wa_govt_fisheries_policy_statement.pd http://www.fish.wa.gov.au/Documents/corporate_publications/wa_govt_fisheries_policy_statement.pd http://www.fish.wa.gov.au/Documents/corporate_publications/wa_govt_fisheries_policy_statement.pd http://www.fish.wa.govt_fisheries_policy_statement.pd http://www.fish.wa.govt_fisheries_policy_statement.pd

Department of Fisheries. (2012d) West Coast Deep Sea Crustacean Managed Fishery Draft Management Plan 2012; Fisheries Management Paper No. 259; Department of Fisheries WA, Perth. 20 pp. http://www.fish.wa.gov.au/Documents/management_papers/fmp259.pdf

Department of Fisheries (2014). Department of Fisheries Annual Report to Parliament 2013/14. Retrieved from <u>http://www.fish.wa.gov.au/About-Us/Publications/Pages/Annual-Report.aspx</u>

Department of Fisheries (2015a). *West Coast Deep Sea Crustacean Resources Harvest Strategy 2015-2020 Version 1. West Coast Deep Sea Crustacean Managed Fishery*. Fishery Management Paper No. 272. Department of Fisheries, Western Australia.

Department of Fisheries (2015b). *Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia*. Fisheries Management Paper No. 271. Department of Fisheries, Western Australia.

Department of the Environment and Water Resources (2007). Guidelines for the Ecologically Sustainable Management of Fisheries. Retrieved from <u>http://www.environment.gov.au/system/files/resources/97ff9461-5ccf-49cb-9368-</u> <u>8bde5f243c0b/files/guidelines.pdf</u>

Eno, N. C., MacDonald, D. S., Kinnear, J. A. M., Amos, C. S., Chapman, C. J., Clark, R. A., Bunker, F. St P. D., and Munro, C. 2001. Effects of crustacean traps on benthic fauna. – ICES Journal of Marine Science, 58: 11–20.

FAO (1995). Interaction of Thai tuna fisheries: Problems, research and development. http://www.fao.org/docrep/003/w3628e/w3628e0m.htm

Fletcher, W.J. and Santoro, K. (eds). (2014). *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2013/14: The State of the Fisheries*. Department of Fisheries, Western Australia. Retrieved from

http://www.fish.wa.gov.au/Documents/sofar/status_reports_of_the_fisheries_and_aquatic_resources_2013-14.pdf

Hartmann, K., Gardner, C., Linnane, A., Gorfine, H., How, J. (2014). Status of key Australian Fish stocks reports 2014. Giant Crab. 161-166.

How, J.R., Webster, F.J., Travaille, K.L. & Harry, A.V. (2015). *MSC Report Series: West Coast Deep Sea Crustacean Managed Fishery*. Department of Fisheries, Western Australia.

Jenner, K.S., Jenner, M-N.M., McCabe, K.A. (2001). Geographical and temporal movements of humpback whales in Western Australian Waters. APPEA Journal 2001: 749-765.

Jones, D.S. and Morgan, G.J. (1994). A field guide to crustaceans of Australian waters. Reed. Sydney Australia. 216pp

Levings, A., Mitchell, B. D. McGarvey, R., Mathews, J., Laurenson, L., Austin, C., Heeron, T., Murphy, N., Miller, A., Roswell, M. and Jones, P. (2001). *Fisheries biology of the giant crab* Pseudocarcinus gigas. FRDC Final Report 93/220 and 97/132. 390 p.

Melville-Smith, R., Norton, S.M.G., Thomson, A.W. (2007). *Biological and fisheries data for managing deep sea crabs in Western Australia.* Fisheries Research Report No. 165, Department of Fisheries WA, Perth. 248 pp. Retrieved from <u>http://www.fish.wa.gov.au/Documents/research_reports/frr165.pdf</u>

Ministry for Primary Industries (2013). Fisheries Assessment Plenary, May 2013: stock assessments and yield estimates. Compiled by the Fisheries Science Group, Ministry for Primary Industries, Wellington, New Zealand. 1357 p.

Ministry for Primary Industries (2014). Fisheries Assessment Plenary, May 2014: stock assessments and stock status. Compiled by the Fisheries Science Group, Ministry for Primary Industries, Wellington, New Zealand. 1381 p.

MRAG Americas Inc. (2015a) Full Assessment Exmouth Gulf Prawn Trawl Fishery Public Certification Report. Retrieved from <u>https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/indian-ocean/exmouth_gulf_prawn/assessment-downloads-1/20151021_PCR_PRA472.pdf</u>

MRAG Americas Inc. (2015b) Full Assessment Shar Bay Prawn Trawl Fishery Public Certification Report. Retrieved from <u>https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/indian-ocean/shark_bay_prawn/assessment-downloads-1/20151022_PCR_PRA477.pdf</u>

Ng, P.K.L., Guinot, D. and P.J.F. Davie (2008). Systema Brachyurorum: Part I. An annotated checklist of extant brachyuran crabs of the world. **Raffles Bulletin of Zoology. Supplement** 17:1-296.

Richardson, L., Mathews, E. and Heap, A. (2005). Geomorphology and Sedimentology of the South Western Planning Area of Australia: review and synthesis of relevant literature in support of Regional Marine Planning. Geoscience Australia, Record 2005/17. 124pp.

Shester, G.G. 2008. Sustainability in small-scale fisheries: an analysis of the ecosystem impacts, fishing behavior and spatial management using participatory research methods. Doctor of Philosophy Degree Thesis. Stanford University, Stanford, CA, USA. September, 2008. 225 pp. http://gradworks.umi.com/3332993.pdf

Shaw, J. (2000). Fisheries Environmental Management Review: Gascoyne Region. Perth: Department of Fisheries WA.

Smith, K.D., Potter, I.C. and Hall, N.G. (2004). Biological and fisheries data for managing the deep-sea crabs *Hypothalassia acerba* and *Chaceon bicolor* in Western Australia. Final report to Fisheries Research

and Development Corporation on Projects 1999/154 and 2001/055. Fisheries Research and Development Corporation. Retrieved from http://researchrepository.murdoch.edu.au/19800/.

Wadley, V. and Evans, D. (1991). Crustaceans from the deepwater trawl fishery of Western Australia. CSIRO Division of Fisheries, Australia 44pp.

Waite, A.M., Thompson, P.A., Pesant, S., Feng, M., Beckley, L.E., Domingues, C.M., Gaughan, D., Hanson, C.E., Holl, C.M., Koslow, T., Meuleners, M., Montoya, J.P., Moore, T., Muhling, B.A., Paterson, H., Rennie, S., Strezelecki, J., and Twomey, L. (2007). The Leeuwin Current and its eddies: an introductory overview. *Deep-Sea Research* 54: 789-796.

Western Australian Government Gazette (2015). No. 123. 11 August 2015. Page 3227.

Appendices

Appendix 1 Scoring and Rationales

Appendix 1.1 Performance Indicator Scores and Rationale

PI 1.1.1

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	
а	Guidepost	It is likely that the stock is above the point where recruitment would be impaired.	It is highly likely that the stock is above the point where recruitment would be impaired.	There is a high degree of certainty that the stock is above the point where recruitment would be impaired.	
	Met ?	Y	Y	N	

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing			
		berried females and undersized crab. The CPUE of legal-sized animals has progressively increased since 2003 and that of berried females has been variable but with no clear tree CPUE of undersized crabs, a more direct measure of recruitment levels, has been declini The fishery is managed under the assumption that, as a long-lived, deep-water species, crystal crab would have stable recruitment (How et al. 2015). The declining CPUE for undersized animals, however, suggests that recruitment may be more variable than was anticipated. The fishery has only been operating since 2000 which is a relatively short the for a species that is estimated to live to 25-30 years, and to take 14 years to reach legal size. This decline in CPUE for undersized animals, which began in 2003 (with one year of higher catch rates in 2005) is therefore unlikely to be an effect of the fishery on recruitment and we consider that the stock is likely to be above the threshold that woul impair recruitment. Therefore, the requirements of the SG60 level are met.			
	Justification	The current size limits add recruitment. These limits p size at sexual maturity and mature females. The standardised CPUE for the introduction of quota i greater than is attributable imprecision of this indicato potential. The declining trend in stan of recruitment. How et al. contributed to this decline standardization and the dif causes of this decline are u Given the relatively short h are indices of abundance of of evidence about stock leve been operating under wha period of monitoring is nee Therefore, we consider it t recruitment would be impa outcome. Therefore, the re SG100 level.	to the level of confidence the provide protection for both fe the prohibition on taking eg berried females is an indicat n 2007/08, the level of year- e to any potential changes in or, there are no trends that su dardised CPUE for undersize (2015) suggested that the sh . Depth, however, is included fferences in size composition under investigation (How et a history of the fishery and the of the different catch compor vels or the impacts of the fish t was considered to be a con eded to provide a high degree o be highly likely that the sto aired but do not attach a high equirements of the SG80 leve	at the fishery has not decreased emale and male crabs beyond their g-bearing females further protects tor of spawning potential, but since to-year variability in this indicator is stock size. Despite the apparent uggest any decline in spawning d crab may indicate declining levels ift to shallower depths has d as a factor in the CPUE with depth are minimal. The al. 2015). even shorter period for which there nents, there is not yet a strong body hery on recruitment. The fishery has uservative TAC but a longer time e of certainty that this is the case. bock is above the point where h degree of certainty to this el are met, but not those of the	
b	Guidepost		The stock is at or fluctuating around its target reference point.	There is a high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.	
	Met?		Y	Y	

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing				
Justification	A target range for standardised CPUE has been identified rather than a specific target point. As indicated in CB2.3.5, the PIs for stock status and reference points are interprete against this CPUE range. Standardised CPUE for retained crystal crab has been within the target in recent years. Th target range, however, has been defined as the range of CPUE values observed over the reference period from 2003 to 2012, so there have only been 2 years since this reference period during which CPUE could have been outside this range. Confidence intervals provided for these estimates of standardised CPUE show that the CPUE index is estimated with relatively little error and that recent CPUE is highly likely to be well above both the threshold and limit reference points. We note that, as for berried females, the level of inter-annual variability in the index is greater than could be attributed to variations in sto size so the confidence intervals probably underestimate the uncertainty in the index of abundance. Nevertheless, there is a high degree of certainty that the CPUE index for retained crystal crab has been at or above target levels in recent years, even though this i partly due to the way the target range has been defined Another management objective is to maintain catch at levels above 90% of the TAC. The latest assessment indicated that the catch has been above the 90% threshold since quota was introduced in 2008 and the stock has been well within the target region for catch sinc it became a fully managed fishery in 2008. However, whether the TAC is met is not a necessarily closely related to stock status so, for assessment of this PI, less weight is assigned to whether or not this objective is met. The requirements of the SG80 and SG100 levels are therefore met.				
References	How et al. (2015)				
Stock Status relat	tive to Reference Points				
	Type of reference point	Value of reference point	Current stock status relat reference point	ive to	
Target reference point	TAC of crystal crab Standardised CPUE of crystal crab	Target: TAC is achieved (≥ 90% caught); CPUE of legally-retainable crabs is ≥ 1.34 and < 2.54 kg/traplift; and CPUE of sublegal crabs and berried females are ≥ 2.57 and 1.74 crabs/traplift, respectively	In 2014 the TAC was 140 and the catch was 139.8 t Tabulated data on CPUE was not made available to the assessment team but CPUE of retained crabs was above the target range, and CPUE of sublegal and berried females were above threshold levels.		
Limit reference point	standardised CPUE of crystal crab	CPUE of legally-retainable crabs is 1.07 kg/traplift	rabulated data on CPUE v made available to the asso team but CPUE was above LRP.	vas not essment e the	
OVERALL PERFOR	OVERALL PERFORMANCE INDICATOR SCORE: 90				

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
CONDITION NUM	CONDITION NUMBER (if relevant):		

PI 1.1.2

PI 1.1.2		Limit and target reference points are appropriate for the stock			
Scoring Issue		SG 60	SG 80	SG 100	
a	Guidepost	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	Reference points are appropriate for the stock and can be estimated.		
	Met?	Y	Y		
	Justification	Target ranges for CPUE and crab rather than specific ta interpreted PIs for stock st the limit reference point and fishery. These are appropriof the fishery. The reference points are and 2015b), the use of empirica is appropriate given the siz and assessment procedure This meets the requirement	d the commercial catch have arget reference points. As ind atus and reference points ag re more than generic, being b iate for stock, given the data lso in line with the Departme al catch and catch rate-based are and scale of the fishery and is in place.	recently been identified for crystal icated in CB2.3.5 we have ainst these ranges. This range and based on data collected from the available, the species and the scale ent's Harvest Strategy Policy (DoF I reference points in the WCDSCMF d is consistent with the monitoring	
b			The limit reference point	The limit reference point is set	
	Ļ		is set above the level at	above the level at which there is	
	sod		which there is an	an appreciable risk of impairing	
	ide		appreciable risk of	consideration of precautionary	
	Gu			issues.	
	Met?		Y	Not scored	

PI 1.1	.2	Limit and target reference points are appropriate for the stock			
		A limit reference point has been set for the standardised CPUE of legally retained crab and is defined as the value 20% below the threshold reference point (i.e. 0.8 times the threshold). The settings are based on values observed within the chosen reference period, 2003 – 2012, but the actual value of the threshold (and hence the limit reference point) are re-calculated annually during the catch rate standardisation process.			
		The limit reference point is dependent on the choice of reference period and includes a period when catches were higher than the recently set TAC of 140kg. Since the beginning of the reference period (2003), the CPUE of legally retained crab has generally increased, despite these higher early catches, suggesting that there has been no substantial reduction in stock size and no appreciable risk of impairing reproductive capacity.			
There are also two secondary performance indicators: mean annual standa (1) berried female and (2) sublegal sized crystal crabs. These indicators prov on spawning stock biomass and recruitment levels of crystal crabs respectiv reference levels have been set for them. The CPUE for berried females is va without a trend suggesting that reproductive capacity has not been impaire undersize crystal crab has generally declined since 2003 (with a slight increa- and is currently marginally above the lower threshold (Figure 12). Given the indicators, this decline is likely to reflect environment effects on recruitment than reduced reproductive output.				mean annual standardised CPUE of These indicators provide information rystal crabs respectively, but no limit berried females is variable but has not been impaired. The CPUE of 3 (with a slight increase after 2010) Figure 12). Given the other effects on recruitment levels rather	
	Justification	The CPUE limit reference p reference period. It is there be from a reduction in stoo gained over time about the the selection of the limit re history, substantial lags be and we consider that these considered. This meets the requiremen	oint is below any CPUE level efore uncertain what the imp cks to levels that would produ- e dynamics of this stock and o eference point. Nevertheless, tween spawning and recruitr e are precautionary issues that ats of the SG 80 level.	observed in the fishery during the bact on reproductive capacity would uce such a CPUE. Knowledge will be confidence should increase about , this is a fishery with a short ment, and a new harvest strategy at have not been explicitly	
C	Guidepost		The target reference point is such that the stock is maintained at a level consistent with B _{MSY} or some measure or surrogate with similar intent or outcome.	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.	
	Met?		Y	Not scored	

PI 1.1.2		Limit and target reference points are appropriate for the stock			
		The target reference range of mean annual standardized CPUE of legally-retainable crystal crabs is based on a period of generally increasing catch rates with no evidence of impaired recruitment.			
This target CPUE range is was selected with the intent of maintaining the stock above B _{MSY} (How et al. 2015). The intent is also to maintain CPUE within the ran historic levels during the reference period and to prevent declines in CPUE whice indicate a risk to biological sustainability. A TAC of 140 t was been in place since the fishery became quota managed in 20 was increased to 154 t in 2015, a level that is still well below the catch sustain fishery before it became quota-managed.					
	Justification	Although the stated intent is to maintain the stock at B_{MSY} or higher the choice of target range and the current TAC allow catches above the B_{MSY} level originally estimated by Melville-Smith et al. (2006) from the first four years of catch data which was in the range of 30-90 t p.a. Subsequently, Melville-Smith et al. (2007) suggested that the estimate of unfished biomass on which this was based was 'conservative' but still concluded that the best estimate of the long term sustainable yield from this fishery was 30-90 t, which is substantially less than the TAC of 140 t. Nevertheless, we consider that the stable or positive trends in the indicators such as CPUE over a much longer period than the four years used for that early analysis (Error! Reference source not found.), support the view that the stock has not been substantially depleted and, as outlined in the research advice in support of an increased TAC (Appendix 6), are good evidence that catches up to a TAC of 154 t are consistent with a B_{MSY} target.			
d For key low trophic level stocks, the target reference point takes into account the ecological role of the stock.					
	Met?	Not relevant			
	cation	Crystal crab is not a key low trophic level species.			
	Justifi				
References		How et al. 2015; Melville-Smith et al. 2007; DoF 2015a			
OVERA	LL PERFOR	MANCE INDICATOR SCORE: 80			
CONDI	CONDITION NUMBER (if relevant):				

PI 1.1.3

The stock is not depleted; therefore, this PI is not considered relevant.

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidepost	Where stocks are depleted rebuilding strategies, which have a reasonable expectation of success, are in place.		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the specified timeframe.	
	Met?	(Y/N)		(Y/N)	
	Justification	Not relevant.			
b	Guidepost	A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or 2 times its generation time. 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 one generation time for the depleted stock.	
	Met?	(Y/N)	(Y/N)	(Y/N)	
	Justification	Not relevant.			
C	Guidepost Set	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within a specified timeframe.	There is evidence that they are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within a specified timeframe. (Y/N)		

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specifi timeframe	ed
	Justification	Not relevant.	
References		Not applicable.	
OVERALL PERFOR		MANCE INDICATOR SCORE:	
CONDI		BER (if relevant):	

PI 1.2	.1	There is a robust and precautionary harvest strategy in place			
Scoring	g Issue	SG 60	SG 80	SG 100	
a	Guidepost	The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points.	
	Met?	Y	Y	Not scored	
	Justification	Four indicators are used to found.) with empirical reference and if the primary indicator remain above their designs harvest strategy that has no would follow if those cond constant catch approach is harvest control rules are for any indications that the stor reference period. Therefore, we consider that designed to be responsive assumption that the comme vary as the stock size varies The constant catch approa suitable for a long-lived sp not especially long-lived (the the level of recruitment vau undersized crabs suggests anticipated. Nevertheless, any potential declines in the secondary indicator. Although there is no fisher the degree of this responsi (the harvest control rules are form a coherent package of achieve the intended stock Recreational catch of deep sea fishing effort by the re- This meets the requirement	b assess the status of crystal of erence points derived from the (2015a) describe the fishery By definition, a constant catch e that the TAC has not been v ors remain within the target ra- ated thresholds, the TAC may now been adopted specifies le- itions should not continue to s conditional on the future lev- bollowed, the level of exploitation ock has not remained at the level at the harvest strategy for cry- to the state of the stock when hercial CPUE (on legal sized, k s and TACs would be adjusted is described by How et al. eccies with low recruitment va- hey are reported to have a main riability is not yet well under that recruitment may be mo- the harvest control rules are ne levels of recruitment by us ry-independent index of the s iveness to be measured, the and tools, the monitoring sys- of measures that are reasonal contangement objectives. o sea crab species is considered creational sector. nts of the SG 60 and SG 80 level	crabs (Error! Reference source not nese assessment indicators. as being managed on the basis of a h approach is not responsive to the aried since it was first set in 2008 anges and the secondary indicators y not be varied. Nevertheless, the evels of reductions in TAC that be met. Thus, the continuation of a vels of all the indicators. If the tion would be varied if there were evels that existed during the ystal crab (DoF 2015a) is in fact en necessary, on the reasonable perried and immature stock) will d accordingly. (2015) and DoF (2015) as being ariability. Crystal crab, however, are haximum age of 20-30 years) and stood. The decline in CPUE of re variable than may have been also designed to take account of sing CPUE of undersized crabs as a tate of the stock that could allow elements of the harvest strategy tem and the assessment method) bly expected to work together and ed to be negligible, due to low deep- vels.	

