Australian Government
Parks Australia

Australian
Marine Parks

Position Paper — Fishing Business Assistance - for the commercial fishing sector * as a result of new Australian Marine Park management arrangements **

* Note this program is for the commercial fishing sector only. Further consultation will be undertaken with other sectors on other elements of the Package as required.

** Note also that this Position Paper relates to Commonwealth Government Australian Marine Parks only.

20 August 2018

Overview

This Position Paper has been prepared by the Commonwealth Director of National Parks (the Director) to facilitate consultation with the commercial fishing industry through peak industry bodies.

The Director is seeking written feedback from the commercial fishing industry through peak industry bodies on the Director's current intended approach for the provision of Fishing Business Assistance to commercial fishers directly affected by new Australian Marine Park management arrangements. The new Australian Marine Park management arrangements apply to Commonwealth waters only. Fishing Business Assistance will provide a one-off payment to eligible commercial fishers directly impacted by new Australian Marine Park management arrangements that came into effect on 1 July 2018.

This Position Paper also provides background information on other elements of the Fisheries Assistance and User Engagement Package (the Package), including the 'Our Marine Parks Grants' Program, on which commercial fishing peak industry bodies' views are welcome. Note that other sectors such as the tourism industry, Indigenous and community organisations will also be eligible to apply for the 'Our Marine Park Grants' Program.

Written feedback on this Position Paper is sought by no later than 5 PM on 30 September 2018, and can be sent to ampfisheriesassistance@environment.gov.au. Following consideration of feedback, the Director will finalise the Fishing Business Assistance guidelines.

Fishing Business Assistance payments will be delivered through the Community Grants Hub of the Department of Social Services (the Grants Hub). The use of Grant Hubs is a whole-of-Government requirement to streamline and standardise grant delivery processes across the Australian Government.

Indicative timeline for Fishing Business Assistance

The Fishing Business Assistance component of the Package aims to deliver assistance to eligible commercial fishers in a timely manner.

The indicative timelines for the Fishing Business Assistance component of the package are:

Aug 2018	Consultation on the Fishing Business Assistance element of the Package
Oct 2018	Consideration of comments and finalisation of guidelines for the Fishing Business Assistance grants
Sept – Oct 2018	The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) obtains and analyses catch data from fisheries management agencies
Nov 2018	Final Fishing Business Assistance guidelines made publicly available on Grants Hub website.
Dec 2018	Letter of invitation sent to eligible fishers inviting them to apply for Fishing Business Assistance
Feb 2019	Fishing Business Assistance application and payment period closes with payments made to successful applicants in accordance with final Fishing Business Assistance guidelines.

Timing for the other elements of the Package is still being considered. It is intended that the first round of Our Marine Park Grants will also open in late 2018.

The above timeline is indicative only and the Director may vary it at its discretion.

NOTE

The Position Paper has been released as part of a consultation process to seek feedback from fishing industry peak bodies to inform the development of the Fishing Business Assistance component of the Package. Comments received may also inform the development of other elements of the Package. Please be aware that this Position Paper represents the Director's current intended approach and that any part of the Package may be changed or not proceeded with. Input from consultation and feedback on the Position Paper will inform advice to Government. However, the Position Paper does not limit in any way what Government may decide with respect to the Package, or any other Government action that may affect fisheries.

1. Introduction

On 1 July 2018, five new Australian Marine Park management plans came into effect. Management plans set out how the Director of National Parks will manage Australian Marine Parks over the next 10 years including through zoning arrangements that both protect Australia's marine environment and support a vibrant and sustainable commercial fishing sector.

The new Australian Marine Park management plans are the product of more than a decade of consultation and consideration of the best available science. In finalising management plans, the Director of National Parks has taken into account key issues raised by stakeholders including the commercial fishing sector.

Australian Marine Parks are located in Commonwealth waters, which generally start at least three nautical miles from the coast. In designing the parks, significant attention was paid to minimising the impacts on sustainable commercial activities where they were consistent with the values of the marine parks. For instance, of the approximately $1.5 billion of income generated by Australia's wild capture fisheries, it is estimated that only around $76 million (five per cent) are caught in Australian Marine Parks, and that only a small proportion of this will be affected by Parks zoning.

Compared to the 2013 management plans, the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) estimates that the new plans have halved the financial impact of Australian Marine Parks on the commercial fishing sector (from around $8.2 million down to $4.1 million) and have significantly increased access for the commercial fishing sector. In particular the plans:

- open more areas to commercial fishing (80 per cent compared to 63 per cent under the previous plans);
- increase the area of habitat protection zones, which allow fishing in the water column while protecting important species and ecosystems on the seafloor;
- enable and support the ongoing development of prospective fisheries around Australia;
- consolidate and simplify zoning arrangements to reduce the risk of gear drifting into areas where it is not allowed, making it easier for fishers to understand and to comply with management requirements; and
- increase opportunities for adaptive management, including by enabling the use of new fishing gear or technologies where assessed not to compromise Australian marine park values.

While there is no constitutional or legal requirement for the Australian Government to provide assistance, the Australian Government has committed $35 million to a Fisheries Assistance and User Engagement Package.

The Package provides:

- direct assistance via grants to affected commercial fishers with a recent history of fishing in