PI 1.2.1		There is a robust and precautionary harvest strategy in place			
b	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.	
	Met?	Y	Ν	Not scored	
C	Suidepost Justification	The harvest strategy is bas commercial fishery will pro adjustments to the current sustained by the fishery be CPUE, will maintain the sto increasing bias as fishers in are plausible arguments as indices is likely to work. Therefore, this meets the r The harvest strategy has on was only finalized in 2015, achieving its objectives. This meets the requirement Monitoring is in place that is expected to determine whether the harvest strategy is working.	ed on the assumption that st ovide a robust index of the cr t TAC (which was set at appro- fore it became quota-manag ock at acceptable levels. Com nprove their fishing power over to why the harvest strategy requirements of the SG 60 level nly recently been developed there has not yet been time hts of the SG 60 level, but not	andardised CPUE indices from the ystal crab resource and that ximately two-thirds of the catch ed in 2008), based on variation in mercial CPUE is often prone to ver time but we consider that there based on these standardised vel. and has not been tested. Also, as it to obtain evidence that it is	
	Met?	Y			
d	Justification	A comprehensive range of throughout the history of t commencement of the fish composition of landings, d conditions. These are suffic monitor whether the harve This meets the requiremen	fishery-dependent data has the fishery, with some datase nery in the early 2000s. These etailed effort and discarding, cient to allow the indicators t est strategy is working as ant hts of the SG 60 level.	been collected on crystal crabs ets extending back to the e data include information on size as well as environmental to be regularly updated and to icipated.	
a	Guidepost			reviewed and improved as necessary.	
	Met?			Not scored	

PI 1.2	.1	There is a robust and precautionary harvest strategy in place			
	Justification	Not scored as not all scoring issues reach the SG80 level.			
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of a that shark finning is not ta place.	certainty aking
	Met?	Not relevant	Not relevant	Not relevant	
	Justification	Not relevant because shar	ks are not a target species.		
References		DOF 2015a.			
OVERA	OVERALL PERFORMANCE INDICATOR SCORE: 7			70	
CONDI	TION NUM	IBER: 1			
By the achievi	3rd survei ng its obje	llance audit, provide eviden ectives	ce that the harvest strategy	for crystal crab is	

PI 1.2.2

PI 1.2.2		There are well defined and effective harvest control rules in place			
Scoring	g Issue	SG 60	SG 80	SG 100	
a Gen harv that the whi exp refe app		Generally understood harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.	Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.		
	Met?	Y	Y		
		 The harvest strategy includes a limit reference point only for one primary indicator: standardised CPUE of legally-retained crabs. If this indicator falls below the threshold leve a reduction in TAC by at least 50% is indicated by the harvest control rule. We consider th to be a well-defined control rule and the response prescribed for falling below the target range should ensure that the exploitation rate is reduced as the limit reference point is approached. The application of this rule in 2015, however, has indicated that some additional attention is needed to ensure that the harvest control rule is consistently applied as intended. As described under section 3.3.4, there are three areas where improvements are required: There was an error in the calculation of the target reference period. Although we do not have major concerns that the higher TAC that resulted from this error would be a threat to the sustainability of the resource, the process that led to the 			
		 error should be reviewed. 2. There is an inconsistency between the tabular and diagrammatic representations of the harvest control rule with the former making no provisions for a TAC increase but the latter providing for an increase of up to 10% when the primary indicator is above the target range. 3. There are also inconsistencies in the time series produced for the secondary indicators of CPUE for berried females and under-sized crabs. 			
		These issues indicate that the process developed to implement the new harvest strategy requires attention. But they not considered sufficient, either individually or collectively, to prevent the harvest control rules from still being considered as well defined.			
	lustification	Recommendations have be issues.	een made in Section 3.4 and l	below to address the other two	
b	-	This meets the requirement	its of the SG 60 and SG 80 lev The selection of the	reis. The design of the harvest control	
	Guidepost		harvest control rules takes into account the main uncertainties.	rules takes into account a wide range of uncertainties.	
	Met?		Y	Ν	

PI 1.2.2		There are well defined and effective harvest control rules in place		
		Although How et al. (2015) account a wide range of ur described.) mention that the "design of ncertainties," the uncertainti	the harvest control rules take into es considered are not explicitly
		How et al. (2015) state that uncertainty in stock status is accounted for by considering four performance indicators that provide information on the status of the legally-retainable component of the stock, spawning stock biomass and recruitment, as well as the ability of the fleet to catch the quota. The assessment relies on trends in standardised commercial CPUE and the validity of using CPUE as an index of relative abundance is probably the main uncertainty in the assessment. Using three CPUE indicators helps with some level of uncertainty, but all may be subject to the same biases. The standardization process, however, should address the main potential sources of such bias.		
How et al. (2015) also suggest that uncertainty is also accounted for by the harvest strategy triggering pre-emptive management responses (e.g. review, minor quoreductions) at the first sign of any evidence that the stock may be at risk.			ccounted for by the harvest s (e.g. review, minor quota ock may be at risk.	
		This meets the requiremer	nts of the SG80 level.	
	Justification	Although we consider that account we do not conside there are also issues with t trends in the size composit additional uncertainty is th threshold. As outlined in th only could the indicator me a year but there may a rea the indicator is within the Therefore the requirement	the harvest control rules tak er that it accounts for a wide the level of discarding, the su cion of the catch that have no be effect of the proximity of t the section on the Harvest Str cove from being within the ta sonable probability that the target range.	the main uncertainties into range of uncertainties. For example, invival of these discards and possible of been explicitly accounted for. An the limit reference point to the ategy, this proximity means that not rget range to below the limit within stock is in fact below the limit while
с		There is some evidence	Available evidence	Evidence clearly shows that the
		that tools used to	indicates that the tools in	tools in use are effective in
	st	implement harvest	use are appropriate and	achieving the exploitation levels
	e b o	appropriate and	exploitation levels	rules.
	uide	effective in controlling	required under the	
	U	exploitation.	harvest control rules.	
	Met?	Y	Y	Ν

PI 1.2	.2	There are well defined and effective harvest control rules in place	
		The main tool used to regulate the exploitation rates is the TAC. Since this was intr in 2008 the landed catch has never exceeded this level.	oduced
		The other tools used to implement harvest control rules are also important for con exploitation levels and include fishery boundaries and closed areas, limited entry, minimum size limits and gear restrictions. While most of these measures have been place for a number of years, the harvest strategy itself was only introduced in 2015	trolling n in 5.
		As a result of the tools implemented, there is evidence that threshold and limit levery yet to be triggered for the fishery. The CPUE for legal size crystal crabs has generall increased (Figure 11) and has been generally stable for berried crabs (Error! Refere source not found.).	els have y ence
		However it should be noted that for immature crabs the CPUE is marginally above lower threshold and has generally declined since 2003 (Figure 12).	the
		The history of the performance of the fishery indicates that the tools that have pre- been used to manage the fishery and which have been effective for controlling exp should continue to be effective. They are now linked to the recently introduced har strategy but evidence from prior to its introduction is relevant to and instructive for assessment of their appropriateness for achieving its intended outcomes.	viously loitation rvest r the
		Therefore, the requirements of the SG 60 and 80 level are considered to be met.	
	stification	There is limited evidence about levels of discards and discard mortality, so the tota mortality rate is not well characterized. Such mortality is assumed to be small, but estimates of such mortality are factored into the TAC. Therefore, we do not consid to be clear evidence that the required exploitation rates are being achieved.	l fishing no er there
Refere		Therefore, the requirements of the SG100 are not considered to be met.	
		90	
OVERA		WANCE INDICATOR SCORE.	00
<u>Recom</u> shown	mendati i in the de	on 1 (1.2.2): That the tabular description of the harvest control rule and outc cision tree are fully aligned with each other.	omes

<u>Recommendation 2 (1.2.2)</u>: That the indicators used as performance measures in the harvest strategy be consistently calculated and reported.

PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy			
Scoring Issue		SG 60	SG 80	SG 100	
a	Guidepost	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 is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.	
	Met?	Y	Y	Ν	
	Justification	There is some relevant info south coasts of WA. The back A range of fishery-depended history of the fishery, with information on the size con- environmental conditions. Most of the catch in the W stock is considered a single size composition of whole The fleet is small, the fishin The success of the harvest commercial catch and fishin monthly logbooks and, on cover over 90% of the reta information from four trips have been collected since a found.). This range of information i therefore, it meets the requise A range of other information strategy. This includes info maturity. However, it is no crystal crabs, no dietary stu history information is avail information is not consider Therefore, the requirement	prmation on the stock structure asic biology of the crystal cra ent data has been collected of some datasets extending ba mposition of landings, detailed CDSCMF comes from a relating e unit for management purper catch is provided from the pro- ing technology is simple and be strategy depends mainly on ng effort. This information is a more detailed basis, by the ined catch. These data are a s per year. The duration of the 2000 and other are more record s considered sufficient to sup- uirements of the SG60 and S on is also available that is nor- rmation related to spawning oted that there is little inform udies have been conducted of able and this that may weak red to be comprehensive. ats of the SG100 level are not-	Lure of crystal crabs on the west or b has been described. on crystal crabs throughout the ck to 1990. These data include ed effort and discarding, as well as evely small geographic area and the bases. Additional information on the rocessors. both are well understood. reliable information on the collected from the mandatory e data in the voluntary logbooks that lso supported by onboard observer nese datasets is variable, but some ent (Error! Reference source not boport the harvest strategy and, iG 80 levels. t directly related to the harvest season and fecundity and size at nation on the stock structure of on crystal crabs and limited life en a stock assessment. The range of	

PI 1.2	.3	Relevant information is co	ellected to support the harve	est strategy
b	Guidepost	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Y	Y	Ν

PI 1.2	.3	Relevant information is collected to support the harvest strategy
		Four indicators are used to assess the status of crystal crabs: two primary indicators (annual commercial catch and standardize commercial catch rate of legally-retainable crystal crab) and two secondary indicators (standardised commercial catch rate of sublegal crystal crab and standardised commercial catch rate of berried female crystal crab). The CPUE indices are used to monitor stock abundance and fishery removals are monitored by logbooks and processor returns. These are monitored routinely and the indicators are calculated annually.
		The harvest control rule (HCR) relies on standardised CPUE in setting reference levels for monitoring the status of the stock. The annual CPUE indices are standardized by considering 6 component factors and their interactions (year, soak, vessel month, latitude and depth). They are, therefore, intrinsically consistent with the requirements of the HCR. Monitoring occurs with sufficient frequency and level of accuracy that is needed to support the HCR.
		A number of additional performance measures are also examined to provide a weight-of- evidence assessment of the status of the crystal crab stock. These include data from Commercial Monitoring, Processor Returns, and Volunteer Logbooks.
		This meets the requirements of the SG 60 and SG 80 levels.
		Although all the information required by the harvest control rule is monitored with high frequency, there is not a high degree of certainty about all these data, or about the robustness of assessment and management to this uncertainty. Some areas of concern that remain include:
		1. The reliance on commercial CPUE with no independent estimate of stock abundance
	cation	 The limited information on the discarded catch and post-discard survival. Discards are recorded as part of on-board commercial monitoring and the camera system showed a high degree of agreement between the two techniques; however, discards estimated by the skipper/crew suggest that the volunteer logbook data may not be an accurate record, particularly in the case of one vessel. Given that these estimates are used in the estimate of the catch rates of berried females and undersize crabs, it is important to further quantify the discrepancies.
	Justifi	Given these concerns the requirements of the SG100 level are not considered to be met.
C	Guidepost	There is good information on all other fishery removals from the stock.
	Met?	Y
	Justification	Recreational catch of deep sea crab species is negligible, due to low deep-sea fishing effort. There are no other commercial fisheries that impact on this stock. Therefore, there are no other fishery removals to consider. This meets the requirements of the SG80 level.

PI 1.2.3	Relevant information is collected to support the harvest strategy		
References	How et al. (2015)		
OVERALL PERFORMANCE INDICATOR SCORE: 80		80	
CONDITION NUMBER (if relevant):			

PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status			
Scoring	g Issue	SG 60	SG 80	SG 100	
A	Guidepost		The assessment is appropriate for the stock and for the harvest control rule.	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.	
	Met?		Y	Ν	
	Justification	As described in How et al. standardised CPUE and mo attempts to account for th soak time, the depth and la appropriate for this stock a indicators. This meets the requiremen The biomass of crystal craft Nevertheless, the standard show marked year-to-year able to take some major fe annual variation in the ava currently adequately unde there remains some unexp significant effect on the as Therefore, the requiremen	(2015), the assessment takes onitoring of commercial catch e potential effects of the mo atitude being fished, and the and the harvest control rule h ints of the SG80 level. to is not expected to fluctuate dised CPUE series for legal-siz fluctuations. This suggests the atures of the species or the f islability of crabs or some asp erstood or for which data are plained source of variability in sessment.	the form of annual analyses of n levels. The standardisation process nth in which fishing takes place, the vessel fishing. This is quite nas been developed to match these substantially on an annual basis. red crab and for berried females do hat these indicators have not been fishery into account. There may be ects of the fishery that are not not available. Whatever the cause, n these indicators that has a	
b	Guidepost	The assessment estimates stock status relative to reference points.			
	Met?	Y			
	Justification	Empirical reference points retained catch and catch ra approach is directly related them. This meets the requiremer	for stock status used by the ates of various types of crysta d to the reference points and nts of the SG60 level.	fishery are derived from the al crabs. Therefore, the assessment l estimates stock status relative to	
C	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.	

PI 1.2.4		There is an adequate assessment of the stock status			
	Met?	Y	Y	Ν	
	Justification	For the catch rate assessment, sources of uncertainty in data collection, and several variables are included in the analysis. The assessment identifies major sources of uncertainty. The statutory CDR and CAES data collected for this fishery provide a high degree of confidence that the annual catch is an accurate representation of what was caught. The assessment inherently expects natural variation in the level of the primary and secondary indicators and the selection of target ranges takes that into account. The assessment, however, is based on point estimates of standardised CPUE and retained catch and does not evaluate stock status relative to the reference levels in a probabilistic way. This meets the requirements of the SG 60 and SG 80 levels but not of the SG 100 level.			
d	Guidepost			The assessment has been and shown to be robust. Alternative hypotheses ar assessment approaches h rigorously explored.	tested nd ave been
	Met?			Ν	
	Justification	We are not aware of any f by Management Strategy assessment approaches m Therefore, the requiremer	ormal testing of the assessme Evaluation. It is also unclear v ay have been explored. hts of the SG100 level are not	ent process and of the HCR what alternative hypotheses met.	s such as s and
e	Guidepost		The assessment of stock status is subject to peer review.	The assessment has been internally and externally p reviewed.	beer
	Met?		Y	Ν	
	Justification	The stock assessment of the crystal crabs is internally reviewed as part of reporting in t annual <i>Status Reports of the Fisheries and Aquatic Resources of Western Australia: the</i> <i>state of the fisheries</i> (e.g. Fletcher & Santoro 2014). The assessment has not been externally reviewed. This meets the requirements of the SG 80 level but not of the SG 100 level.		g in the the	
Refere	nces	How et al. 2015.			
OVERA	LL PERFOR	MANCE INDICATOR SCORE	:		80
		IBER (if relevant):			

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidepost Wet?	Main retained species are likely to be within biologically-based limits (if not, go to scoring issue c below). Y	Main retained species are highly likely to be within biologically-based limits (if not, go to scoring issue c below). N	There is a high degree of certainty that retained species are within biologically-based limits and fluctuating around their target reference points. N	

PI 2.1.1

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species
		Apart from the target species, crystal crab (<i>Chaceon albus</i>), the primary retained species are giant crab (<i>Pseudocarcinus gigas</i>) and champagne crab (<i>Hypothalassia ascerba</i>). Neither giant crab nor champagne crab have comprised more than 5% of the total catch since 2001. Hence, both species fail to classify as "main" on the basis of the percentage of total catch following the MSC guidance for main retained species unless they are particularly vulnerable (CR v1.3, GCB 3.5.2). However, Hartmann et al. (2014) classified giant crabs to be in a transitional-depleting phase based on declining catches in Tasmania and Victoria. Due to this uncertainty, the team determined to consider giant crab as a main retained species following MSC guidance (CR v1.3, GCC2.4.0.4).
		Giant crab Giant crab is considered to be a single biological stock from Tasmania to Western Australia due to its continuous distribution across the whole range Hartmann (et al. 2014). The majority component of the biomass and historical catch of the stock occurred in Victoria and Tasmania. Based on recent trends in declining catches in these states, the stock is classified to be in a transitional-depleting phase.
	ion	Only small quantities of giant crab are retained each year in Western Australia (0-1.5 t of giant crabs between 2001 and 2014). Less than two tonnes have been landed on the southwest coast of WA annually since the fishery began. The annual catch for giant crab exceeded the threshold level of 0.8 t in 2014, triggering a review. Despite the increased catch the species is considered to be within biologically-based limits based on a risk assessment that was conducted by the Department of Fisheries in 2014 (How et al. 2015). However, this cannot be confirmed with a high degree of certainty for giant crab.
	Justificat	Champagne crab The champagne crab (<i>H. acerba</i>) is endemic to WA and occurs from Kalbarri to Eucla. Historically, champagne crabs were the primary target species of the fishery. However, lack of demand and declining prices resulted in a decrease in effort targeting this species (How et al. 2015). Catches between 2001 and 2014 have been low (crystal crab 0-6.3) and within the target range. This species is considered likely to be within biologically-based limits (How et al. 2015).
		not met for this main retained species.
		Bait In this fishery, crabs are caught using baited traps. Bait information is currently available for one vessel. Blue mackerel (<i>Scomber australasicus</i>) and hoki (<i>Macruronus novaezelandiae</i>), both sourced from New Zealand, are the dominant bait species, accounting for 47% and 43% of bait used in the fishery over the last five seasons. Both of these bait species comprise more the 5% (11-13%) the total catch by weight they will be considered as a "main" retained species in this MSC assessment.

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species			
		BAIT In this fishery, crabs are caught using baited traps. Bait information is currently available for one vessel. Blue mackerel (<i>Scomber australasicus</i>) and hoki (<i>Macruronus</i> <i>novaezelandiae</i>), both sourced from New Zealand, are the dominant bait species, accounting for 83% and 22% of bait used in the fishery over the last five seasons. Both of these bait species comprise more the 5% (29% and 8%) the total catch by weight they will be considered as a "main" retained species in this MSC assessment.			
		Small quantities of Western Australian herring and pilchards are also used for bait in the fishery. Western Australian herring will be considered as a main species due to its vulnerability. Pilchards will be considered as minor retained species for the purpose of this assessment (< 1% total catch by weight).			
		Other species used in the last five years include small amounts of orange roughy (~0.2%; <i>Hoplostethus atlanticus</i>), and jack mackerel (0.2%; <i>Trachurus declivis</i>). Tuna from Thailand (unknown species and orange roughy from New Zealand have also been used as bait. Both species have not been used in recent years (2014-2015). However in 2013 the tuna made of >5% of total crystal crab catch by weight and due its uncertainty will be treated as a "main" retained species in this MSC assessment.			
		New Zealand blue mackerel and hoki NZ blue mackerel status is poorly known and no estimates of current and reference biomass, or yield, are available for any blue mackerel area (Ministry for Primary Industries, 2014). The NZ hoki fishery has been certified as sustainable under the MSC standard since 2001, indication that this bait species is highly likely to be within biological limits.			
		Therefore, SG 60 is met for both main bait species and 80 and 100 is met for NZ hoki .			
		New Zealand jack mackerel It is not known whether catches at the level of the current TACs or recent catch levels are sustainable in the long-term. However, only small amounts of New Zealand jack mackerel were used as bait in 2012 (1 t), which constitutes a very small amount of the 40.000 - 43.000 t fishery (Ministry for Primary Industries, 2014).			

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species			
 Western Australian herring stocks are currently in recovery due overfishing in recent years (Fletcher and Santoro 2014). In 2014, implemented management measures to assist recovery. In 2013, were caught in the commercial sector of the fishery and it is unlil used (< 1% of total catch by weight) in the WDCDSMF will hinder Pilchards are managed by the Department with a TAC and currer biologically-based limits. Orange Roughy stocks are managed by the New Zealand Ministry stocks are considered below limits according to the 2013 Plenary Tuna from Thailand The tuna species from Thailand used as bait in the fishery is unkr smaller tuna species, longtail tuna (<i>Thunnus tonggol</i>), kawakawa frigate tuna (<i>Auxis thazard</i>), caught by drift gillnet and purse sein Thailand, the status is unknown and they may well be outside bid (FAO 1995). Therefore, SG 60 is met but the 80 is not met for main bait species uncertainty. 		very due to poor recruitment and In 2014, the Department In 2013, around 346 t of herring d it is unlikely the quantities of bait vill hinder stock recovery. Ind current catches are within d Ministry of Primary Resources but 3 Plenary Report (MPI 2013). ry is unknown. If it is one of the awakawa (<i>Euthynnus affinis</i>) and burse seine, caught in the Gulf of utside biologically based limits pait species tuna due to its erall.			
b	Guidepost			Target reference points are defined for retained species.	
	Met?			Ν	

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
	Justification	 For giant crabs the target range is 0 – 0.8 t. For champagne crabs the target range is 0 – 6.3 t. The trigger levels are based on the highest annual catch in Western Australia during the reference period 2003-2012. The limit reference levels have been set at two-times the threshold level (i.e. twice the highest catch reported during the reference period), with the target range set to include any catches below the threshold level. These do not constitute target reference points because not the entire giant and champagne crab stocks have been considered when the trigger levels were set. An SG 100 score is not met for the retained species. BAIT: BAIT: There are two main bait species in the fishery. For New Zealand hoki target reference points are defined and the SG 100 is met. For NZ blue mackerel targets are not specified. Other bait species also have no target reference points defined and therefore the SG 100 is not met for bait species. 		
C	Guidepost	If main retained species are outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.	If main retained species are outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.	
	Met?	Y	Y	

There is concern about the main retained species, giant crab and therefore this issue is scored. There is a strategy in place for managing retained species. This strategy utilizes limited entry, minimum size limits, an annual combined TAC for giant and champagne crabs, protection of undersized and berried female crabs and spatial closure within the		
 Inflited entry, minimum size limits, an annual combined TAC for giant and champagne crabs, protection of undersized and berried female crabs and spatial closure within the 150m depth contour. Therefore, the SG 80 is met. The impact of this fishery on the NZ stocks of blue mackerel is likely to be minimal. The fishery is managed with input/output controls and assessments are conducted. The TAC for blue mackerel is 11,550 t; therefore, the quantity of bait used in the WCDSCMF is negligible. The tuna species from Thailand is unknown. If it is one of the smaller tuna species, longtail tuna (<i>Thunnus tonggol</i>), kawakawa (<i>Euthynnus affinis</i>) and frigate tuna (<i>Auxis thazard</i>), caught by drift gillnet and purse seine, then the status is unknown and they may be outside biologically based limits (FAO 1995). However catch is monitored and the amount of bait used here to the total catch of small tunas (ca. 120,000 mt) in the Gulf of Thailand is negligible. Therefore, the SG 80 is met. 		
If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically-based limits or hindering recovery.		

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
Giant crabs: Giant crab is considered a main retained sper vulnerability. The status for giant crab is known to be wit year (2014), the annual catch for giant crabs since 2008 to 0.8 t). In 2014, the annual catch exceeded the threshold review which is still ongoing. Champagne crabs: since 2008 the annual catch for cham range (0 – 6.3 t). The measures put in place include a TAC and separate ca TAC: Giant and champagne crabs have a combined annu Reports from historical catches in Western Australia betw with the exception of 2 years (1994 and 1996), catches o exceeded 1.5 t. In those two year that catches were nota and 41.7% (1.0 t) in 1996. Given that the stock is classifie is 0.8 t, it is not known what the status of this stock is. W exceeded the threshold, it triggered a review. Therefore, are expected to result in the fishery not causing the reta biologically-based limits or hindering recovery. The SG 60 is met. BAIT: The status of most bait species is known. However there like the Western Australian herring, NZ blue mackerel, a Thailand. Given the low level of catch for bait compared is very unlikely to hinder the bait species' recovery. Therefore, the SG 60 score is met. References FAO 1994; Hartmann et al. 2014; How et al. 2015, MPI 20		Giant crabs: Giant crab is considered a main retained species for this assessment d vulnerability. The status for giant crab is known to be within limits. With the excep year (2014), the annual catch for giant crabs since 2008 was within the target rang 0.8 t). In 2014, the annual catch exceeded the threshold level and this has triggerer review which is still ongoing. Champagne crabs: since 2008 the annual catch for champagne crabs was within th range (0 – 6.3 t). The measures put in place include a TAC and separate catch thresholds for each sp TAC: Giant and champagne crabs have a combined annual TAC of 14 t. Reports from historical catches in Western Australia between 1989 and 2014 indic with the exception of 2 years (1994 and 1996), catches of giant crab in the fishery 1 exceeded 1.5 t. In those two year that catches were notably higher; 17.3% (2.3 t) ir and 41.7% (1.0 t) in 1996. Given that the stock is classified as vulnerable and the th is 0.8 t, it is not known what the status of this stock is. When the catch of giant cra exceeded the threshold, it triggered a review. Therefore, there are measures in pla are expected to result in the fishery not causing the retained species to be outside biologically-based limits or hindering recovery. The SG 60 is met. BAIT: The status of most bait species is known. However there are concerns about some like the Western Australian herring, NZ blue mackerel, and tuna (unknown species Thailand. Given the low level of catch for bait compared to the population size, the is very unlikely to hinder the bait species' recovery. Therefore, the SG 60 score is met.	ue to its tion of 1 e (0 – d a e target ecies ate that, have not n 1994 greshold b ace that species) from e fishery	
Refere	References FAO 1994; Hartmann et al. 2014; How et al. 2015, MPI 2013			
OVERA	OVERALL PERFORMANCE INDICATOR SCORE:			
CONDITION NUMBER: 2				
By the third annual surveillance audit the client shall provide evidence that all retained species, including giant crab and bait species with particular concern, are highly likely to be within biologically-based limits.				

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidepost	There are measures in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically-based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main retained species at levels which are highly likely to be within biologically-based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing retained species.	
	Met?	Y	Y	Crabs Y, Bait N	
	Justification	A minimum size of 140 mm Any berried females are re m which is shallower than Therefore, the SG 60 is me There are two formal meas crab and champagne crab designated threshold level introduction of quota in 20 evaluation on the catches f the threshold. Therefore, t There is a strategy in place measures for the WCDSCM minimum size limits, an an of undersized and berried f Therefore the SG 100 is me BAIT: The impact of this fishery of minimal. Both the blue ma controls and assessment an 160,000 t for hoki therefor significantly less than 0.002 Therefore SG 60 and SG80	n CW is in place for giant crab turned to the water. The dist where the main fishing effor- t. sures in place for the two ma are controlled through quota s which were set based on ca 008 through 2012 (How et al. for both species and a review he SG 80 is met. for managing retained speci IF Management Plan (2012). nual combined TAC for giant female crabs and spatial clos et. on the NZ stocks of blue mack ckerel and hoki fisheries are re conducted. The TAC for blue e the quantity of bait used in 1% of the catch used as bait i are met for bait.	as and 90 mm for champagne crabs. In species. First, landings of giant is species. First, landings of giant is. Second, each species has atches of each species since the 2015). There is a scientific is triggered if the catches exceed es that consists of multiple This strategy utilizes limited entry, and champagne crabs, protection ure within the 150m depth contour. Exercl and hoki are likely to be managed with input and output ue mackerel is 11,550 t and the WCDSCMF is negligible with n the fishery at any given year.	
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.	

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species			
	Met?	Y	Y	Ν	
	Justification	Recent scientific evaluation in historical catch record has evaluated current catches and estimated acceptable biological catches for giant crab and champagne crab, although giant crab catches exceeded the threshold of 0.8 and no instances of overfishing were identified. These measures for ensuring the sustainability of the stock are considered likely to work and SG 60 is met. A review into the sustainability of catches of giant crab catch is being developed. It can therefore be concluded that there is a partial strategy currently in place. The partial			
		strategy is based on the lin these species.	nit reference points on catch	es and ongoing catch monitoring of	
		The bait species blue mackerel (<i>Scomber australasicus</i>) and hoki (<i>Macruronus novaezelandiae</i>) are "main" retained species for the purpose of the MSC assessment. However, since the amount of bait used has been monitored and very small amounts are used compared to the total catch of the fisheries in NZ there is confidence that this fishery is not posing any risk to the bait species. Therefore SG 80 is met.			
		The annual catch is closely monitored through annual catch and disposal records (CDRs However, there is no formal testing of the strategy and, therefore SG 100 is not met.			
C	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.	
	Met?		Y	Ν	

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species			
	For Example in the partial strategy is based on the limit reference points on catches and ongoing cat monitoring of the retained species. The results of the monitoring suggest that biologi based limits are not being exceeded for the species covered by the partial strategy. I example in the case of giant crabs the catch exceeded the threshold and a review wa implemented with the precautionary objective to ensure that stocks remain sustaina. Therefore, the SG 80 is met. Giant crab is a single biological stock from WA to Tasmania (Hartmann et al. 2014) an concern is that it has been classified as transitional depleting phase based on declinin catches in Tasmania and Victoria. It is considered vulnerable and will be assessed as main retained species for the purposes of MSC assessment. However, there is no clear explanation what that review is and any demonstrated evidence that it can be success. The review is currently in progress. Therefore SG 100 is not met. Bait: A strategy is in place for jack mackerel and hoki that is based on the limit reference p on the level of biomass depletion. For all NZ bait species including blue mackerel there input and output controls, including setting a TAC which has been implement successfully. Therefore the SG 100 is met for New Zealand bait species. Overall the SG 100 is not met.		ts on catches and ongoing catch nonitoring suggest that biologically- ered by the partial strategy. For he threshold and a review was re that stocks remain sustainable. Ania (Hartmann et al. 2014) and the leting phase based on declining erable and will be assessed as a nent. However, there is no clear evidence that it can be successful. not met. Dased on the limit reference points s including blue mackerel there which has been implemented es.		
d	Guidepost			There is some evidence that the strategy is achieving its overall objective.	
	Met?			Ν	

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species			
		Catches of each of the retained species are monitored and assessed as part of the west coast deep sea crustacean resources harvest strategy (DoF 2015), with the total annual catch of each species used as a performance measure. Specific reference levels have been set based on catches of each species since the introduction of quota in 2008 through 2012.			
		BAIT:			
		New Zealand hoki: Recent assessments of the based limits (Ministry for P as sustainable under the N this species.	aland hoki: assessments of the fisheries by the NZ Department of Fisheries within biologically- mits (Ministry for Primary Industries, 2014). The NZ hoki fishery has been certified inable under the MSC standard since 2001, indicating that the SG 100 is met for cies.		
		New Zealand blue macker	el:		
		states for EMA 1, where	the main catch is taken, the	he stability of the age	
composition data and the large number of age classes that co				sses that comprise the catches staining current commercial	
		fishing mortality, at least in the short-term. Therefore there is some eviden strategy is achieving its objective and the SG 100 is met for this species.			
New Zealand jack mackerel:For the base model in the preliminary assessment of jack mackerel (in and Auckland West, JMA 7 region in the New Zealand fishery), it was a current biomass is at 53% of virgin biomass (B0). Given the determinis B0 for T. declivis and the current stock is presumably at 53%, it can be stock is not depleted in that region. For the other region were jack mack 1, JMA 3, it is not known whether catches at the level of the current T levels are sustainable in the long-term (Ministry for Primary Industries)				ck mackerel (in the Central West ishery), it was estimated that the deterministic <i>MSY</i> value is 8.8% 53%, it can be inferred that the n were jack mackerel is fished (JMA f the current TACCs or recent catch mary Industries, 2014).	
	Justif	Overall, the SG 100 is not met.			
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.	
	Met?	Not relevant	Not relevant	Not relevant	
	Justification	NA		<u>.</u>	
References		Hartmann et al. (2014), How et al. (2015), Ministry for Primary Industries (2014)			
PI 2.1.2	There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species				
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OVERALL PERFORMANCE INDICATOR SCORE: 85					
CONDITION NUMBER (if relevant):					

PI 2.1.3

PI 2.1	.3	Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species			
Scoring	; Issue	SG 60	SG 80	SG 100	
а	Guidepost	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.	
	Met?	Y	Y	Ν	
	Justification	There is quantitative data of record (CDR) and the entire species are able to be separ Catches are reported in mo There is high confidence the accurate, with Department monitoring of the CDRs for also provides information of BAIT: Blue mackerel (<i>Scomber au</i> considered "main" retained on bait use in this fishery he observer sampling or indep only well known for the Ne "verifiable" information in	on all retained species collect e catch is represented in thes irated. Therefore, a score of S onthly catch and effort (CAES hat the reported catches of gi tal research staff validating C on the catch of non-target re <i>ustralasicus</i>) and hoki (<i>Macru</i> d species for the purpose of t has only been collected for or bendent monitoring does not ew Zealand hoki. Therefore, t regards to bait species and, f	ted in statutory catch and disposal se records. The two main retained SG80 is met.) returns as well as daily CDRs. (ant and champagne crabs are AES returns and compliance es. Occasional observer coverage tained species. (and species) (and species) (and validation through the MSC assessment. Information the vessel, and validation through coccur. The status of bait species is he fishery cannot be said to have thus, does not meet SG 100.	
b	Guidepost	Information is adequate to qualitatively assess outcome status with respect to biologically- based limits.	Information is sufficient to estimate outcome status with respect to biologically-based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.	
	Met?	Y	Y	Ν	
	Justification	The information is sufficien have been established. Th indicators relative to refere A SG 100 score is met. BAIT: Information on bait has on species involved can only b species, New Zealand hoki	It for retained species in resp ere is a high degree of certain ence points in the harvest str ly been collected for one ves be estimated with a high degr . A score of 100 is not met.	pect of the reference points that nty around status of stock ategy for both retained species. sel and outcome status of the ree of certainty for one of the bait	

PI 2.1	.3	Information on the nature risk posed by the fishery a species	e and extent of retained spec and the effectiveness of the s	cies is adequate to determine the strategy to manage retained
C	Guidepost	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	Ν
		Available information is ad on retained species stocks retained deep sea crustace a partial strategy and is acl an ongoing basis and are r CDRs - used to monitor sta met. The West Coast Deep Sea also includes acceptable ca of either species exceed th giant crabs) a review of the sustainability is considered	lequate to support a strategy by limiting overall fishing eff eans, champagne and giant co hieving its objective. Sufficien eported in monthly catch and itus for the two main retained Crustacean Resources Harves atch levels for both champag he threshold level (i.e. > 6.3 t e causes for the change in car I to be at risk, changes to the	to reduce the impact of the fishery fort and annual catches of the main rabs. As mentioned in (2.1.2) this is nt data on catches are collected on d effort (CAES) returns, and daily d species. Therefore, the SG 80 is st Strategy 2015 – 2020 (DoF 2015) ne and giant crabs. Should the catch of champagne crabs or > 0.8 t of tch will be undertaken. If management arrangements will be
	Justification	undertaken. Should catche > 1.6 t of giant crabs), man implemented. As mentioned in (2.1.2) thi that it can be successful. T BAIT: Information on bait has on only well known for the Ne all bait species to determin is not met	es exceed the limit level (i.e. agement strategies to furthe agement strategies to furthe is strategy is reactive and the herefore, the SG 100 is not m ally been collected for one ves ew Zealand hoki. Therefore, t he if the strategy is achieving	 12.6 t of champagne crabs or 12.6 t of champagne crabs or er protect the stocks will be ere is yet no demonstrated evidence net. assel and the status of bait species is the information is not sufficient for its objective. Therefore, the SG 100
d	Guidepost		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
	Met?		Y	Ν
	Justification	Catch monitoring for the retained species is ongoing and sufficient to assess ongoing mortalities to these species. Risk assessments for both retained deep sea crab species are available to assess ongoing mortalities (Currie and Ward 2009). An SG 80 score is met. The monitoring of bait usage is ongoing but only for one of the three vessels. Therefore, SG 100 score is not met.		

PI 2.1.3	Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species		
References	Currie and Ward 2009.		
OVERALL PERFORMANCE INDICATOR SCORE:			
CONDITION NUMBER (if relevant):			
Recommendation: Information of bait usage should include all three vessels in the fishery and included details on species and origin of other species like tuna and orange roughy.			

PI 2.2.1

PI 2.2	.1	The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species			
		groups			
Scoring	g Issue	SG 60	SG 80	SG 100	
а	Guidepost	Main bycatch species are likely to be within biologically-based limits (if not, go to scoring issue b below).	Main bycatch species are highly likely to be within biologically-based limits (if not, go to scoring issue b below).	There is a high degree of certainty that bycatch species are within biologically-based limits.	
	Met?	Y	Υ	Y	
	Justification	The fishery has extremely l regarded as a "main" bycar catch. However, deep seas vulnerability. Data from on-board monit on-board surveillance cam other than totally-protecte 2010 and 2014. The few sp sea urchin, octopus, deep s were caught in 2012. The level of catch of each s species' distribution and put There is no evidence of cor caused by fishing, however of certainty that bycatch sp Based on GCB3.8.2, if the b fishery would meet SG100. Therefore, an SG score of 6	ow levels of bycatch. None of tch species following MSC gu sharks were considered as "n oring by Departmental resea eras indicated fifteen inciden ed crabs) in almost 4,700 trap becies that were caught inclus sea sharks and one unidentifient species is considered to be in opulation size. Infidence intervals on any esting given the extremely low lev becies are within biologically- bycatch is exceptionally rare a so, 80 and 100 is met.	f the species are likely to be idance CR v1.3 due to their level of nain" bycatch species due to their rch staff (observers) and remote ices of bycatch (e.g. discarded catch lifts that were observed between ded other deep sea crab species, red finfish. Two deep sea sharks significant compared to each mates used in the mortality rate els of bycatch there is a high degree -based limits. and negligible in its impact, then the	
α	Justification B Guidepost	If main bycatch species are outside biologically- based limits there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding.	If main bycatch species are outside biologically- based limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding. N/A		

	The fishery does not pose a risk of serious or irreversible harm to the bycatch specie		ecies or	
PI 2.2	.1	species groups and does not hinder recovery of depleted bycatch species or spec	ies	
c	Guidepost Wet?	groupsIf the status is poorly known there are measures or practices in place that are expected 		
	Justification	 Y The level of bycatch in this fishery is extremely low and therefore the effect of the population of bycatch species is considered to be negligible. The baited traps are fitted with species restrictions as follows: Have an internal volume that is less than 0.257 m³; Have two escape gaps, with each gap being (as nearly as practicable) rectangular in shape and when measured internally are ≥ 294 mm in length by 54 mm in height. Other Species Restrictions include: Rock lobster (<i>Jasus</i> or <i>Panulirus</i> spp.) or finfish, must be released within five minutes of being brought onto the boat and before any other trap is pulled. When fishing in the waters of the Fishery east of 126° 58′ E, any scampi (Family Nephropidae) or white tailed bug (<i>Ibacus</i> spp.) brought on board must be released within five minutes of being brought on board the boat and before any other trap is pulled. 		
Refere	References How et al. 2015.			
OVERA	LL PERFOR	MANCE INDICATOR SCORE:	100	
CONDITION NUMBER (if relevant):				

PI 2.2.2

PI 2.2.2 There is a strategy in place for managing bycatch that is designed to ensure the does not pose a risk of serious or irreversible harm to bycatch populations			is designed to ensure the fishery bycatch populations	
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary, that are expected to maintain the main bycatch species at levels which are highly likely to be within biologically-based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main bycatch species at levels which are highly likely to be within biologically-based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing and minimizing bycatch.
	Met?	Y	Y	Y
	Justification	The level of bycatch in the need to be considered as a (5% or more of the total ca Deep sea sharks were cons 2 sharks were reported in 2 conducted between 2010 a lobster and finfish, are not There are measures in plac bycatch to the water. Bott of losing one, or a whole lin bycatch through the use of be returned within five min There are scientific observe of bycatch. The extremely that is put in place is mana Therefore SG 60, 80 and 10	fishery is very low and most "main" bycatch species for t itch by weight). idered as "main" bycatch species 2012 during on-board monito and 2014. Deepwater sharks permitted to be retained (De te to minimize bycatch includ com currents are minimal at t he, of traps is very low. Traps mandatory escape gaps. Mon nutes of being brought on bo er and video records that are low occurrence of bycatch clo ging and minimizing bycatch. 20 are met.	of the species recorded would not he purpose of the MSC assessment ecies due to their vulnerability. Only oring (scientific observer) program (amongst other species like rock oF 2015). ing gear restriction and returning he depths fished and the chances are also designed to reduce ost bycatch species are required to ard a fishing vessel. used to collect data on the amount early indicates that the strategy
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	Ν

PI 2.2.	2.2.2 There is a strategy in place for managing bycatch that is designed to ensure the fisher does not pose a risk of serious or irreversible harm to bycatch populations			is designed to ensure the fishery bycatch populations	
	Justification	The level of bycatch is monitored and assessed as part of the <i>West Coast Deep Sea</i> <i>Crustacean Resources Harvest Strategy 2015 – 2020</i> (DoF 2015a), with risk assessment outcomes used to measure fishery performance. Therefore, SG 60 is met. The strategy specifies actions directed at those species with identifiable risks. The actions required are commonly used in crustacean fisheries and have a high level of success. Therefore, SG 80 is met. The data indicates that the Catch Rate (no./1000 traplifts) is highly likely to be less than 0.5, however the strategy has not been formally tested. Therefore, SG 100 is not met.			
C	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.	
	Met?		Y	Y	
	Justification	 There is a strategy in place to manage fishery impacts on bycatch species. This strategy utilises a number of management measures under the <i>West Coast Deep Sea Crustacean Managed Fishery Management Plan 2012</i> (2012d), including: Limited entry; Species restrictions; Gear restrictions; Spatial closures within the 150 m depth contour; and Compliance policing. These management measures work together to reduce the impact of the fishery on bycatch species stocks by limiting overall fishing effort and providing incentives for fishers to reduce the capture of unwanted species, as they are not permitted to retain a number of species, such as rock lobster, sharks and finfish. There are also restrictions on the retention of scampi and white-tailed bugs east of 128° E. The <i>West Coast Deep Sea Crustacean Resources Harvest Strategy 2015 – 2020</i> (DoF 2015) also includes acceptable risk levels for all bycatch species. Should the risk to any species exceed the threshold level, a review of the causes for the increased risk will be undertaken If sustainability is considered to be at risk, changes to the management arrangements will be undertaken. Should the assessed risk level exceed the limit reference level (i.e. a severe risk), management strategies to further protect the species' population will be implemented. Therefore, an SG score of 100 is met.			
d	Guidepost			There is some evidence that the strategy is achieving its overall objective.	

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations		
	Met?		Y	
	Justification	A risk assessment is carried out on those species with identifiable risks. The 2014 PSA assessment found the impacts to deep sea sharks to be a medium risk, which was mainly attributed to their biological characteristics of low productivity rather than their susceptibility to fishing activities. All other species have a Negligible ERA Risk Rating (2002) (Impact on breeding stock) and the PSA (2014) rating is low. The PSA risk assessment scores and the ERA Risk Rating provides evidence that the strategy is achieving its overall objective.		
Refere	References DoF 2012d; DoF, 2015a			
OVERA	OVERALL PERFORMANCE INDICATOR SCORE: 95			95
CONDITION NUMBER (if relevant):				

PI 2.2.3

PI 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				
Scoring	g Issue	SG 60	SG 80	SG 100		
а	Guidepost	Qualitative information is available on the amount of main bycatch species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main bycatch species taken by the fishery.	Accurate and verifiable information is available on the catch of all bycatch species and the consequences for the status of affected populations.		
	Met?	Y	Y	Ν		
	Justification	The level of bycatch in the recorded would need to be MSC assessment (5% or mo considered as "main" byca Fishers are encouraged to information collected durin departmental staff (How e obtained through the use o vessels (which account for Quantitative data is collect board monitoring (scientifi standardised to catch rate SG 100 is not met because sporadic.	fishery is very low and it is use considered as a "main" byca ore of the total catch by weig tch species due to their vulne report all bycatch in voluntar ng periodic on-board monito t al. 2015). Additional bycatc of a remote on-board camera over 90% of the landed catch cobserver and video) betwe per traplift. Therefore, SG 80 data is not verifiable because	nlikely that any of the species atch species for the purpose of the ght). Deep sea sharks were erability. Ty logbooks, with additional bycatch ring trips undertaken by h information has also been a deployed on two commercial crab h). Therefore SG 60 is met. Therefore SG 60 is met. The point and 2014. Data are the second monitoring is only		
b	Guidepost	Information is adequate to broadly understand outcome status with respect to biologically- based limits	Information is sufficient to estimate outcome status with respect to biologically-based limits.	Information is sufficient to quantitatively estimate outcome status with respect to biologically- based limits with a high degree of certainty.		
	Met?	(Y/N/Not relevant)	(Y/N/Not relevant)	(Y/N/Not relevant)		
	Justification	N/A				
C	Guidepost	Information is adequate to support measures to manage bycatch.	Information is adequate to support a partial strategy to manage main bycatch species.	Information is adequate to support a strategy to manage bycatch species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.		
	Met?	Y	Y	Ν		

PI 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			
	Justification	Considering the very low level of bycatch, ongoing occasional scientific observers, as well as video monitoring information, it is sufficient to estimate outcome status with respect to biologically-based limits (How et al. 2015). However, the fishery cannot be considered to have information sufficient to quantitatively estimate outcome status with a high degree of certainty. A dedicated observer program with more coverage and accuracy of bycatch reporting at species level would be required. Therefore. SG 60 and 80 are met, but SG 100 is not met.			
d	Guidepost		Sufficient data continue 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 effectively of the strategy).	Monitoring of bycatch dat conducted in sufficient de assess ongoing mortalities bycatch species.	a is tail to s to all
	Met?		Y	Ν	
	Justification	The impacts of the fishery on deep sea sharks are considered be within acceptable limits due to the low number of captured individuals, fishing effort and longlines associated with traps (< 25 for the total fishery). In addition, fishing activities are concentrated in a few discrete areas along the Gascoyne and West coasts, resulting in extensive areas of refuge from fishing activities for these widely-distributed species. SG 80 is met. The use of remote videos on-board vessels will continue, and provides greater coverage of deep sea shark captures and assists with species identification in general. However the current level of bycatch monitoring is not sufficient to meet the SG 100 score is not met.			
Refere	nces	How et al. (2015)			
OVERA	LL PERFOR	MANCE INDICATOR SCORE:			80
CONDI	CONDITION NUMBER (if relevant):				

PI 2.3.1

PI 2.3.	.1	The fishery meets national and international requirements for the protection of ETP species The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species			
Scoring	g Issue	SG 60	SG 80	SG 100	
a	Guidepost	Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.	The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species.	There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species.	
	Met?	Y	Y	Y	
		Potential list of ETP spe	cies the fishery could inte	ract with:	
		 Whales The migratory paths of humpback whales (<i>Megaptera novaeangliae</i>) along the Western Australian Coast is typically within the 200 m isobath (Jenner et al. 2001), which is typically outside of where the WCDSCMF operates, and there is no high overlap between the WCDSCMF and humpback whales. Various whale species are likely to be encountered throughout the waters of the WCDSCMF. Blue and sperm whales are often observed well offshore, and migrating humpback whales can be seen approximately 10 – 20 km from the shoreline (Shaw 2000). The migratory paths of humpback whales along the Western Australian Coast is typically within the 200 m isobath (Jenner et al. 2001), which is typically outside of where the fishery operates. Dolphins and dugongs Dolphins and dugongs are abundant in more coastal areas, but are likely to migrate onto the shelf at times and may be important tertiary and primary consumers in this area (Brewer et al. 2007). Turtles Loggerhead (<i>Caretta caretta</i>), green (<i>Chelonia mydas</i>), leatherback (<i>Dermochelys coriacea</i>) 			
	and hawksbill (<i>Eretmochelys imbricata</i>) turtles can also be encountered in coastal are Sea snakes Various sea snakes, including the critically endangered short-nosed sea snake, <i>A.</i> <i>apraefrontalis,</i> also occur in coastal waters.			short-nosed sea snake, A.	
		Whale sharks and manta rays Whale sharks (<i>Rhincodon typus</i>) and manta rays (<i>Manta alfredi, M. birostris</i>) Whale sharks and manta rays are abundant in the Ningaloo region, although their occurrence offshore is not well documented (Brewer et al. 2007).			

DI 221		The fishery meets nationa species	l and international requirem	nents for the protection of ETP	
PI 2.3	.1	The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species			
SharksShark species, such as grey nurse sharks (Carcharias taurus) and whit (Carcharodon carcharias) also occur in these waters. They are fully pre-Five international agreements are put in place to protect endangered			urus) and white sharks ney are fully protected. ct endangered, threatened and		
Image: system Image: s		Western Australia. Primary p h EPBC Act, the Western Aus nery-specific management ac	pieces of national and legislation tralian Wildlife Conservation Act tt (FRMA).		
	Ecological risk assessments are conducted on identified ETP species, particularly on whales, dolphins and leatherback turtles with details on how the fishery inte these ETP species The ERA identified negligible levels of risk to whales, dolphins leatherback turtles. The SG score of 60 is met.			l ETP species, particularly focusing s on how the fishery interacts with f risk to whales, dolphins and	
There has been one record in 2014 of a humpback whale becoming entangled gear associated with the fishery since the commencement of the fishery in 19 individual was disentangled and was released unharmed. There has been no reported interaction with any other ETP species. ETP species are monitored by the fishery, allowing for recognition of potentia fishery has a small number of vertical rope lines deployed at any given time. I these lines are generally spaced far apart to allow the 120 traps between the only three vessels operating in the fishery that could cause boat strikes.				le becoming entangled with fishing ent of the fishery in 1989. This d. There has been no other	
				recognition of potential risks. The red at any given time. Furthermore, 20 traps between them. There are ruse boat strikes.	
		Considering the way the fis fact that there are only 3 v effects of the fishery are w 80 and 100 are met.	shery operates, away from th essels operating, there is a h ithin limits of national and in	ne migration path of whales, and the igh degree of certainty that the nternational requirements. SG score	
b	Guidepost	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on ETP species.	
	Met?	Y	Y	Y	
	Justification	There has been only one re gear since the fishery start been recorded. The ERA co Considering the size and so migration path and outside confidence that there are r species. The SG 100 is met.	ecord of a humpback whale b ed in 1989. No other direct in onducted by DoF (2003) rates cale of the fishery with only 3 e distribution of most other E no significant detrimental dir	becoming entangled with fishing mpacts with other ETP species have a risk to ETP species as negligible. B vessels operating and outside the ETP species, there is a high degree of rect effects of the fishery on ETP	

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species			
		The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species			
c Guidepost			Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of confidence that there are significant detrimental inc effects of the fishery on E species.	no lirect TP
	Met?		Y	Ν	
	Justification	Overall, the SG 80 is met. There is no ongoing indepe and, therefore, a high degr	endent observer program and ree of certainty cannot be acl	d video surveillance for ETP hieved. SG 100 is not met.	species
References		Brewer et al. 2007; DoF 2003; How et al. 2015; Jenner et al. 2001; Shaw 2000.			
OVERALL PERFORMAN		MANCE INDICATOR SCORE:			95
CONDI	CONDITION NUMBER (if relevant):				

PI 2.3.2		 The fishery has in place precautionary management strategies designed to: Meet national and international requirements; Ensure the fishery does not pose a risk of serious harm to ETP species; Ensure the fishery does not hinder recovery of ETP species; and Minimise mortality of ETP species. 			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidepost	There are measures in place that minimise mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.	
	Met?	Y	Y	Υ	

		The fishery has in place precautionary management strategies designed to:				
		Meet national and international requirements;				
PI 2.3	.2	 Ensure the fishery does not pose a risk of serious harm to ETP species; 				
		Ensure the fishery does not hinder recovery of ETP species; and				
		 Minimise mortali 	ty of ETP species.			
There is a strategy in place to manage fish national and international requirements a number of management measures und <i>Fishery Management Plan 2012</i> and oper Limited entry; Gear restrictions; Fishing methods (use of longline Spatial closures within the 150 m			to manage fishery impacts or requirements for protection measures under the <i>West Co</i> 2012 and operational activiti	on ETPs that is designed to achieve of these species. This strategy uses past Deep Sea Crustacean Managed ies, including:		
			use of longlines); and ithin the 150 m depth conto	ur.		
		These management measures work together to reduce the impact of the fishery on ETP populations by limiting overall fishing effort and minimising the likelihood of an interaction through reducing the number of lines in the water at any given time and fishing in offshore areas where the majority of ETPs are not found.				
		The West Coast Deep Sea Crustacean Resources Harvest Strategy 2015 – 2020 (DoF 2015) also includes acceptable interaction and risk levels for all ETPs. Should the number of interactions or risk to any species exceed the threshold level (i.e. more than three interactions with any particular species in a year or fishing impacts considered a high risk to species populations), a review of the causes will be undertaken. Should the assessed risk level exceed the limit reference level (i.e. a severe risk), management strategies to further protect the species' population will be implemented.				
		The use of heavy ropes and the low number of lines in the water, spaced long distances apart, is considered to reduce the risk of entanglement of whales, dolphins, manta rays and turtles. SG 60 is met.				
		The WCDSCMF has been assessed under the EPBC Act for the purposes of the protected species provisions (Part 13 of the Act) and the wildlife trade provisions (Part 13A of the Act).				
	Justification	The initial assessment resulted in the declaration of the fishery as an approved Wildlife Trade Operation (WTO) and an amendment to the List of Exempt Native Species (LENS) in March and October 2004, respectively. The fishery was reaccredited under Parts 13 and 13A as an approved WTO in 2007 and 2010 and 2013. The application of international agreement meet the SG80 and the assessment of the fishery under the EPBC Act meets the SG 100.				
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar	There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species	The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.		
	Met?	risheries/species). Y	Y	Ν		

PI 2.3.2		 The fishery has in place precautionary management strategies designed to: Meet national and international requirements; Ensure the fishery does not pose a risk of serious harm to ETP species; Ensure the fishery does not hinder recovery of ETP species; and Minimise mortality of ETP species. 				
	Justification	The fishing activities and impacts of the WCDSCMF have been assessed by the Commonwealth government under the provisions of the EPBC Act 1999 (Part 13 and 13A) and have been found to meet the <i>Guidelines for the Ecologically Sustainable Management</i> <i>of Fisheries</i> . An SG score of 60 is met. The number of interactions with ETPs are monitored and assessed annually as part of the <i>West Coast Deep Sea Crustacean Resources Harvest Strategy 2015 – 2020</i> (DoF 2015a), with the number of annual interactions and risk assessment outcomes used to measure fishery performance in the form of risk assessments. SG 80 is met. The analysis is mainly qualitative, and therefore the SG 100 is not met.				
c	Guidepost		There is evidence that the strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.		
	Met?		Y	Ν		
	ustification	The traps and ropes used in deep sea crab longlines have minimal capacity to interact with ETP species. The main possible interaction would be entanglement in ropes/lines; however, with approximately 1,000 traps in the fishery and an average of 120 traps per longline, there is estimated to be fewer than 25 vertical rope lines deployed at any given time. Furthermore, these lines are generally spaced far apart to allow the 120 traps between them. The SG 80 is met. However, there is no comparison of data from observers cameras compared to monthly reporting of entanglements and therefore clear evidence to understand the level of implementation is not provided and the SG 100 is not met.				
d	Guidepost			There is evidence that the strategy is achieving its objective.		
	Met?			Y		
	Justification	Fishers are required to report interactions in monthly CAES returns. The strategy to st outside the migration path of humpback whales and operate with little possible intera by spacing ropes far enough apart seems to achieve its objective because there has be only one record of a humpback whale becoming entangled with fishing gear associate with the WCDSCMF (in 2014) since the commencement of the fishery in 1989. This individual was disentangled and was released unharmed. The SG 100 is met.				

PI 2.3.2	 The fishery has in place precautionary management strategies designed to: Meet national and international requirements; Ensure the fishery does not pose a risk of serious harm to ETP species; Ensure the fishery does not hinder recovery of ETP species; and Minimise mortality of ETP species. 			
References	DoF 2015a.			
OVERALL PERFOR	OVERALL PERFORMANCE INDICATOR SCORE: 90			
CONDITION NUM	CONDITION NUMBER (if relevant):			

PI 2.3.3

PI 2.3.3		Relevant information is collected to support the management of fishery impacts on ETP species, including: Information for the development of the management strategy; Information to assess the effectiveness of the management strategy; and 				
Scoring	z Issue	Information to de SG 60	etermine the outcome status	s of ETP species. SG 100		
а	Guidepost	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.	Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.		
	Met?	γ	Y	N		
	Justification	 Fishers are required to report all interactions with ETPs on monthly CAES returns. Additional information on ETP interactions is also provided through observer monitoring activities. SG 80 is met. The information is mainly provided by fishers and only supplemented by scientific observers onboard of fishing vessels. Therefore, outcomes cannot be estimated quantitatively, and SG 100 is not met. 				
b	Guidepost	Information is adequate to broadly understand the impact of the fishery on ETP species.	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species.	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.		
	Met?	Y	Y	N		
	Justification	Y Y N There are data available to assess the impact of the WCDSCMF that mainly consist of fishery dependent reporting. SG 60 is met. N A risk assessment is conducted that outlines the interaction of the fishery with each species. The risk assessment found medium risk ranking for whales and dolphins, particularly the risk to humpback whales (as the most-vulnerable whale species for this fishery). Leatherback turtles were ranked at low risk. For both species groups possible interactions were thought to occur from boat strikes and entanglement in ropes and lines, not from capture in traps. However based on information that few vertical lines (< 25) are in the water at any given time and location of fishing activities is in deep, offshore waters, the likelihood of entanglements is very low. The likelihood of vessel strike is also very low, based on knowledge that the fishery consists of only two full-time and one part-time vessel. SG 80 is met. The number of interactions is assessed annually however spatial and temporal coverage is not clear and the SG score of 100 is not met.				

		Relevant information is collected to support the management of fishery impacts on ETP				
PI 23	3	species, including:				
11 2.3		 Information for the development of the management strategy; 				
		 Information to as 	sess the effectiveness of the	e management strategy; an	a	
	[Information to de	etermine the outcome status	s of ETP species.		
с		Information is adequate	Information is sufficient	Information is adequate to	0	
		to support measures to	to measure trends and	support a comprehensive	strategy	
	4	manage the impacts on	support a full strategy to	to manage impacts, minin	nize	
	soo	ETP species.	manage impacts on ETP	mortality and injury of ET	P	
	dep		species.	species, and evaluate with	n a high	
	Buid			degree of certainty wheth	ier a	
	0			strategy is achieving its ob	ojectives.	
	Met?	Y	Y	Ν		
	Justification	 The Department of Parks and Wildlife (DPaW) are responsible for attending to stranding and entanglements of ETPs. If an ETP species is entangled in fishing gear DPaW notify the Department that the event has taken place. At the conclusion of every year DPaW forwards a summary of ETP interactions with fishing gear to the Department. Risk Assessment Outcomes outlined the interaction of the WCDSCMF with ETP species and found negligible risk ratings. The information collected through logbook reporting and periodic observer, research station board the vessels is not sufficient to meet a SG score of 100. 				
References		How et al 2015				
OVERA	LL PERFOR	MANCE INDICATOR SCORE	:		80	
CONDI	TION NUM	BER (if relevant):				

PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function			
Scoring	; Issue	SG 60	SG 80	SG 100	
a	Guidepost	The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	
	Met?	Y	Y	Y	
		The fishery is open to fishin are only retrieved to collect continual contact with the The impact of traps on ben trap; hauling speed, ocean (Fuller et al. 2008). In gene than sensitive bottom habit the effects of crab and lobs flexible species, such as set traps made contact. After of themselves when in contact to be more vulnerable to in deeper than 150 m, it is un Previous studies on the im cause serious or irreversible benthic cover and minimal Productivity, especially in to likely to be highly complex GCB, where the majority of Benthic environments are heterogeneity and hard su fine particulate matter dep Communities of infauna an Sediments at depths greate fauna decreasing with increased The fishery is highly unliked there would be serious or in	ng all year. Traps remain in the t the catch and for rebating a habitat. This habitats depends on the conditions, depth of haul an ral, sand and mud bottom ha itats, i.e. corals and sponges ster traps on deepwater bend a pens, tended to bend in res contact, smothering and ever t with muddy substrate (Encompacts from traps; however, likely that hard coral commu- pacts of pots on habitat have be harm. Shester (2008) obse- immediate damage to gorgo the deeper waters, is low, and Broad scale mapping indicat f fishing occurs, are relatively fairly uniform due to the lack bstrates for sessile benthic in posited from the water column d epifauna are likely to be sp er than 300 m are likely to be easing depth (Levings et al. 2 by to reduce habitat structure irreversible harm.	he water throughout the year and and, therefore, the traps have e size, weight and material of the d substrate where the trap is set abitats are less affected by traps (Barnette et al. 2001). Studies on thic fauna have identified that sponse to wave pressure before the n uprooting, they re-established o et al. 2001). Hard corals are likely as the fishery is restricted to areas unities exist in the fishing areas. e demonstrated that they do not rved no significant impacts on onian corals in Baja, California. d associated ecosystems are not thes that deep water habitats off the v featureless (Brewer et al. 2007). a of geomorphological overtebrates, and are dominated by an and fine shelf sediments. barse (Brewer et al. 2007). e mostly mud, with macrobenthic 001). e and function to a point where	
		predominantly soft mud be	ottom with minimal vertical s	structure is highly unlikely to reduce	

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, cons on a regional or bioregional basis, and function	idered
		habitat structure and function to a point where there would be serious or irreversi effects. However, there is some evidence that coral in localized areas occur and are sometimes brought up by traps. Therefore, there is the potential to cause limited h a localized basis. Evidence from other trap fisheries in more productive communit where corals and sponges are more common indicate that the overall structure or of the habitat is still not reduced to any significant extent. SG score of 100 is met.	ble e harm on ies function
	Justification		
References Barnette (2001), Brewer et al. (2007), Eno et al. (2001), Kenchington et al. 2010, Lev al. (2001), Lewis et al. 2010, Shester (2008), Troffe et al. 2005.		vings et	
OVERA	OVERALL PERFORMANCE INDICATOR SCORE:		100
CONDI	CONDITION NUMBER (if relevant):		

PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types			
Scoring Issue		SG 60	SG 80	SG 100	
a	Guidepost	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of the fishery on habitat types.	
	Met?	Y	Y	Y	
	Justification	Habitat impacts are mainly There is little movement of at each end of the lines are The rope used to connect to the benthos. This prevents benthos such as occurs fro There is a strategy in place utilises a number of manage Managed Fishery Manager Limited entry; Species restrictions; Spatial closures w The spatial closures and get therefore, meet the require The harvest strategy identiand annual fishing effort Together this constitutes a previous to fishing, thus the	a managed by the selection and the traps once they are in co e heavier, with additional ball the traps in a line is positively any damage that may occur m 'anchor scarring' in seagra to manage fishery impacts o gement measures under the ment Plan 2012, including: as; and ithin the 150 m depth contou- ar restriction system represe ement of SG 80. fies limits and thresholds f t as well as specific manage full strategy addressing the se e SG 100 is met.	nd implementation of gear types. ontact with the benthos. The traps last to 'anchor' the ends of the line. buoyant and is not in contact with from rope movement across the ss meadows. In benthic habitats. This strategy <i>West Coast Deep Sea Crustacean</i> ur. ents a partial strategy and, for extent of area fished (blocks) ement responses (DoF 2015a). structure of benthic community	
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.	
	Wet?	Y	Ŷ	N	

PI 2.4	.2	There is a strategy in place serious or irreversible har	e that is designed to ensure t m to habitat types	the fishery does not pose a risk of	
	Justification	These management measures work together to reduce the impact of the fishery on benthic habitats by limiting overall fishing effort, minimising benthic impacts through the methods and gear used and providing refuge from fishing activities within the 150 m depth contour. Traps are mainly set over muddy bottom habitats, which are likely to have a low density of sessile invertebrates. Benthic biota is occasionally brought to the surface and is returned to the water immediately upon removal. The strategy is based on knowledge and understanding of habitat within the WCDSCMF fishing grounds, and there is confidence it will work through occasional scientific observer and video surveillance work. This meets the SG 80 but the strategy has not been tested and the SG 100 is not met.			
C	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.	
	Met?		Y	Ν	
	Justification	Fishing impacts on benthic West Coast Deep Sea Crust the extent of the area fishe performance (see below). The West Coast Deep Sea C also includes reference lev impacts are the extent of t fishing effort, measured in traplifts/year have been id reference period (2003 – 2 threshold level (i.e. > 125 k the reasons, with changes considered to be at risk. Th levels (i.e. > 138 blocks or 3 management strategies to Some evidence for the suc form of voluntary daily log which therefore meets SG There are plans to augmen commercial fishing vessels benthic species which have footage and record bycatch score will remain at 80. Co	habitats are monitored and tacean Resources Harvest Stru- ed and risk assessment outco Crustacean Resources Harves els for benthic habitats. Perfe he area fished annually (num number of traplifts. Target le entified, based on the highes 012). Should the area fished blocks or > 169 000 traplifts), to management arrangemen he limit reference levels have > 186 000 traplifts). If the lim further protect benthic habit cessful implementation of th books and statutory CDRs (us 80. ht this information by the place on a regular basis. These vid e become entangled in the tr h and entanglements. Until th nsequently, SG 100 is current	assessed annually as part of the ategy 2015 – 2020 (DoF 2015), with omes used to measure fishery t Strategy 2015 – 2020 (DoF 2015) ormance indicators for habitat ober of 10°'x 10°' blocks) and annual evels of ≤ 125 blocks and ≤ 169 000 st levels recorded during the or fishing effort exceed the a review is triggered to investigate its implemented if sustainability is been set as 10% above the target it reference level is breached, tats will be initiated. e partial strategy is provided in the sed to monitor fishing location), cement of remote videos on board eos will provide footage of any aps. Trained observers review the hese plans are finalized the fishery tly not met.	

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types			
d	Guidepost			There is some evidence the strategy is achieving its ob	at the ojective.
	Met?			Y	
	Justification	There is some evidence that small solitary corals brough	at the strategy is achieving its ht to the surface with traps, t	s objective by the low frequ hus meeting the SG 100.	ency of
Refere	References DoF (2015), How et al. (2015).				
OVERALL PERFORMANCE INDICATOR SCORE:			90		
CONDI		BER (if relevant):			

PI 2.4.3

PI 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			
Scoring Issue		SG 60	SG 80	SG 100	
a	Guidepost	There is basic understanding of the types and distribution of main habitats in the area of the fishery.	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.	
	Met?	Y	Y	Ν	
	Justification	The WCDSCMF operates in these depths are known or 2005). However, at these of sparse (Brewer et al. 2007) mud, with macrobenthic fa Sponges and small solitary impacts to these sessile inv that they are brought to the substrate. Therefore habits intensity of the fishery Therefore, the SG 60 and 8	150 m to 1200 m water dep hly at the bioregion level (Bal depths, communities of infau). Sediments at depths greate auna decreasing with increasi corals are infrequently broug vertebrates are thought to be he surface and minimal footp at types are known at a level 30 are met but a score of 100	ths. The nature of the habitats at ser et al, 2008, Richardson et al. na and epifauna are likely to be er than 300 m are likely to be mostly ing depth (Levings et al. 2001). ght to the surface with traps. The e minimal due to the infrequency rint of the traps to the benthic of detail relevant to the scale and is not warranted.	
b	Guidepost	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.	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.	The physical impacts of the gear on the habitat types have been quantified fully.	
	wet?	T	Ť	N	

PI 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			
	Justification	The location (longitude and logbooks and statutory CDR entanglements are also rep and remote video surveillar entanglements and habitats Soft sediment dwelling biot immediately returned to th biota and low probability of risk to benthic mud habitats when brought to the surfac Therefore, the information SG 60 and SG 80.	latitude) of fishing activities as and is used to monitor fish orted in daily logbooks. In ac nee also provides some limite s where fishing is occurring. a is infrequently brought to e water when found. Due to f encounters with traps, the s. Sessile invertebrates are in e (How et al, 2015). available is considered suffic	is reported in voluntary da ning location. Sponge and co ddition, monitoring by obse ed information on potentia the surface with the traps a the low abundance of ben fishery is considered to be a nfrequently encountered in cient to meet the requireme	aily oral ervers I and are thic a low traps ents of
C	Guidepost		Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Changes in habitat distribuover time are measured.	utions
	Met?		Y	N	
	Justification	Logbooks can provide only limited information about the amount of corals and/or sponges that are encountered in the traps. This is currently being augmented by the placement of remote videos on board commercial fishing vessels (How et al, 2015). This will ensure better and ongoing collection of information on habitat interactions of the fishery.			
References Baker et al, (2008), Brewer et al. (2007), Richa		et al. (2007), Richardson et	al. (2005), How et al. (2015),	
OVERA	LL PERFOR	MANCE INDICATOR SCORE:			80
CONDI		BER (if relevant):			

PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem			
	-	structure and function			
Scoring	g Issue	SG 60	SG 80	SG 100	
a	Guidepost	The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The fishery 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.	There is evidence that the is highly unlikely to disrup elements underlying ecos structure and function to where there would be a so irreversible harm.	fishery t the key ystem a point erious or
	wet:	1	1	1	
	Justification	Image:			41.3 t in th. not s been the s a species ct of the not a ep sea ships system rm. As
Refere	nces				
OVERA	LL PERFOR	MANCE INDICATOR SCORE:			100
CONDI		BER (if relevant):			

PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidepost	There are measures in place, if necessary.	There is a partial strategy in place, if necessary.	There is a strategy that consists of a plan, in place.	
	Met?	Y	Y	Y	
	 The level of catch of each crab species and the potential risk of fishing activities on ecological processes are monitored and assessed as part of the West Coast Deep Sea Crustacean Resources Harvest Strategy 2015 – 2020 (DoF 2015), with risk assessment outcomes used to measure fishery performance (see below). There is a strategy in place to manage fishery impacts on retained non-target species. T strategy utilises a number of management measures under the West Coast Deep Sea Crustacean Managed Fishery Management Plan 2012, including: Limited entry; Minimum size limits for champagne and giant crabs; 				
		 An annual (combined) catch limit (TAC) for champagne and giant crabs; 			
		 Total protection of undersize and berried female crabs; 			
		 Spatial closure within the 150 m depth contour; 			
		Gear restriction:	S;		
		Statutory report	ting requirements; and		
		 Compliance policing. 			
	stification	It appears that the strategy in place is not specific to the management strategies for habitats and communities; instead, it is planned around the priority species for monitoring, as well as catch monitoring and reporting requirements. While these measures may all indirectly ensure protection of habitats (through spatial closure within the 150 m depth contour and gear restrictions), protection of biomass of the target species and protection of ETP, the fishery will have negligible impacts on the ecosystem. Therefore, the SG 60 and 80 are clearly met. The Harvest Strategy has clearly defined target threshold and limits set for ecosystem with management responses (DoF 2015a) which indicated here is a full strategy for protection			
	Justif	management responses (D of ecosystem function. The	PoF 2015a) which indicated herefore, the SG 100 is met.	ere is a full strategy for protection	

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or			
		irreversible harm to ecosy	stem structure and function		
b	Guidepost	The measures take into account potential impacts of the fishery on key elements of the ecosystem.	The partial strategy takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	The strategy, which consists of a plan, contains measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem. This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.	
	Met?	Y	Y	N	
	Justification	The main strategy to ensur maintenance of significant serves to minimise the pot TAC, catches of crystal crai Other strategies, such as li restrictions and gear restri protection of other retaine SG 60 and 80 are met. However, the strategy doe deepwater sharks, and the	e there is minimal impact on stock/biomass levels of the t ential for any trophic interac os have remained at or just b mited entry, minimum size lin ctions further minimise the p ed, bycatch, and ETP species, s not address all main impact SG 100 is not met.	the broader ecosystem is the target species, crystal crabs. This tions Since the implementation of a elow the 140 t limit. mits, spatial closures, biological botential for impacts through the as well as benthic habitats. As such, ts on the ecosystem component like	
С	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.	
	Met?	Y	Y	Y	
	Justification	The West Coast Deep Sea (also includes acceptable ris ecosystem exceed the three management action impler risk to the ecosystem (or m reference level (i.e. a sever will be implemented. This meets the SG 60, 80 a	<i>Crustacean Resources Harves</i> sk levels for ecosystem proce eshold level (i.e. a high risk), a mented if sustainability is cor nore than one component of re risk), management strateg nd 100.	t Strategy 2015 – 2020 (DoF 2015) esses. Should the risk to the a review will be undertaken, with hisidered to be at risk. Should the the ecosystem) exceed the limit ies to further protect the ecosystem	

PI 2.5.2		There are measures in pla irreversible harm to ecosy	ce to ensure the fishery doe stem structure and function	s not pose a risk of serious	or
d	Guidepost		There is some evidence that the measures comprising the partial strategy are being implemented successfully.	There is evidence that the measures are being imple successfully.	mented
	Met?		Y	Y	
	Justification	 There is evidence that this partial strategy is being implemented through scientific monitoring and video surveillance by DoF staff (How et al., 2015). Evidence for effective implementation exists in the form of low amounts of bycatch, lo interaction rates with ETP species, and observer monitoring of temporal and spatial closures. The SG 80 and 100 are met. 			
References		DoF (2015a), How et al. (20	015),		
OVERALL PERFOR		MANCE INDICATOR SCORE:			95
CONDI		BER (if relevant):			

PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem			
Scoring Issue		SG 60	SG 80	SG 100	
a	Guidepost	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.		
	Met?	Y	Y		
	Justification	Community composition and productivity for the North West Shelf ecosystem have been described by Brewer et al. (2007). Appropriate levels of information are available for each component (e.g. retained/bycatch species, ETP species and habitats), which has allowed for a sensible assessment of the level of risk to be determined. This information includes data collected from both fishery-independent monitoring and fishery-dependent reporting.			
b	Guidepost	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated.	
	Met?	Y	Y	Y	
	Justification	The available information a the ecosystem, the low lev ETP and habitat that would negligible impact on the ke of the fishery on trophic st (DoF, 2003) and found neg	about the target species, its b el of retained and bycatch as d cause irreversible harm all i ey elements of the ecosystem ructure and function has bee ligible effects. Therefore, SG	piology and place in the food web of well as unlikely interaction with ndicates that the fishery has h. A risk assessment on the impact on conducted by the Department f 60, 80 and 100 are met.	
C	Guidepost		The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.	The impacts of the fishery on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.	
	Met?		Y	Y	

PI 2.5.3		There is adequate knowledg	ge of the impacts of the fish	nery on the ecosystem	
	Justification	Actual catch of the main targ component that may be impa and is unlikely to impact mar The fishing activities are cons deep sea ecosystem. Deep se opportunistic predators, and effect on species at higher tr have on the lower trophic lev the standing stock is harvesto trophic structure. Therefore, the SG 80 and 100	get species, crystal crab, is o acted. The amount of finfis rine food webs or communi sidered to be a negligible ri ea crabs are considered to l I their exploitation is, there rophic levels. In terms of the vels, the minimum sizes are ed, with sufficient levels of 0 are met	considered the only likely h and invertebrate bycatch is small ity structure. sk to trophic interactions in the be both scavengers and fore, unlikely to have a significant e effect that their removal might e such that only a small portion of crabs remaining to maintain	
d	Guidepost	S a c C S S C C E	Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.	Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred.	
	Met?	Y	ſ	Y	
	Justification	Considering the size and scal main consequences for the e The SG 80 and 100 are met.	e of the fishery, sufficient i ecosystem.	nformation is available to infer the	
е	Guidepost	s t a (t s c c e r	Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Information is sufficient to support the development of strategies to manage ecosystem impacts.	
	Met?	Y	(Ν	
	Justification	Information continues to be collected to detect any increase in risk level on the ecosystem and the SG 80 is met. This information, however, may not be sufficient to support the development of a strategy to manage impacts on ETP species or the deep water ecosystem across the range of the fishery if fishing levels increase. Overall very little data is collected to help inform or modify strategies to manage ecosystem impacts. The SG 100 is not met.			
Refere	nces	Brewer et al. (2007), DoF (2003), How et al. (2015).			

PI 2.5.3	There is adequate knowledge of the impacts of the fishery on the ecosystem				
OVERALL PERFORMANCE INDICATOR SCORE:					
CONDITION NUMBER (if relevant):					

PI 3.1.1		 The management system exists within an appropriate legal and/or customary framework which ensures that it: Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and Incorporates an appropriate dispute resolution framework. 		
Scoring	g Issue	SG 60	SG 80	SG 100
a	Guidepost	There is an effective national legal system and <u>a framework for</u> <u>cooperation</u> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and <u>organised and effective</u> <u>cooperation</u> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and <u>binding procedures</u> <u>governing cooperation with other</u> <u>parties</u> which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Y	Y	Υ

		The management system exists within an appropriate legal and/or customary framework which ensures that it:		
DI 211		Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and and		
FI 3.1.1		 2; and Observes the legal rights created explicitly or established by custom of people 		
		dependent on fishing for food or livelihood; and		
		Incorporates an appropriate dispute resolution framework.		
		In accordance with the <i>Offshore Constitutional Settlement 1995</i> (Brayford and Lyon 1995), the WCDSCMF falls under the management jurisdiction of the WA Government. The WA Government provides management, licensing (where applicable), research and compliance and education services for commercial fisheries, recreational fisheries and customary fishing.		
		However, the Commonwealth Government retains responsibility for implementing Australia's commitments under a range of international fisheries legislation and instruments. This responsibility is undertaken through the Commonwealth EPBC Act. The WCDSCMF is subject to assessment under the EPBC Act's <i>Guidelines for the Ecologically</i> <i>Sustainable Management of Fisheries</i> (Department of the Environment and Water Resources 2007). The WCDSCMF is also subject to the provisions of the EPBC Act related to species protected under that Act. A memorandum of understanding is being developed between the Commonwealth and DoF to facilitate and formalise procedures for reporting of protected species interactions.		
		The key legislative components of the WA fisheries management system are the FRMA, the FRMR and the WCDSCMF Management Plan. Commercial fishers must also comply with the requirements of the <i>Western Australian Marine Act 1982</i> and the <i>Wildlife Conservation Act 1950</i> (WA). These legislative instruments are supported by a range of high level policies including:		
	ы	 The WA Government's Fisheries Policy Statement (DoF 2012c); The Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia (DoF 2015b); Ecosystem Based Fisheries Management (as described in Fletcher and Santoro 2014); The objectives of these legislative instruments and policies are consistent with MSC Principles 1 and 2; and The Responsible Minister in the WA Government is the Minister for Fisheries who has legislative power to act upon knowledge and advice he is provided with. Administration of the management arrangements is the responsibility of the CEO of DoF. The Department is governed by the <i>Public Sector Management Act 1994</i>, which requires, among other things, that DoF provide an Annual Report to Parliament that includes an assessment of the extent to which the Department has achieved its goal of conserving and sustainably developing the State's aquatic resources. 		
	Justificat	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2. The fishery meets the requirements of SG 60, 80 and 100.		
PI 3.1.1		 The management system exists within an appropriate legal and/or customary framework which ensures that it: Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and Incorporates an appropriate dispute resolution framework 		
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b	Guidepost	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.	The management system incorporates or subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
	Met?	Y	Y	Y

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it:
		• Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2: and
		 Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and
		Incorporates an appropriate dispute resolution framework.
		All changes to existing or new fisheries legislation, including subsidiary legislation such as the WCDSCMF management plan, are potentially subject to review through the disallowance process of State Parliament. All subsidiary legislation is also reviewed by the Joint Standing Committee on Delegated Legislation, which may seek further advice on the reasons for the legislation and potentially move to disallow. In this way, there is Parliamentary and public scrutiny of all fisheries legislation. There are also well-established formal dispute mechanisms for administrative and legal
		appeals of decisions taken in respect to fisheries (as prescribed in Part 14 of the FRMA).
	Justification	Most decisions made by the CEO of the Department and disputes regarding the implementation and administration of fisheries legislation can be taken to the Western Australian State Administrative Tribunal (SAT) for review, or to the WA (and Commonwealth) Court System. The decisions of the SAT and Courts are binding on the Department, and all SAT decisions must be carried out by the Department (under section 29(5) of the <i>State Administrative Tribunal Act 2004</i>). These mechanisms have been used and tested. Dispute resolution mechanisms have been used in the WCDSCMF where the SAT has been used to assess a variation of permit under the WCDSCMF interim management plan (see http://decisions.justice.wa.gov.au/SAT/SATdcsn.nsf/PDFJudgments-
		WebVw/2005WASAT0031/\$FILE/2005WASAT0031.pdf.)
		Disputes in the fishery are also informally dealt with or avoided through the ongoing processes of communication and consultation between the fishery's management and research staff and industry.
		The assessment team saw no evidence of ongoing disputes or disagreements between DoF and WAFIC or commercial fishers generally. This suggests that the above mechanisms for dispute resolution are effective.
		The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
		The fishery meets the requirements of SG 60, 80 and 100.

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and			
		2; and	hts created avalisitly or acta	bliched by custom of poonlo	
		 Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood: and 			
		Incorporates an appro	opriate dispute resolution fra	amework.	
c		The management system	The management system	The management system has a	
		has a mechanism to	has a mechanism to	mechanism to formally commit to	
		generally respect the	observe the legal rights	the legal rights created explicitly	
	st	legal rights created	created explicitly or	or established by custom of	
	odi	explicitly or established	established by custom of	people dependent on fishing for	
	lide	by custom of people	people dependent on	food and livelinood in a manner	
	פו	food or livelihood in a	livelihood in a manner	MSC Principles 1 and 2	
		manner consistent with	consistent with the	MSC Principles 1 and 2.	
		the objectives of MSC	objectives of MSC		
		Principles 1 and 2	Principles 1 and 2		
	Met?	γ	γ γ	γ	
		The management system p	provides access rights to the o	commercial fishery by way of the	
		issue of a limited number of	of licenses and through the a	llocation of individual transferable	
		quota units. Licences and o	uota units are issued in acco	ordance with the WCDSCMF	
		wanagement Plan which d	erives its power from the FR	MA.	
		In 1992 the High Court of	Australia recognised native t	itle i e that indigenous Australians	
		may continue to hold nativ	re title and to be uniquely co	nnected to the land. Australian law	
		recognises that native title	exists where Aboriginal peo	ple have maintained a traditional	
		connection to their land ar	nd waters, since sovereignty,	and where acts of government	
		have not removed it. A 201	13 High Court decision conclu	ded that State fisheries legislation	
		in South Australia did not e	extinguish native title rights t	o fish. It is likely that this decision	
		also means that WA fisher	es legislation does not exting	guish native title rights to fish where	
		that right is exercised for a	traditional, non-commercial	purpose by an Aboriginal person.	
		There are currently no nat	ve title claims that relate to	the waters in which the WCDSCMF	
		occurs.			
		The rights of Aboriginal pe	rsons fishing for customary p	urposes are recognised under	
		Section 6 of the FRMA and	S258(1)(ba) of the Act provid	des the power to make regulations	
		to manage customary fishi	ng.		
		DoF's Integrated Fisheries	Management (IFM) policy (D	oF 2009b) seeks to share resources	
		between fishing sectors i.e	. commercial, recreational a	nd customary. The <i>Aquatic</i>	
		Resources Management Bi	<pre>// (which, when enacted will</pre>	replace the FRMA) provides for a	
		quantity of an aquatic reso	ource to be reserved for cons	ervation and reproductive purposes	
		before setting a sustainabl	e harvest level for by the fish	ing sectors. It is proposed that this	
		'reserve' include an allowa	nce for customary fishing if r	equired. However, there is no	
		known customary fishing f	or deep sea crab.		
	ion	The management system b	as a machanism to formally	commit to the logal rights created	
	icat	explicitly or established by	custom of neonle dependen	t on fishing for food and livelihood	
	stifi	in a manner consistent wit	h the objectives of MSC Prin	ciples 1 and 2. The fishery therefore	
	'nſ	meets the requirements of	SG 60, 80 and 100.	spice I and Li me honery therefore	

	The management system exists within an appropriate legal and/or customary framework which ensures that it:			
PI 3.1.1	 Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2: and 			
	 Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and 	le		
	Incorporates an appropriate dispute resolution framework.			
	Brayford, H. and Lyon, G. (1995). Offshore Constitutional Settlement 1995. Fisherie	es		
	Management Paper 77, WA Department of Fisheries, Perth.			
	Department of the Environment and Water Resources (2007). Guidelines for the			
	Ecologically Sustainable Management of Fisheries. Retrieved from			
	http://www.environment.gov.au/system/files/resources/97ff9461-5ccf-49cb-9368	<u>8-</u>		
	<u>8bde5f243c0b/files/guidelines.pdf</u>			
	Fish Resources Management Act 1994.			
	http://www.austlii.edu.au/au/legis/wa/consol_act/frma1994256/index.html			
	Fish Resources Management Regulations 1995			
	https://www.slp.wa.gov.au/legislation/statutes.nsf/main_mrtitle_1458_homepag_e.html			
References	DoF (2009b). Integrated Fisheries Management Government Policy.			
	http://www.fish.wa.gov.au/Documents/ifm/IFMGovtPolicy_2009.pdf			
	DoF. (2012c). Western Australian Government Fisheries Policy Statement March 20 Department of Fisheries WA 12 nn	012.		
	http://www.fish.wa.gov.au/Documents/corporate_publications/wa_govt_fisheries	policy		
	statement.pdf	_, , , _		
	DoF (2015b). Harvest Strategy Policy and Operational Guidelines for the Aquatic Re	esources		
	of Western Australia. Fisheries Management Paper No. 271 Department of Fisherie	es,		
	Western Australia.			
	Fletcher, W.J. & Santoro, K. (eds). (2014). Status Reports of the Fisheries and Aquat	tic		
	Resources of Western Australia 2013/14: The State of the Fisheries. Department of Fisheries WA			
OVERALL PERFOR	OVERALL PERFORMANCE INDICATOR SCORE: 100			
CONDITION NUM	IBER (if relevant):			

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties			
Scoring	g Issue	SG 60	SG 80	SG 100	
а	Guidepost	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.	
	Met?	Y	Y	Not scored (PI did not score 80)	
	u	The roles and responsibilit management of fisheries re <i>Settlement 1995</i> . The roles respect to ecological susta marine waters, are clearly responsibilities of the WA Australian commercial fish DoF has identified the key Department and their role. DoF is structured along cle regional services (including each of these areas are spe example, DoF 2014). WAFIC plays a central role the Government's principle industry. WAFIC's consulta defined in an SLA with DoF	ies of the Commonwealth an esources are well articulated and responsibilities of the C inability and conservation of set out in the Commonwealt Government in relation to th eries are set out in the FRMA organisations and individual s and responsibilities are clea arly defined roles relating to g compliance and licensing). T elt out in the DoF's Annual Re- in the management system of e source of coordinated adviction tion roles and responsibilities.	d WA Governments in the in the <i>Offshore Constitutional</i> ommonwealth Government with marine resources, in relation to WA h EPBC Act. The roles and e management process for Western A. positions relevant in the arly articulated. (How et al. 2015). aquatic management, research and The roles and responsibilities of eport to Parliament (see for of commercial fisheries since it is ce from the commercial fishing s and interactions with DoF are	
	Justificatic	Organisations and individu Functions, roles and respo areas of responsibility and 60 and 80.	als involved in the managem nsibilities are explicitly define interaction. The fishery there	ent process have been identified. ed and well understood for key efore meets the requirements of SG	

PI3.1.2The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in management process are clear and understood by all relevant parties			ocesses that are open to ividuals who are involved in the relevant parties		
b	Guidepost	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.	
	Met?	Y	Y	Not scored (PI did not score 80)	
	Justification	The WA Government's commitment to consultation with stakeholders is stated in the Government's Fisheries Policy Statement (2012c) which identifies WAFIC and Recfishwess as the key source of coordinated industry advice for the commercial and recreational fishing sectors respectively. These two peak sector bodies work in partnership with DoF under SLAs to ensure adequate consultation is conducted with their constituents on broad or fishery/specific species policy issues. The broad stakeholder consultation framework is described in (Figure 16). Consultation requirements with 'affected persons' (commercial licence holders) that the Minister must adhere to when developing a new management plan or amending an existing plan are specified in the FRMA (Sections 64 and 65). DoF also seeks public comment on research, management and discussion papers from time to time. Draft Fisheries Management Papers are released for public comment and those comments mu be taken into account before a decision is made on future management (How et al. 2015 AMMs are held with licensees for most fisheries, including those in the WCDSCMF. These meetings provide an opportunity for fishers, managers and researchers to discuss and exchange information on the fishery. The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained. The fishery therefore meets the requirement of SG 60 and 80.			
C	Guidepost		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.	
	Met?		Ν	Not scored (PI did not score 80)	

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties.		
		The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
		As noted above, at the management system level, there are both statutory a statutory consultation processes in place. In particular the legislation requires Minister consult with respect to changes to management plans.	and non- that the	
		Despite recognition of other stakeholder groups in the consultation framework (F the assessment team considered that there is currently a focus on consultat commercial and recreational fishers. There are formal arrangements in p consultation with these sectors through SLAs with DoF. However, the nature or fr of consultation with other stakeholders (see, for example, those identified in Secti is not specified. The harvest strategy (DoF 2015a) notes, for example, that in re- management changes "consultation with the public, other Government agencies users, Native Title parties and NGOs is undertaken by the Department on an basis". Consultation with these groups is, therefore, entirely at the discretion of D commercial and recreational fishers were consulted in the development of the strategy.	igure 16) ion with place for requency on 3.5.2) plation to s, marine as needs poF. Only e harvest	
		While DoF makes a range of management system and fishery specific level do available on its website, some of which are available for public comment, ther principles or requirements in place that guide the level of consultation with all ir and affected parties. As a result, at both a management system level and fisher level, the approach to involving affected parties, other than fishers, appears to b and the management system does not provide confidence that it will provide oppor for all interested and affected parties to be involved.	e are no nterested y specific e ad hoc ortunities	
	Justification	DoF is currently reviewing its consultation processes to provide greater opport stakeholder involvement. Options under consideration include public forums, consultation with key interest groups, or a regional approach, depending on the f issues under consideration. However, currently, the fishery does not meet the requ of SG 80.	unity for targeted ishery or uirement	
		How, J.R., Webster, F.J., Travaille, K.L. & Harry, A.V. (2015). <i>MSC Report Series: Wes Deep Sea Crustacean Managed Fishery</i> . Department of Fisheries, Western Australia	st Coast a.	
Defermine		DoF. (2012c). Western Australian Government Fisheries Policy Statement March 20 Department of Fisheries, WA, 12 pp. <u>http://www.fish.wa.gov.au/Documents/corporate_publications/wa_govt_fisheries</u> <u>statement.pdf</u>	012.	
nererei		DoF (2014). Department of Fisheries Annual Report to Parliament 2013/14. Retriev http://www.fish.wa.gov.au/About-Us/Publications/Pages/Annual-Report.aspx	ed from	
		DoF (2015a). West Coast Deep Sea Crustacean Resources Harvest Strategy 2015-20 Version 1. West Coast Deep Sea Crustacean Managed Fishery. Fishery Managemen No. 272. Department of Fisheries, Western Australia.	920 t Paper	
OVERA	LL PERFOR	MANCE INDICATOR SCORE:	75	

PI 3.1.2 The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in management process are clear and understood by all relevant parties		n the
CONDITION NUMBER 3:		
By the 1st surveillance audit DoF shall demonstrate that consultation processes have been amended to provide opportunity for all interested and affected parties to be involved.		

ΡΙ	3.1	L .3
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PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach			
Scoring Issue		SG 60	SG 80	SG 100	
a	Guidepost	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are implicit within management policy	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.	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.	
	Met?	Y	Y	Y	
 The long-term objectives of the management system are specified section 3.5.4) and are consistent with the MSC Principles and Crite FRMA requires that the precautionary principle be applied in exert powers under the Act. The long-term objectives are reflected in D 2009c) which outlines the objectives of the Department as: Sustainability – to ensure WA's fisheries and aquatic rest and to provide services based on risk to ensure fish for the maintenance of healthy aquatic ecosystems; Community Outcomes – to achieve an optimum balance development and social amenity in accordance with a fit sustainability; Partnerships – to promote effective strategic alliances a stewardship; and Agency Management – deliver services on behalf of Gor with the Department's statutory requirements to achier use of resources to support the delivery of our strategy 		re specified in the FRMA (see es and Criteria. Section 4A of the ied in exercising functions or flected in DoF's Strategic Plan (DoF t as: aquatic resources are sustainable re fish for the future and support ms; um balance between economic ce with a framework to achieve alliances and community chalf of Government in accordance ts to achieve effective and efficient ur strategy.			
	ис	The legislative long-term objectives are translated into clearly-defined operational arrangements and procedures for commercial resource/fisheries in the form of harvest strategies (see Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia (DoF 2015b)).			
	Justificatic	The available evidence indicates that clear long-term objectives that guide decision- making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy. The fishery therefore meets the requirements of SG 60, 80 and 100.			
		Fish Resources Manageme	nt Act 1994		
References		DoF (2009c). Strategic Plan 2009-2018 (Phase 3 2013-2015). Retrieved from: http://www.fish.wa.gov.au/Documents/corporate_publications/strategic_plan_2009- 2018_phase3.pdf			

PI 3.1.3	The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach		
	DoF. (2015b). Harvest Strategy Policy and operational Guidelines for the Aquatic Re of Western Australia. Fisheries Management Paper No. 271. Department of Fisheri Western Australia.	esources es,	
OVERALL PERFORMANCE INDICATOR SCORE:		100	
CONDITION NUMBER (if relevant):			

PI 3.1.4 The management system provides economic and social incentives for and does not operate with subsidies that contribute to unsustainable		al incentives for sustainable fishing o unsustainable fishing		
Scoring	g Issue	SG 60	SG 80	SG 100
a	Guidepost	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that perverse incentives do not arise.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure they do not contribute to unsustainable fishing practices.
	Met?	Y	Y	Y
		InstantInstantInstantInstantInstantYYYYThe provision of secure access rights under the Management Plan provides an environment that encourages stewardship of the resource by commercial fishers. This is further encouraged by the presence of formal and comprehensive systems of licensing and compliance which provide confidence for fishers that their good management practices are not compromised by non-compliance.The development of harvest strategies and the use of annual performance measures for commercial fisheries ensure that the performance of fisheries is regularly reviewed against the legislative objectives, which are consistent with achievement of the outcomes of MSC Principles 1 and 2. The fishery is assessed annually (in, for example, the annual Status Reports of the Fisheries and Aquatic Resources of Western Australia and DoF's annual report to Parliament) against its objectives, which derive from the FRMA and include sustainable management of fish resources, other aquatic fauna and habitats. This review necessarily involves assessment of whether management arrangements contribute to unsustainable fishing practices. Further, in the longer-term when the WCEMF Management Plan is reviewed, it will also be assessed against these objectives. This ensures that management policies and procedures do not contribute to unsustainable fishing practices.All managed commercial fisheries in WA are subject to a funding model aimed at improving flexibility for resourcing priority management needs and providing equity in how much licensees pay in access fees and greater certainty of funding and access rights. This involves all managed commercial fisheries in WA paying an access fee equivalent to 5.75% of the gross value of production of the respective fishery (How et al. 2015).		
	cation	The assessment team did r fishing practices. The assessment team cons are consistent with achievi explicitly considers incentiv	idered that the management ing the outcomes expressed l ves in a regular review of ma	t would contribute to unsustainable t system provides for incentives that by MSC Principles 1 and 2, and nagement policy or procedures to
	Justif	The fishery therefore meet	ts the requirements of SG 60	80 and 100

PI 3.1.4	The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing				
References	How, J.R., Webster, F.J., Travaille, K.L. & Harry, A.V. (2015). <i>MSC Report Series: West Coast Deep Sea Crustacean Managed Fishery</i> . Department of Fisheries, Western Australia.				
OVERALL PERFOR	OVERALL PERFORMANCE INDICATOR SCORE: 100				
CONDITION NUMBER (if relevant):					

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2			
Scoring	g Issue	SG 60	SG 80	SG 100	
a	Guidepost	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management system	Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.	
	Met?	Y	Y	Y	
	ustification	 The long-term ecological o objective of the FRMA, are To maintain spalevel where the To maintain spalevel where the To ensure fishin bycatch species To ensure fishin species populati To ensure the efficiency of the structure To ensure the efficiency	bjectives of the WCDSCMF, of defined in the harvest strate whing stock biomass of the t main factor affecting recruits whing stock biomass of each main factor affecting recruits g impacts do not result in ser populations; g impacts do not result in ser ons; fects of fishing do not result e and function; and fects of fishing do not result sses. ates these objectives into shi surable performance indicato nst the objectives.	consistent with the overarching egy (DoF 2015a) as follows: arget species (i.e. crystal crabs) at a ment is the environment; retained (non-target) species at a ment is the environment; tious or irreversible harm ¹⁴ to rious or irreversible harm to ETP in serious or irreversible harm to in serious or irreversible harm to ort-term operational objectives (see ors to enable monitoring of the fined and measurable short and nt with achieving the outcomes within the fishery's management	
Refere	nces	DoF (2015a). West Coast Deep Sea Crustacean Resources Harvest Strategy 2015-2020 Version 1. West Coast Deep Sea Crustacean Managed Fishery. Fishery Management Paper No. 272. Department of Fisheries, Western Australia.			

¹⁴ The WCDSCMF harvest strategy notes that serious or irreversible harm relates to a change caused by the fishery that fundamentally alters the capacity of the component to maintain its function or to recover from the impact.

PI 3.2.1	The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2			
OVERALL PERFOR	OVERALL PERFORMANCE INDICATOR SCORE: 100			
CONDITION NUMBER (if relevant):				

PI 3.2.2	ΡΙ	3.2	2.2	
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		The fishery-specific manage	The fishery-specific management system includes effective decision-making processes		
PI 3.2	.2	that result in measures and strategies to achieve the objectives, and has an appropriate			
		approach to actual disputes in the fishery under assessment.			
Scoring	; Issue	SG 60	SG 80	SG 100	
а	Guidepost	There are some decision- making processes in place that result in measures and strategies to achieve the fishery- specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery- specific objectives.		
	Met?	Y	Y		
The FRMA, together with the WCDSCMF Management Plan, provide decision-making on long-term management of the WCDSCMF. Decis responsibilities are well defined. Decisions are generally taken by th Minister, after consultation with commercial and recreational fisher provides for decisions to be taken without such consultation where for action.			Plan, provide the framework for DSCMF. Decision-making roles and y taken by the CEO of DoF or the ational fishers. However the FRMA ation where there is an urgent need		
	tification	The harvest strategy (DoF 2 making in pursuit of short- reviewing the status of the pressures for change, with Decision-making in pursuit periodic ecological risk assi- changes in market condition These drivers may dictate for the fishery, often through for the WCDSCMF. Decision consultation with industry written information, meetin working groups.	2015a) contains harvest cont term operational objectives. fishery, and for the discussion the commercial industry (e.g of longer-term objectives re essments, results of monitorions, changes in fishing behavion the need for higher level chan changes to legislation e.g. the ns to proceed with such char and other stakeholders. This ngs, internal workshops, exter-	rols rules that drive decision- There are established processes for on of any other internal or external g. through AMMs). sponds to processes including ing programs and research projects, iour and resource allocation issues. nges to the management regime for e adoption of a management plan oges involve a higher level of may include the provision of ernal/expert workshops or tasked	
	Justi	result in measures and stra requirements of SG 60 and	tegies to achieve the fishery SG 80 are met.	-specific objectives and that the	

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 under assessment.			
b	Guidepost	Decision-making processes respond to serious issues_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 serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	
	Met?	Y	Y	Y	

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 under assessment.			
		Decision-making processes respond to issues raised through:			
		 Ecological risk assessments; 			
		 Results of research, management or compliance projects or investigations; 			
		 Monitoring or assessments outcomes (including those assessed as part of the harvest strategies); 			
		 Expert workshops and peer review of aspects of research and management; 			
		 Harvest strategy control rules (DoF 2015a) dictate the management response to performance of the fishery against established indicators. While these harvest strategies have only recently come into force, experience with other harvest strategies employed by DoF provides some confidence that decisions will be taken in line with control rules; 			
		As discussed above, more overarching changes to the fishery-specific management system are the subject of broader consultation and examination. This provides a mechanism to identify and consider the broader implications of management options. The responsiveness of the fishery-specific management system has been demonstrated through the transition from an interim managed fishery to a fully managed fishery under the WCDSCMF Management Plan over 2013/2014. The assessment team was provided with examples of the responsiveness of the decision making processes to operational matters raised by industry.			
		The decision-making processes are subject to various transparency requirements which are met through:			
		 Publication of Fisheries Management Papers, Fisheries Occasional Papers and Fisheries Research Reports on the DoF website; 			
		 Written advice to licence holders and other stakeholders regarding new statutory arrangements; 			
		 A requirement to report annually to the WA Parliament on the performance of the Department against the objectives of the FRMA; 			
		 Public access to relevant legislation including the FRMA, FRMR and the WCDSCMF Management Plan, harvest strategies, the Department's research plan and annual status report of fisheries. 			
		The assessment team did not identify any instances where the management system had failed to respond in a timely way to research, monitoring, evaluation and consultation and considered that decision making was undertaken in a transparent manner.			
	Justification	As a result the assessment team considered that decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. The requirements of SG 60, 80 and 100 are met.			

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 under assessment.			
C	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.		
	Met?		Y		
	Justification	Decision making is driven b DoF's Harvest Strategy Pol precautionary approach ar poses to target, other reta The use of threshold refere the precautionary approact target. This ensures that an if necessary in a proactive will be approached. The performance indicator on catch, effort, catch rate assessments of target, oth ecosystems. Decision-making processes	by the harvest strategy (DoF 2 icy (DoF 2015b) which is pre- ind the use of EBFM and respo- ined species, bycatch, ETP sp ence levels in the harvest stra- th by triggering a review whe my significant impacts are det way, effectively minimising the rs in the harvest strategy rely is, interactions with protected er retained species, bycatch,	2015a) which is consistent with dicated on the application of the onds to the assessed risk that fishing pecies, habitats and ecosystems. ategy, also demonstrates the use of re fishery performance is below the tected, examined and responded to he risk that the limit reference point on the best available information d species and periodic risk ETP species, habitats and	
d	Guidepost	Some information on fishery performance and management action is generally available on request to stakeholders.	Information on fishery performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on fishery performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	
	Met?	Y	Y	N	

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 under assessment.			
	Justification	 ber provides mornation on matchy performance and management action to stakeholders through a range of mechanisms including annual management meetings, annual status reports (e.g. Fletcher & Santoro 2014), fisheries management papers, fisheries occasional papers and fisheries research reports. Opportunities exist for stakeholders to query actions or lack of action in response to research, monitoring, evaluation and review outcomes. However, comprehensive fishery-specific performance indicators have only recently been developed through the development of harvest strategies and the reporting on these is yet to be demonstrated. The assessment team found that information on fishery performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity and the requirements of SG80 were met. However, the assessment team considered that the fishery management system has not yet demonstrated that it provides comprehensive information on fishery performance and management actions to all interested stakeholders, and that SG100 was not met. 			
e	Guidepost	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.	
	Met?	Y	Y	Y	
	Justification	The fishery system is not su for the WCDSCMF proactiv notably commercial and re Where legal challenges hav http://decisions.justice.wa WebVw/2005WASAT0031/ the judicial decision. The management system of implements judicial decision and 100 are met.	ubject to continuing court ch rely avoids legal disputes throus creational fishers, in its mana we been made to the manage .gov.au/SAT/SATdcsn.nsf/PD /SFILE/2005WASAT0031.pdf) or fishery acts proactively to a ons arising from legal challen	allenges. The management system ough inclusion of key stakeholders, agement decision making. ment system (see, for example, FJudgments- b, DoF has responded promptly to avoid legal disputes or rapidly ges. The requirements of SG 60, 80	
References and 10 DoF (2 Versio No, 27 DoF (2 Versio No, 27 DoF (2 Versio No, 27 DoF (2 Versio No, 27 DoF (2)		and 100 are met. DoF (2015a). West Coast Deep Sea Crustacean Resources Harvest Strategy 2015-2020 Version 1. West Coast Deep Sea Crustacean Managed Fishery. Fishery Management Paper No, 272. Department of Fisheries, Western Australia. DoF (2015b). Harvest Strategy Policy and Operational Guidelines for the Aquatic Resources of Western Australia. Fisheries Management Paper No. 271. Department of Fisheries			

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 under assessment.		
	Western Australia. Fletcher, W.J. & Santoro, K. (eds). (2014). <i>Status Reports of the Fisheries and Aquat Resources of Western Australia 2013/14</i> : The State of the Fisheries. Department of Fisheries, WA.	tic F	
OVERALL PERFORMANCE INDICATOR SCORE: 9			

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with			
Scoring Issue		SG 60	SG 80	SG 100	
а	Guidepost	Monitoring, control and surveillance mechanisms exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.	
	Met?	Y	Y	Y	

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with			
		For compliance purposes, MCS is delivered through a section 3.5.9). Managemen combined OCP for a numb by a combined periodic ris was conducted in 2012, ho associated compliance stra combined compliance risk	compliance purposes, DoF includes the WCDSCMF in the West Coast Bioregion (WCB). S is delivered through a sophisticated compliance structure within DoF (as described in tion 3.5.9). Management arrangements for the WCDSCMF are enforced under a nbined OCP for a number of minor commercial fisheries of the WCB. This is informed a combined periodic risk assessment of these fisheries. The most recent risk assessment s conducted in 2012, however a local review and update of compliance assessment and ociated compliance strategies, manuals and procedures is conducted annually. A new nbined compliance risk assessment is scheduled for 2015.		
		The primary monitoring ac quota. There is a comprehe	tivity in the WCDSCMF relate ensive MCS system in place in	es to ensuring compliance with ncluding:	
		 Departmental cl 	necking of processor reporte	d weights and those in CDRs;	
		 Wholesale and r 	etail inspections targeting re	cords and catch;	
		Boat inspections	s to detect bycatch and off-q	uota product;	
		 Attending indus 	try meetings;		
		Intel-driven inve	estigations;		
		Land patrols, inc	cluding opportunistic inspect	ions of catch, licenses and bycatch;	
		 Sea patrols; 			
		 Processor inspections; and 			
		 Road-side check points (in collaboration with the WA Police) for protected fish species (e.g. undersize or berried females). 			
		These strategies are supported by appropriately trained staff, suitable deterrents in the forms of fines and administrative penalties and targeted education campaigns to promote voluntary compliance.			
		Data on detection of offences and the nature of the offence are available from DoF (See Table 4) indicating that the MCS system consistently enforces relevant management measures, strategies and/or rules.			
	Justification	The assessment team concluded that a comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules and that SG 60, 80 and 100 are met.			
b	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non- compliance exist, are consistently applied and demonstrably provide effective deterrence.	
	Met?	Y Y Y		Y	

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with			
		The FRMA contains an exp sanctions to be applied to system of sanctions include prosecutions. Sanctions ar cancellations or suspension commensurate with the va and 2013 three prosecutio offenders, were prepared. evidence. In addition, one warning were issued in this noted that the fine issued a However, non-payment re Registry (FER). The infringe added to the original amou result in any of the following	licit sanction framework, incl non-compliance with comme es infringement warnings, in ising from prosecution can in ns and confiscation of gear o alue of illegal fish and the typ n briefs, in relation to one of These briefs did not proceed infringement notice, one infr s period. No offences were d as a result of the infringemer sults in the matter being refe ement notice then becomes a unt. Failing to pay the fine res	luding the nature and extent of ercial fishing regulations. A tiered fringement notices a, LoW and aclude monetary penalties, licence r catch. The penalties are e of illegal activity. Between 2009 fence involving three alleged d to prosecution due to insufficient ringement warning and one letter of etected in 2013 and 2014. It is not notice in 2011 remains unpaid. erred to the Fines Enforcement a court order and further fees are sulting from the court order can	
		 Additional costs 	;		
		 Suspension of d 	river's licence;		
		 Suspension of vehicle licence; 			
		 Immobilisation of your vehicle; 			
 Seizure and sale of your property; and/or 					
		 Publication of your name on a website. 			
	tion	DoF advises that the FER action will have been applied to the unpaid infringement a suitable penalty will have been applied.		to the unpaid infringement and a	
	Sanctions to deal with non-compliance exist and are consistently applied and the level of infringements suggesting that the sanctions demonstrably provide an effective deterrence. It is considered that SGs 60. 80 and 100 are met.		nsistently applied and there is a low monstrably provide an effective emet.		
cFishers are generally thought 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.Some evidence exists 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 high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.			
	Met?	Y	Y	Y	

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with			
		The offending rate in the WCDSCMF is very low (Table 9) and there is a comprehensive MCS system in place which provides confidence that the available data are credible. The reported level of compliance is also supported by the positive status of the target fish stock.	e		
		While the level of compliance contacts is low (1/year) the primary compliance issue relates to ensuring that the quota is not exceeded. This is done primarily through desk-based review of documentation (processor records and CDRs) that is not reflected in the contact statistics.			
	tion	Fishers participate actively in the collection of data through submission of mandatory logbook data and reports on interactions with ETP species. Fishers also provide additional information for the effective management of the fishery, particularly through the provision of industry boats for Department surveys and the collection of additional data through industry surveys delivered under a SLA with the Department.			
	Justificat	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery and SG 60, 80 and 100 are met.			
d	Guidepost	There is no evidence of systematic non- compliance.			
	Met?	Y			
	Justification	The level of detected offences in the commercial fishery in the WCDSCMF (see Table 4) is extremely low with a maximum of 3 infringements issued in any of the six years to 2014. There is no evidence of systematic non-compliance and the requirement of SG 80 is met.			
References		How, J.R., Webster, F.J., Travaille, K.L. & Harry, A.V. (2015). <i>MSC Report Series: West Coast Deep Sea Crustacean Managed Fishery</i> . Department of Fisheries, Western Australia. Fish Resources Management Act 1994			
OVERALL PERFOR		RMANCE INDICATOR SCORE: 100)		
CONDITION NU		MBER:			

PI 3.2.4		The fishery has a research plan that addresses the information needs of management			
Scoring Issue		SG 60	SG 80	SG 100	
e Guidepost		Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	
Met?		Y	Y	Y	
The identification of research needs and priorities in the WCDSCMF is concontext of the broader DoF arrangements for strategic research planning, has a research plan that is detailed in DoF's RMAD Plan (DoF 2012b). Rese are assessed on an annual basis through consultation with scientists and fi and discussions with industry members and peak bodies (WAFIC in particulate primary mechanism for priority review (DoF 2015b). Where appropriate workshops are held with stakeholder groups. The research plan identifies research and monitoring needs in relation to: retained species stock analysis older biology stock assessments bycatch ETP species The plan also specifies the mechanism and timing for review of research plan covers all aspects of MSC principles 1, 2 and 3 and provi		e WCDSCMF is conducted in the research planning. The WCDSCMF (DoF 2012b). Research priorities with scientists and fishery managers s (WAFIC in particular). The AMM is . Where appropriate, research eeds in relation to: wth, reproduction, diet, natural eview of research priorities and ., 2 and 3 and provides for the n sufficient to achieve the			
	Just	objectives consistent with are met.	MSC's Principles 1 and 2. The	e requirements of SG 60, 80 and 100	
b	Guidepost	Research results are available to interested parties.	Research results are disseminated to all interested parties in a timely_fashion.	Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.	
	Met? Y Y Y		Y		

PI 3.2.4		The fishery has a research plan that addresses the information needs of manager	ment
	Justification	The RMAD Plan is available on the DoF website and research reports are also posted on the DoF website (see http://www.fish.wa.gov.au/About-Us/Publications/Pages/Fisheries-Research-Reports.aspx). The outcomes of monitoring and research undertaken in accordance with the RMAD Plan are also reviewed and reported annually in Fletcher & Santoro (2014).	
References		Department of Fisheries (2012b). <i>Research, Monitoring, Assessment and Development Plan</i> 2011 – 2012. Fisheries Occasional Paper No. 106. Department of Fisheries WA. Retrieved from http://www.fish.wa.gov.au/Documents/occasional_publications/fop106.pdf. Fletcher, W.J. & Santoro, K. (eds). (2014). <i>Status Reports of the Fisheries and Aquatic</i> <i>Resources of Western Australia 2013/14</i> : The State of the Fisheries. Department of Fisheries. WA.	
OVERALL PERFORMANCE INDICATOR SCORE:		100	
CONDITION NUMBER (if relevant):			

		There is a system of monitoring and evaluating the performance of the fishery-specific			
PI 3.2.5		management system against its objectives			
		There is effective and timely review of the fishery-specific management system			
Scoring Issue		SG 60	SG 80	SG 100	
a Guidepost		The fishery has in place mechanisms to evaluate some parts of the management system.	The fishery has in place mechanisms to evaluate key parts of the management system	The fishery has in place mechanisms to evaluate all parts of the management system.	
	Met?	Y	Y	Ν	
Met?YYNMost parts of the WCDSCMF management system are subject to evaluation. Eva processes include strategic planning and risk assessments (ecological risk assess (every 3-5 years) and compliance risk assessments (every 3 years) and AMMs are licence holders and stakeholders (if agreed) to discuss current research program management changes and future research needs. Additional meetings may also on an as needs basis throughout the year to address specific issues or initiatives. The recently developed harvest strategy requires annual evaluation of performa fishery against specified performance indicators across biological, ecological and economic aspects of the fishery. The harvest strategy will be reviewed in 2020 at amended as necessary before then, if required.Fishery performance against long-term and short term objectives is evaluated ar through the Status Reports of the Fisheries and Aquatic Resources of Western Au 2013/14: The State of the Fisheries (see for example Fletcher & Santoro 2014) ar broadly through DoF's Annual Report to the Western Australian Parliament (see example DoF 2014).The performance of the management target, bycatch, ETP species and habitats i assessed under the Commonwealth EPBC Act for the purposes of export approval		subject to evaluation. Evaluation ints (ecological risk assessments ry 3 years) and AMMs are held with current research programs, tional meetings may also be held, ecific issues or initiatives. al evaluation of performance of the biological, ecological and socio- vill be reviewed in 2020 and objectives is evaluated annually <i>Resources of Western Australia</i> etcher & Santoro 2014) and more ustralian Parliament (see for			
	Justification	However, neither the FRMA nor the WCDSCMF Management plan provide for the regular review of the management plan. Therefore the fishery has in place mechanisms to evaluate key, but not all, parts of the management system. The requirements of SG 60 and 80 are met.			
b	Guidepost	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.	
Met? Y		Y	Ŷ	Ŷ	

PI 3.2.5		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives		
		There is effective and timely review of the fishery-specific management system		
The management system is subject to regular internal review as described under issue (a). Internal review processes also included extensive internal review of the management plan and the draft harvest strategy. As noted above, the WCDSCMF is also subject to periodic external review under Act. This review must be conducted at least every 5 years in order to remain acc export of the target species. The fishery-specific management system is subject to regular internal and exter and SG60, 80 and 100 are met.		The management system is subject to regular internal review as described under s issue (a). Internal review processes also included extensive internal review of the management plan and the draft harvest strategy.	coring draft	
		As noted above, the WCDSCMF is also subject to periodic external review under the EPBC Act. This review must be conducted at least every 5 years in order to remain accredited for export of the target species.		
		The fishery-specific management system is subject to regular internal and external and SG60, 80 and 100 are met.	review	
		DoF (2014). Department of Fisheries Annual Report to Parliament 2013/14. Retriev http://www.fish.wa.gov.au/About-Us/Publications/Pages/Annual-Report.aspx	/ed from	
		Fletcher, W.J. & Santoro, K. (eds). (2014). Status Reports of the Fisheries and Aquatic		
References		<i>Resources of Western Australia 2013/14</i> : The State of the Fisheries. Department of Fisheries, WA	F	
		How, J.R., Webster, F.J., Travaille, K.L. & Harry, A.V. (2015). <i>MSC Report Series: West Coast Deep Sea Crustacean Managed Fishery</i> . Department of Fisheries, Western Australia.		
OVERA	LL PERFOR	MANCE INDICATOR SCORE:	90	
CONDITION NUM		BER (if relevant):		

Appendix 1.3 Conditions

Table A1.3: Condition 1

Performance Indicator 1.2.1	There is a robust and precautionary harvest strategy in place
Score	70
Rationale	See rationale in evaluation table 1.2.1.
Condition	By the 3rd surveillance audit, provide evidence that the harvest strategy for crystal crab is achieving its objectives.
Client action plan	At each surveillance audit provide evidence that fishing effort is being constrained to a level that is not having a significant impact on recruitment to the stock. This will be achieved by assessing the performance indicators (annual catch rate and catch) and factors that may be affecting these indicators.
	By the third surveillance audit review the outcomes of applying the harvest strategy (e.g. the time series to date) with particular reference to testing that the harvest strategy is maintaining the stock at around the target level.
Consultation on condition	The action plan has been developed in close consultation with the Department of Fisheries (WA)

Condition 2

Performance Indicator	The fishery does not pose a risk of serious or irreversible harm to the retained	
2.1.1	species and does not hinder recovery of depleted retained species	
Score	70	
Rationale	See rationale in evaluation table 2.1.1	
Condition	By the third annual surveillance audit the client shall provide evidence that all retained species including giant crab and bait species with particular concern are highly likely to be within biologically-based limits.	
Client action plan	By the first surveillance audit consultation with industry will be conducted by the Department of Fisheries regarding the division of B Class units (combined champagne and giant crab) into separate units for each species with appropriate catch limits (quota). A memorandum of understanding will be developed to use only bait species which are sourced from managed fisheries By the second surveillance audit separate quota and appropriate units for champagne and giant crabs will be set to ensure that catch limits do not pose a serious risk of irreversible harm to the stock. Implement a memorandum of understanding to use bait from managed fisheries. By the third surveillance the effectiveness of the catch limits will be assessed to ensure they are not posing a serious risk of irreversible harm to the stock. In addition all bait is sourced from managed fisheries.	

Consultation on	The action plan has been developed in close consultation with the Department of	
condition	Fisheries (WA)	

Condition 3

Performance Indicator 3.1.2	The management system has effective consultation processes that are open to interested and affected parties.The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties
Score	75
Rationale	See rationale in evaluation table 3.1.2
Condition	By the 1st surveillance audit DoF to demonstrate that consultation processes have been amended to provide opportunity for all interested and affected parties to be involved.
Milestones	NA
Client action plan	By the first surveillance audit, the Department will have developed, published (online) and implemented a new <i>Stakeholder Engagement Guideline</i> (SEG), setting out the processes through which the Department will provide opportunities for involvement to all interested and affected parties in the management arrangements for the state's aquatics resources. This may manifest as direct consultation with relevant stakeholders and/or notification of public comment opportunities through the Department's website.

Appendix 2. Peer Review Reports

Peer Reviewers Overall Opinion

Overall Opinion of the Report			
	Peer Reviewer 1	Peer Reviewer 2	
Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report? (Yes/No)	Yes	Yes	
Peer Reviewer Justification	NA	There was generally good reference to the information available and the quality of this information was of a high standard. There were a few specific PI where I may have disagreed or been uncertain about the scoring	
		but overall, I think the assessment was of a high quality and scored appropriately.	
Certification Body Response	No response required.		
Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? (Yes/No)	Yes, with the exception that I would like to see some indication of stock abundance trends outside the areas currently fished. This could be addressed in the client's action plan to meet condition 1.	Generally yes.	
Peer Reviewer Justification	The fishery has been concentrating in a smaller area over time. If the stock is also concentrating in a smaller area, CPUE from the fishery may not provide an accurate representation of the overall status of the stock.	Under 2.1.1 the main response is that an MOU be implemented to use only bait species sourced from managed fisheries. I suggest that this be supported with the requirement for reporting or monitoring the use of bait (by species) across all vessels in the fishery.	
Certification Body Response	This issue is raised under PI 1.2.1 and a response is provided below.	The table has been updated to show the use of bait across all vessels in the fishery targeting crystal crab and include the most recent years (2014 and 2015).	

	Tuna was not used as bait during the recent years. However a recommendation was added to 2.1.3 to provide more information about the tuna species and stock status of the bait used in the fishery.

Client Action Plan Comments

Client Action Plan Comments (if included)		
	Peer Reviewer 1	Peer Reviewer 2
Do you think the client action plan is sufficient to close the conditions raised? (Y/N)	Condition 1: No Condition 2: Yes Condition 3: Yes	
Peer Reviewer Justification	The client action plan for Condition 1 seems to be "business as usual." The implication is that each additional year in which the annual catch rate and catch stay within their prescribed limits will be evidence that the harvest strategy is achieving its objectives. The objective is to "maintain stock at levels above BMSY." The possibility that CPUE in the fished areas may not reflect overall stock abundance requires additional evidence that the harvest strategy is achieving its objectives.	Under 2.1.1 I would suggest that a mechanism is required to demonstrate that bait species are being sourced from managed fisheries.
Certification Body Response	The issue is raised for PI 1.2.3 and a response is provided below.	A response is provided above and more details under 2.1.3.

Peer Reviewers General Comments

Peer Reviewer General Comments (optional)		
Peer Reviewer 1	Peer Reviewer 2	
The confusing rationales provided for the retained		
species scoring demonstrates the difficulties		

associated with making a fishery in assessment	
responsible for the management of the fisheries	
from which it sources bait. The retained species	
issues for this fishery appeared to be de minimis in	
nature, but their discussion took up an inordinate	
amount of space and time.	
Certifying Body Response	

Peer Reviewers Comments Related to Scores and Rationales

Principle 1

Performance Indicator 1.1.1	cator 1.1.1		
	Peer Reviewer 1	Peer Reviewer 2	
Has all the relevant information available been used to score this indicator? (ves/no)	No	Yes	
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes	
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A	
Peer Reviewer Justification	The rationale understates the importance of control measures in addition to the limit reference point in protecting the resource from impairment in reproductive capacity. The minimum size protects male crabs for two years after they reach sexual maturity. The minimum size also protects female crabs beyond their size at sexual maturity and the prohibition on taking egg- bearing females further protects mature females. Additional protection for the spawning stock is provided by the fact that the fishery has only been operating in less than one-half the blocks considered to encompass the extent of the	All relevant information appears to have been collated in How et al. (2015). This is the only reference cited. The continued drop in the recruitment index may be a concern in the future but as mentioned it is unlikely to be linked to the fishery at this point. I agree that the reasons given by How et al (2015) for the reduced recruitment "decline in undersize catch rates since 2005 may be a result of a shift in fishing effort" are not valid if factors such as depth and location are included in the standardization.	

	fishery and the maximum number of blocks fished is apparently subject to regulation. The report is inconsistent in the reported age at maturity and age at legal size: Page 29. of age at maturity (12 years), age at legal size (14 years) Page 31. 14 years to reach maturity and longer to become legal size Page 87. 14 years to reach maturity and longer to become legal size.	
Certification Body Response	The rationale has been revised to include reference to the level of protection afforded by the size limits. The number of blocks fished is not considered to be relevant because of the longevity of crystal crabs means that fishing may only need to occur in an area infrequently to impact on the stock. Furthermore, no analyses of the distribution of fishing effort have been provided that would suggest that there are areas protected from fishing. The inconsistencies in the age at maturity have been corrected.	No response required

Performance Indicator 1.1.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	No
rationale used to score this		
indicator support the given		
score? (yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		

Deen Deviewer Leville -	It isn't clean what has the ODUS	
Peer Reviewer Justification	It isn't clear whether the CPUE	Meiville-Smith et al. (2007)
	standardization accounts for the	states "Estimates produced in
	fishery concentrating in the more	2003 (Melville-Smith et al.
	productive blocks over time,	2006), used a depletion
	particularly following the removal	technique to calculate the
	of the requirement for license	unexploited biomass (B0) of
	holders to fish in specific areas.	animals > 120 mm CW in the
		fishery. Those estimates of
		B0=1,200 t, with a likely MSY in
		the range of 30-90 t p.a., appear
		conservative, given that since
		2000 the fishery has landed
		around 200 t p.a. Catch rates
		appear to have stabilized, but
		this is a long lived species and
		there is a need to establish a
		reasonable time series before
		the harvest potential of a fishery
		can be properly understood."
		Although the fishery has
		contracted and catches prior to
		TAC were well above the current
		TAC of 140t (two thirds), these
		catches are still well above the
		MSY range of 30-90 t and come
		from a species that can live to
		25-30 years (so there can be
		biomass from many
		accumulated year classes in
		initial catches). If the current
		BMSY figure is not used then
		there needs to be justification
		that 140t is "some measure or
		surrogate with similar intent or
		outcome".
		Melville-Smith et al. (2007)
		states "it has been decided
		that an adaptive management
		approach will be adopted $\Delta T\Delta C$
		of 140 t will be set for the
		fishery and its performance will
		he monitored primarily against
		chue "
		If this is indeed adaptive and
		requires monitoring then I
		requires monitoring them

		would think the current catch
		figure either be justified or
		require a condition of
		monitoring and re-assessment.
Certification Body Response	· · · · · · · · · · · · · · · · · · ·	The proposed rationale had
		considered that the difference
		between the current TAC and
		the earlier estimate of B _{MSY}
		(Melville-Smith et al. 2006)
		meant that there was not a high
		degree of certainty that the
		choice of the reference range
		was appropriate for achieving
		B _{MSY} . The reviewer has suggested
		that the current justification is
		not sufficient to meet the SG80
		level and that a condition should
		be imposed.
		We have reviewed this issue and
		noted that the conclusions of
		Melville-Smith et al. (2007) were
		based on an analysis of only the
		first few years catch data from
		the fishery. Additional
		information was obtained from
		the DoF about the status of
		these early analyses and we
		consider that the stable or
		positive trends in the indicators
		such as CPUE over a much longer
		period than the four years used
		for that early analysis (Figure
		3.11), support the view that the
		stock has not been substantially
		depleted and, as outlined in the
		research advice in support of an
		increased TAC (Appendix 6), are
		good evidence that catches up
		to a TAC of 154 t are consistent
		with a BMSY target. We have
		revised the background and
		rationale to include this
		additional evidence and
		argument that the SG80 level of
		1.1.2c is met.
Performance Indicator 1.1.3		
------------------------------------	------------------------	-----------------
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	NA	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	NA	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No responses required.	

Performance Indicator 1.2.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	No	Yes
available been used to score this		
Indicator? (yes/no)		
Does the information and/or	Yes	No
rationale used to score this		
indicator support the given		
score? (yes/no)	No.	No.
will the condition(s) raised	Yes	Yes
norformance to the SCR0 lovel2		
(ves/no/NA)		
Reer Reviewer Justification	On page 97 in the rationale for	The stated Condition "provide
reel neviewer Justification	this PL the report states that "the	evidence that the harvest
	TAC has not been varied since it	strategy for crystal crabs is
	was first set in 2008 and if the	achieving its objective" is
	primary indicators remain within	adequate. Whilst this is straight
	the target ranges and the	forward and should achieve
	secondary indicators remain	SG80, the accompanying text
	above their designated	implies that 3 years of extra data
	thresholds, the TAC may not be	should allow this. This may not
	varied." This is not consistent	be the case. If there is no
	with information on page 57 that	contrast in the data during this
	indicates that the TAC was	time, it may be worth
	increased to 154 t in 2015. This	considering conducting an MSE.
	increase in TAC during a period of	
	apparent declining recruitment	
	(regardless of the reasons for the	

decline) is not presentioner.	
decline) is not precautionary.	
Both the future catch and future	
recruitment will depend on the	
maintenance of the spawning	
stock through a period of	
reduced recruitment.	
The rationale states that:	
"Therefore, we consider that the	
harvest strategy for crystal crab	
(DoF 2015a) is in fact designed to	
be responsive to the state of the	
stock when necessary on the	
reasonable assumption that the	
commercial CDUE (on logal sized	
confinencial CPOE (off fegal sized,	
berried and immature stock) will	
vary as the stock size varies and	
TACs would be adjusted	
accordingly." Multiple fisheries	
have demonstrated that CPUE	
does not necessarily decline with	
stock size. MacCall's basin model	
(MacCall, Alec D. 1990. Dynamic	
Geography of Fish Populations.	
Washington Sea Grant Program	
Seattle WA) provides one	
ovalanation. The Canadian	
explanation. The Canadian	
northern cou stock is perhaps the	
most notorious example of CPUE	
remaining stable as the stock	
collapsed. The concentration of	
the fishery into a smaller number	
of blocks could explain the	
increase in legal-size CPUE as	
fishermen targeted the most	
productive areas. Sampling of	
catch rates in areas previously	
fished would help to assure that	
stable catch rates were not	
simply the result of a smaller	
nonulation concentrating in the	
most foursable babitating in the	
most ravorable nabitat. The	
report notes that "Fishers also	
provide additional information	
for the effective management of	
the fishery, particularly through	
the provision of industry boats	

	for Department surveys and the collection of additional data through industry surveys delivered under a SLA with the Department." One might expect these surveys to check catch rates in areas not currently	
Certification Body Response	The background and scoring	The objectives to be achieved are
	rationale have been amended to acknowledge the change made to the TAC. More information about the basis for this increase has also been added to the background material. We agree that there is no guarantee that commercial CPUE will track stock biomass and that there are multiple reasons why this may not occur. Nevertheless, for the scale of this fishery (3 vessels) it is a reasonable approach. It assumes that the standardization process can account for some of the most obvious factors that could confound the signal from CPUE,	to allow at least 90% of the TAC to be caught and to maintain commercial CPUE within the target range. Three years of data are not a lot but should be sufficient to demonstrate that these indicators are tracking as intended. The three year period has been selected as sufficient to allow the proposed condition to be closed but monitoring would continue beyond this period as part of normal surveillance. Whether CPUE tracks stock abundance is a separate question which would require some contrast in CPUE or stock levels, and may also require
	such as changes in the blocks fished, but this also depends on there being enough data across the combinations of factors.	more than three years of data. Demonstrating this link, however, is not considered necessary to close out the proposed condition.

Performance Indicator 1.2.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given		
score? (yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	The rationale may understate the	I agree with the scoring but am

	role of the minimum size and the	also concerned about the
	prohibition on horright fomalos in	provimity of the limit reference
	prohibition on berned remaies in	proximity of the innit reference
	controlling the exploitation rate	point to the threshold.
	on the total stock, as compared	
	to the role of the TAC in	
	controlling the exploitation rate	
	on the legal-size population. The	
	minimum size protects males for	
	two years after they reach sexual	
	maturity, and the minimum size	
	protects females well beyond	
	their size at sexual maturity.	
	Additional protection is provided	
	to mature females by the	
	prohibition on taking berried	
	females. This combination of	
	measures assures that a	
	substantial reproductive stock of	
	males and females will be	
	protected from the fishery	
	regardless of the exploitation	
	rate on the legal-size population,	
	provided that favorable	
	conditions maintain a steady	
	flow of recruitment.	
Certification Body Response	We agree that the minimum size	No response required.
<i>,</i> .	limits and prohibition on taking	
	berried females are also	
	important for controlling the	
	exploitation rate. They had been	
	mentioned in the rationale but	
	the text has been revised to add	
	emphasis to them and reiterate	
	their importance.	

Performance Indicator 1.2.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	No	Yes
rationale used to score this		
indicator support the given		
score? (yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		

performance to the SG80 level? (yes/no/NA)		
Peer Reviewer Justification	Because of the concentration of the fishery in a relatively small area compared to the extent of the stock, I can't agree that stock abundance is regularly monitored at a level of accuracy and coverage consistent with the objective to maintain the stock at Bmsy. The small footprint of the fishery relative to the range of the stock has advantages and disadvantages: a large portion of the stock may enjoy a refuge from the fishery; but the stock may also decline without that decline being evident in the areas being fished. We can't know which is the case without sampling areas beyond the areas currently fished. In my opinion, the fishery does not meet the requirements of SG 80 for PI 1.2.3b.	Stock delineation is suggested between West Coast and South Coast fisheries based on limited larval dispersal and migration. "Linkages between stocks on the west and south coast are unknown. However, there is little evidence of large scale movements by deep sea crab species therefore they are thought to be largely separate stocks" (How et al 2015 from Melville-Smith et al. 2007). This may also suggest that some stock structuring between bioregions (if not at a smaller scale) within WCDSCMF may also be possible.
Certification Body Response	The requirements for this PI are for the monitoring to be consistent with and to support the harvest control rule. This only concerns what happens within the area of the fishery as the data required by the harvest control rule (catch and CPUE) only relate to fishing activities. Sampling of areas beyond the fishery would indeed improve knowledge of the stock as a whole but is not required by the harvest control rule.	No changes to scores or rationales are suggested but some additional text has been added to the background sections to reflect this suggestion about possible stock structuring. The quote from How et al. (2015) is correct but Melville-Smith et al. (2007) make no statements about whether there are separate south coast and west coast stocks other than the general statement in their introduction that "The biogeographical boundary separating the cool water of the south coast of the state from the warmer waters of the west coast has provided a logical boundary between crustacean fisheries in Western Australia" (page 8)

Performance Indicator 1.2.4		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	NA	Whilst I don't disagree with the scoring, in 1.2.4a it is stated that the reason that SG100 is not met is because "there remains some unexplained source of variability in these indicators." This would apply to many robust assessments and is probably not sufficient explanation for the scoring. For a crab fishery protected with a size limit, I think there could be further analysis (assessment of
		further analysis / assessment of the protection this affords to the reproductive capacity of the stock. The growth, fecundity, together with estimates of M would allow such an analysis. To me, this would be an assessment that is "relevant to the biology of the species and the nature of the fishery".
Certification Body Response	No response required	We agree that there are always unexplained sources of variability, even in robust assessments. The issue with this assessment is level of inter- annual variability in the main index of abundance. The suggested additional analyses would also be useful and appropriate and their absence is now noted in the

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Principle 2

Performance Indicator 2.1.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Too confusing to make a determination.	No
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	Yes	Yes
Peer Reviewer Justification	The justification for 2.1.1b is confusing. It isn't clear whether the target ranges for giant crabs and champagne crabs refer to allowable catches (which are listed elsewhere as 14t combined), or realized catches or some other metric. If the numbers refer to allowable catches or realized catches, I question whether it is appropriate to consider an allowable catch or a realized catch for one sector of a multi- sector fishery as constituting a defined "target reference point" for the stock in question. The report states that "an annual combined quota of 14 t was introduced for giant and champagne crabs under the new (current) management plan." It isn't clear whether the combined TAC is based on the status of the entire giant and champagne crab stocks or the WA portion of the stocks or based on some other factor. The realized catches would not appear to be connected to the status of the stocks of the main retained species of crab, particularly when	I agree with the assessor decision to include Giant Crab as a "main" retained species based on its vulnerability. Based on recent changes to the default assessment tree, I am unclear whether the cut-off for "main species" remain at 5% or should be 2% because it is a "less resilient" species. I am not quite sure why if under 2.1.1 a, SG80 is not met why is 2.1.1 c under SG80 marked as N/A. The guidepost for 2.1.1a specifically states for both SG60 and SG80 that if not met go to 2.1.1c. This might be my lack of understanding of the process.

	the target species is found	
	outside the range of the	
	incidental species.	
	c Under by the report states that	
	c. Onder D, the report states that	
	targets for NZ blue mackerer are	
	not specified. That raises the	
	question of now it would be	
	autoida tha limita. Howayar tha	
	roport also states that "recent	
	accossments of those fisheries	
	(blue mackerel and baki) by NZ	
	Department of Eisberies consider	
	both of these fisheries to	
	currently be within biologically-	
	based limits " This would imply	
	the existence of defined target	
	reference points for both species	
	d The justification for 2.1.1d	
	states that "the status of the two	
	"main" hait species New Zealand	
	blue mackerel and hoki are	
	within hiologically-based limits "	
	despite the fact that there are no	
	defined target reference points	
	for NZ blue mackerel.	
	There are apparently multiple	
	stocks of NZ blue mackerel with	
	different levels of management	
	and knowledge of stock status.	
	That may explain the	
	inconsistencies in the	
	justification and points out the	
	difficulty in holding a fishery in	
	assessment responsible for the	
	status of the stocks from which	
	its bait is sourced.	
Certification Body Response	2.1.1b has been revised to	With CR v 1.3. the cut off is 5% of
	indicate that the retained species	total catch by weight to be
	do not have proper reference	classified as major unless the
	points. The trigger levels are	species in vulnerable in which
	based on highest annual catch	case it can be classified as major
	during the reference period	regardless of its %.
	2003-2012. The limit reference	
	levels have been set at two-times	Scoring issue c has now been

the threshold level (i.e. twice the highest catch reported during the reference period), with the target range set to include any catches below the threshold level.	scored under SG 80. This was an oversight.
c. has now been scored, rationales have been revised with more information for NZ blue mackerel and scores.	

Performance Indicator 2.1.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score	Not clear because of the apparently conflicting	Yes
this indicator? (yes/no)	Justifications described below.	
Does the information and/or	Too confusing to make a	No
rationale used to score this	determination	
indicator support the given		
score? (yes/no)		N1 / A
will the condition(s) raised	NA	N/A
Improve the fishery's		
(vos (no (NA))		
(yes/110/NA)	Lam confused by the various	Lam not clear on the logic used in
reel Reviewer Justification	statements about blue mackerel	this DI
	On page 118 the report states	
	that the SG 100 is met	2 1 2a is scored at SG100
	indicating there is a strategy in	indicating there is a strategy in
	place for managing retained	place for managing retained
	species. The justification on page	species (including bait). Under
	119 of the report states that:	2.1.2d. however, justification
	"Both the blue mackerel and	states "There is no strategy in
	hoki fisheries are managed with	place for blue mackerel". This is
	input and output controls and	inconsistent with the above.
	assessment are conducted. The	
	TAC for blue mackerel is	The main catch of blue mackerel
	11,550 t" This would seem to	in NZ is from EMA 1. MPI (2014)
	indicate that the NZ fishery	states "For EMA 1, the stability of
	management system has a	the age composition data and the
	strategy in place for blue	large number of age classes that
	mackerel. On page 120, under b,	comprise the catches suggests
	the SG 80 score is met because	that blue mackerel may be
	"the amount of bait used has	capable of sustaining current
	been monitored and very small	commercial fishing mortality, at
	amounts are used compared to	least in the short-term".
	the total catch of the fisheries in	

	NZ," creating "confidence that this fishery is not posing any risk to the bait species." On page 121, the report states that a "partial strategy is in place for jack mackerel and hoki However, there are no measures specified for blue mackerel." On page 122, the report states that "There is no strategy in place for blue mackerel. The SG 100 is not met for this species." For New Zealand hoki it is clear that the strategy to ensure the fishery does not pose a risk of serious or irreversible harm to retained species is the NZ management system for the hoki fishery, not anything done in the WCDSCMF. If NZ is conducting stock assessments and using input and output controls, including setting a TAC for blue mackerel, it would appear that NZ has in place a strategy for protecting blue mackerel, as it does for hoki. But the WDSC Assessment Report appears to recognize the NZ management for hoki, but not for blue mackerel, at least for some performance indicators.	A very small amount if blue mackerel is taken for bait relative to the NZ TAC of ~11,000 t TACC. Does a bait species require a quantitative assessment before it can be considered to have met SG100 under 2.1.2d? Further, in recent years, tuna sourced from Thailand has been an increasing bait source for the fishery. If the recent trend continues (or if it is also being used by other vessels) it is likely that the tuna bait could be conservatively classified as a "main species". It has not been mentioned at all in the assessment and should be. The species needs to be determined and assessed. The above may be confounded because there is an assumption that bait from one vessel is representative of bait from the others. My suggestion is that based on available information there is only a "partial strategy" in place and 2.1.2a should be scored at SG80 rather than SG100. MPI (2014). Fisheries Assessment
		MPI (2014). Fisheries Assessment Plenary, May 2014: stock assessments and stock status. Compiled by the Fisheries Science Group, Ministry for Primary Industries, Wellington, New Zealand. 1381 p
Certification Body Response	The rational has been revised. See also 2.1.1 above.	How et al. (2015) reported that the tuna used as bait in the fishery is likely for South Australia tuna aquaculture and only heads and processed fish are used as

	bait therefore the tuna was not considered in this MSC assessment.
	A recommendation was added under 2.1.3 to collect information on bait usage for all vessels in the fishery.

Performance Indicator 2.1.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given		
score? (yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		There is no reputien in the
Peer Reviewer Justification	NA	assessment of the tune hait
		assessment of the tuna balt
		this species is just under 5% of
		catch weight during 2013 it is not
		clear whether this is being used by
		other vessels. If it is then it is
		likely to be over the 5% threshold
		and increasing.
Certification Body Response	No response required.	The table of bait used in the
· ·		fishery has been updated to
		include all vessels targeting crystal
		crab and including the most recent
		years (2014 and 2015). The tuna
		species used as bait in the fishery
		is unknown but tuna has now
		been considered as a "main bait"
		species because of the uncertainty
		and scored accordingly. A
		recommendation was added to
		collect information on bait usage
		for all vessels and include details
		of species and stock status. Tuna

	has not been used as bait during
	2014 and 2015.

Performance Indicator 2.2.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given		
score? (yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	I would add into the justification
		2.2.1a:
		Based on GCB3.8.2, if the bycatch
		is exceptionally rare and
		negligible in its impact, then the
		fishery would meet SG100.
Certification Body Response	No response required.	The reference to the MSC
		guidance GCB has been added.

Performance Indicator 2.2.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	No	Yes
rationale used to score this		
indicator support the given		
score? (yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	I would consider more than 20	I would add to 2.2.2a justification
	years of experience and data	that no deepwater sharks are
	collection to constitute testing	allowed to be retained
	that "supports high confidence	(specifically referenced because
	that the strategy will work,	they are the main bycatch
	based on information directly	species - based on vulnerability).

for 2.2.2b.		
Certification Body ResponseData on bycatch for the fishery has not been available for that long. There was a bycatch study for 4 years (2010-2014) and some additional video monitoring. Fishers are encouraged to report all bycatch in voluntary logbooks which together does not warrant aThis has been included as suggested by the peer reviewer	Certification Body Response	This has been included as suggested by the peer reviewer.

Performance Indicator 2.2.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Performance Indicator 2.3.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Performance Indicator 2.3.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	No
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	NA	I agree SG80 is met for 2.3.2c but I can see no reason or justification that SG100 is not met. I suggest that SG100 is not met because that Under Section 4 of Management Measures and Implementation (DoF 2015) there is no mention in Table 3 of the management measures as they would relate to ETP species. Also, a comparison of data from observers cameras compared to daily/voluntary would assist to understand level of implementation.
Certification Body Response	No response required.	More information has been added as to why the SG 100 is not met.

Performance Indicator 2.3.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given		
score? (yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		

Peer Reviewer Justification	NA	References are missing. 2.3.3c requires justification of why SG100 was not achieved.
Certification Body Response	No response required.	The reference and information why the SG 100 is not met has been added.

Performance Indicator 2.4.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Performance Indicator 2.4.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (ves/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	No
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	N/A
Peer Reviewer Justification	NA	The justification for not achieving SG100 in 2.4.2a is that "A full strategy addressing the structure of benthic community previous to fishing has yet to be developed". I believe that with the strategy containing limits and thresholds for extent of area fished (blocks) and annual fishing

		effort (and management responses) in addition to the limited entry, gear restrictions and 150m depth closures, this could be considered a full strategy – not a partial strategy. I suggest this would meet SG100.
		For 2.4.2b, I can see no evidence of testing of the strategy. As such I would score this as achieving SG80 but not SG100.
		Ultimately these changes counteract each other and will not change the overall score for this PI of 90
Certification Body Response	No response required.	Agreed, this has been changed accordingly.

Performance Indicator 2.4.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this	Yes	No
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this indicator support the given		
score? (yes/no)		
Will the condition(s) raised	NA	
improve the fishery's		
(ves/no/NA)		
Peer Reviewer Justification	NA	I suggest there is some important information contained in the following with respect to potential impact of fishing on benthic habitats that has not been referenced.
		Richardson, L., Mathews, E. and Heap, A. (2005). Geomorphology and Sedimentology of the South Western Planning Area of Australia: review and synthesis of relevant literature in support of Regional Marine Planning.

		Geoscience Australia, Record 2005/17. 124pp.
		Baker, C., Potter, A., Iran, M. and Heap, A.D., 2008. Geomorphology and Sedimentology of the
		Northwest Marine Region of
		Record 2008/07. Geoscience
		Australia, Canberra. 220pp.
		In the justification of 2.4.3a, I would add that the nature of the habitat is described by a combination of bioregion and depth, and the combination of
		these is of a scale relevant to the fishery.
Certification Body Response	No response required.	These 2 references have been considered and the rational revised.

Performance Indicator 2.5.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given		
score? (yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	2.5.1a I agree with the
		assessment of SG100
Certification Body Response	No response required.	

Performance Indicator 2.5.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	No
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	No

		-
rationale used to score this		
indicator support the given		
score? (yes/no)		
will the condition(s) raised	NA	N/A
nuprove the fishery's		
(ves/no/NA)		
(yes/no/NA) Peer Reviewer Justification	NA	I think that the original risk assessment referred to in DoF (2003, 2013) is required is required to properly review this PI. I requested it but it could not be supplied. 2.5.2a I was tempted to score this as SG100 based on what was written in How (2015) and the harvest strategy (DoF 2015) which suggests "there is a strategy that consists of a plan in place". Both of these refer to the risk assessments undertaken under the EBFM assessments. There is reference to the Risk Assessments undertaken (DoF 2003) and one of these mentions that "ERA Risk Rating: Impact on trophic levels (C0 L3 NEGLIGIBLE)."
		This would suggest that the strategy does take heed of ecological processes such as trophic structure and function, community composition, and biodiversity and not based just on "priority species for monitoring". Unfortunately, I could not gain access to the original ERA document, so it is difficult to determine to what extent the ecological processes have been assessed. Further, under the harvest strategy there is a long term objective "6) To ensure the

		effects of fishing do not result in serious or irreversible harm to ecological processes". This does not appear to be represented under any performance indicators or reference levels for other ecological assets (3.4.1.3).
		Based on the above, I agree with the scoring of 2.5.2a at SG80.
		2.5.2b I agree with the score but I think that the main reason this PI does not achieve SG100 is that there is NOT a well-understood functional relationship between the fishery and the Components and elements of the ecosystem.
		2.5.2c How (2015) states "potential risk of fishing activities on ecological processes are monitored and assessed as part of the West Coast Deep Sea Crustacean Resources Harvest Strategy 2015 – 2020 (DoF 2015), with risk assessment outcomes used to measure fishery performance (see below).
Certification Body Response	No response required.	More information has been added to the rational of 2.5.2 a and b. The score has been raised to 95 because a high score for 2.5.2a was justified after review.

Performance Indicator 2.5.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		

performance to the SG80 level? (yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Principle 3

Performance Indicator 3.1.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Performance Indicator 3.1.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	Yes	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Performance Indicator 3.1.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Performance Indicator 3.1.4		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Performance Indicator 3.2.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	No
rationale used to score this		
indicator support the given		
score? (yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		

(yes/no/NA)		
Peer Reviewer Justification	NA	Whilst short and long-term objectives exist and are well defined for target, bycatch, ETP, and habitat, they are not well defined, particularly in the short term for Ecosystem processes. Under the harvest strategy there is a long term objective "6) To ensure the effects of fishing do not result in serious or irreversible harm to ecological processes". This does not appear to be represented under any performance indicators or reference levels for other ecological assets (3.4.1.3). I suggest this warrants an overall performance indicator score of
		95 rather than 100.
Certification Body Response	The harvest strategy includes performance indicators and reference	
	levels for the ecosystem management objective.	
	It is considered that this meets the requirements of SG100 and that	
	no change to the score is required.	

Performance Indicator 3.2.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Performance Indicator 3.2.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	No
rationale used to score this		
indicator support the given		
score? (yes/no)		
Will the condition(s) raised	There is some confusion within	N/A
improve the fishery's	the Assessment report regarding	
performance to the SG80 level?	the score and condition for PI	
(yes/no/NA)	3.2.3. The table for PI 3.2.3b	
	indicates that only the SG 60 is	
	met. However, the justification	
	for PI 3.2.3b states that "SGs 60,	
	80, and 100 are met." The overall	
	performance indicator score for	
	PI 3.2.3 is given as 100, and no	
	condition is listed. However, the	
	summary of conditions lists	
	Condition 4 for PI 3.2.3, requiring	
	that "By the 1" surveillance audit	
	DoF to demonstrate that	
	sanctions to deal with non-	
	compliance are consistently	
	applied and thought to provide	
	effective deterrence."	
Peer Reviewer Justification	NA	I think there has been a simple
		mistake in 3.2.3b where SG80
		and SG100 are marked as not
		met. The justification suggests
		that they are met.
Certification Body Response	An error did occur following incorp	oration of additional information
	to score this indicator. The scoring has been maintained at 100 and	
	the table amended to tick the SG 80 and 100 boxes as 'Y'. The	
	summary of conditions has been amended to remove the condition	
	applying to this indicator.	

Performance Indicator 3.2.4		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes

1		
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Performance Indicator 3.2.5		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information	Yes	Yes
available been used to score this		
indicator? (yes/no)		
Does the information and/or	Yes	Yes
rationale used to score this		
indicator support the given score?		
(yes/no)		
Will the condition(s) raised	NA	N/A
improve the fishery's		
performance to the SG80 level?		
(yes/no/NA)		
Peer Reviewer Justification	NA	
Certification Body Response	No response required.	

Any Other Comments (optional)							
	Peer Reviewer 1	Peer Reviewer 2					
	One aspect of the fishery was high-lighted as it pertains to protected species, but not for the additional protection provided to the target species: "fishing activities are concentrated in a few discrete areas along the Gascoyne and West coasts, resulting in extensive areas of refuge from fishing activities for these widely-distributed species." This likely serves to protect a substantial portion of the stock from exploitation, but may also						
	cause the CPUE indices to be misleading if the stock is						

	concentrating in the most favorable habitat and the fishery is following those concentrations. I had difficulty knowing whether the various comments about giant crab and champagne crab referred only to activities within the WCDSCMF or throughout the range of the giant crab and champagne crab resources. For example, "in the case of giant crabs the catch exceeded the threshold and a review was implemented with the precautionary objective to ensure that stocks remain sustainable." Was it only the catch in the WA DS crab fishery that exceeded the threshold, or for the entire resource? Would a review of the WCDSCMF crab fishery catch of giant crabs have a meaningful impact on the objective to ensure that stocks remain sustainable? The decline in abundance of champagne crabs after only a few years of exploitation serves as a cautionary note for the crystal			
	cautionary note for the crystal crab fishery.			
Certification Body Response	Individual comments have been resp have been set for the WA fishery an entire stock. The team agrees that the Deep Sea precautionary management than wa	sponded to above. Thresholds and have not been based on the a Crab Fishery is subject to more was apparently applied to the		
	crystal crab fishery. A condition under 2.1.1 include giant crab and is focused on providing evidence by the third annual surveillance audit, that this species is highly likely to be within biologically-based limits.			

Appendix 3. Stakeholder submissions

Stakeholder comments to the PCDR and team response

MSC comments and team responses

Main	SubID	Page	Grade	Requirement	Oversight Description	PI	CAB Comment
ID		Ref.		Version			
17950	20622	69	Guidance	CR-27.6.1.2 v1.2	Usually if the target date is the date of certification it is not necessary to specify a specific date (provided that it is within 6 months or less from the publication date), especially since it is estimated. Could just be stated as date of certification with estimated month in parantheses.		This has been modified to state the date of certification, estimated June 2016.
17950	20623	69	Minor	CR-27.12.2.1.b v1.3	Section 5.3 states "If ownership does not change during transport, CoC starts at processing facility or at first point of sale" - where would CoC start if ownership did in fact change during transport?		It has been clarified that ownership does not change during transport, therefore CoC starts at the processing facility or at first point of sale.
17950	20624	69	Minor	CR-27.12.1 v1.3	In section 5.2 there is no specific comment or determination on whether fishery has adequate traceability systems in place after landing. Presumably this is alluded to by the sentence "All product landed by individual license holders is		This has been clarified in the report by adding further details to address traceability systems in the fishery.

					transported in company owned and operated vehicles to local markets where it is sold"?	
17950	20625	69	Guidance	CR-27.12.1.2 v1.3	No comment is given on the likelihood of vessels fishing and landing catch from outside the permitted fishing areas.	Further details have been added on hoe this risk is addressed by the fishery in the traceability section.

(REQUIRED FOR THE PCR ONLY)

- 1. The report shall include a rationale for determining the surveillance score.
- 2. The report shall include a completed fishery surveillance plan table using the results from assessments described in CR 27.22.1

Table A4: Fishery Surveillance Plan

Score from CR Table C3	Surveillance Category	Year 1	Year 2	Year 3	Year 4
[e.g. 2 or more]	[e.g. Normal Surveillance]	[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]

Appendix 5. Client Agreement

(REQUIRED FOR PCR)

The report shall include confirmation from the CAB that the Client has accepted the PCR. This may be a statement from the CAB, or a signature or statement from the client.

(Reference: CR: 27.19.2)

Appendix 5.1 Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

The report shall include all written decisions arising from an objection.

Appendix 6. Department of Fisheries Advise for the West Coast Deep Sea Crustacean Fishery

Jason How, 31/03/2016

The following document is to provide additional information or clarification requested by P1 assessor (Sandy Morrison) for the West Coast Deep Sea Crustacean Fishery after peer-review of the draft Certification Report for the West Coast Deep Sea Crustacean Managed Fishery. A copy of the request is included (Appendix 1). Information or clarification requested is boxed, with the response following.

One Peer Reviewer identified an inconsistency in the report with one section saying that the TAC had been constant at 140 t and another noting that the TAC had recently been increased to 154 t. The comment about an increase was reflecting a comment in the DOF document (P 106) about that increase, which also mentioned "the Department's research division is currently working to provide advice to the managers regarding the sustainability of the increase." We wish to confirm whether or not a TAC increase has been implemented (the version of the management plan on the DoF website still refers to 140 t) but would also like to see that advice if possible.

At the time of producing the Western Australian Marine Stewardship Council Report for the West Coast Deep Sea Crustacean Managed Fishery (henceforth referred to as the DoF document), the TAC had been constant at 140 tonnes from 2008 to 2014. The DoF document presented information up to and including the 2014 fishing season. The TAC was officially increased during the 2015 season as has been reflected in the most recent management plan

(http://www.slp.wa.gov.au/statutes/subsiduary.nsf/0/A531C79F8279DE6F48257E9E00242DC7/\$file/44. <u>1+west+coast+deep+sea+crustacean+fishery+mp+11.08.15.pdf</u>). The research advice (Appendix 2) was being drafted and provided to managers at the time of the DoF publication and hence was included in the document as was highlighted by the peer reviewer above. The TAC increase was granted during the 2015 season, after the production of the DoF document.

I went back to some reports to check the basis for the statement in the DOF document (P 40) that "The current TAC of 140 t ... is therefore considered to be set at a highly-precautionary level, with the intent of maintaining the stock at levels above B_{MSY} (see Figure 6.1; Melville-Smith et al. 2007)." I had looked at the Melville-Smith et al. 2007 report before but on checking I found that, although they state "Those estimates of B0 =1,200 t, with a likely MSY in the range of 30-90 t p.a., appear conservative" I had missed a later statement in their conclusions that explicitly queries the sustainability of a 140 t TAC: "Best estimates of the long term sustainable yield from this fishery is 30-90 t, which is substantially less than the 200 t landings of the last five years, or the 140 t TAC proposed for the fishery in the future" The recent advice about sustainability requested above should provide the most current view of the research staff about TAC levels.

The estimate of 30-90 tonnes references in Melville-Smith et al. (2007) was from a depletion analysis conducted and published in Melville-Smith et al. (2006). This depletion analysis used raw catch rates and cumulative catch for three complete seasons (2000-2002) and one incomplete season (2003) (Figure 1). This resulted in an estimated B₀ of 1200 tonnes, which when combined with different levels of natural mortality (M) indicative of a long-lived slow growing species (M 0.05-0.15) resulted in the estimates of 30-90 tonnes following Gulland's (1971) adaptation to the Schaefer (Schaefer 1954) model: MSY = $0.5(M) B_0$. See Melville-Smith et al. 2006 for full details.



Figure 1 - CPUE for 2000–2003 for Zones 2 to 4, plotted against the cumulative catches reported for those zones. *Year 2003 is based on incomplete data* (Melville-Smith et al. 2006).

A preliminary re-examination of this analysis revealed that a depletion analysis of data from 2000-2002 (noting 2003 was incomplete) would result in a B_0 of ~1160 tonnes (Figure 2). Should the full 2003 season been included, this would have provided an estimate of B_0 of ~1580 tonnes (Figure 2). However, utilizing the extended time period encompassing all data up to the most recent season (2015) violates the assumption of no recruitment to an even greater extent. As such a depletion analysis should not be conducted. What is demonstrated from the presentation of the full time series of cumulative catch against catch rate (Figure 2) is how catch rates have stabilized and in some cases increased. Note the catch rates presented in Figure 2 are a raw catch rate and as such are different from the standardized catch rates in Appendix 2.



Figure 2 – Catch rate (raw) and cumulative catches by year from 2000 to 2015. Blue line is the regression of years 2000 to 2002 the complete seasons used in the analysis by Melville-Smith et al. 2006. Green line represents the regression for the complete seasons 2000 to 2003, as only part of 2003 was included in the Melville-Smith el al. 2006 analysis. Black line represents the regression for all seasons 2000 to 2015.

This stabilization of catch rates was acknowledged by Melville-Smith et al. (2007) who stated that the *"likely MSY range of 30-90 t p.a. appears conservative, given that the fishery has landed around 200 t p.a."*. It should be noted that while Melville-Smith et al. (2007) contended that *"Best estimates of the long term sustainable yield from this fishery is 30-90 t, which is substantially less than the 200 t landings of the last five years, or the 140 t TAC proposed for the fishery in the future."*, in the same document, the

following was also stated "A TAC of 140 t will be set for the fishery and its performance will be monitored, primarily against cpue.". This is what has occurred (Attachment 2), and monitoring of the fishery has established that a TAC of the order of 140 tonnes is indeed sustainable.

The research advice for a TAC increase (Appendix 2) had an error in the level of the upper target reference point (Appendix 2, Figure 1b). This was due to an incorrect reference period for the establishment of the reference points. The reference period used in Appendix 2 was from 2003-2008, where the actual reference period is from 2003-2012 (DoF Document). The peak in the standardized catch rate occurred in 2012, and has remained at this high level since then. While using the appropriate reference period in conjunction with the Harvest Strategy and Decision Rules (HSDR) would have technically resulted in no increase to the TAC, given the rising trend in the CPUE with the quota at 140 t over the last 7 years, an increase in quota was not unreasonable. The effect of the quota increase has been closely monitored and appears to have had little effect on the stock, with the standardized catch rate remaining at this higher level (DoF unpublished data). This will continue to be closely monitored.

One other thing that I would like checked is the caption for Figure 3.1 in the DOF document (the maps of fishing effort). The left and right maps don't seem to match the caption as it suggests the 2014 effort covers the whole coast but that for 1999-2014 is only in the north.





Figure 3.1. Location of effort for crystal crabs (line start GPS location) from volunteer logbook (black dots) and the associated 10' x 10' blocks in which catch was recorded left) since it began (1999-2014) (centre) during the reference period (2003-2012) and (right) 2014. Note a small amount of fishing occurs off Fremantle but is not recorded by volunteer logbook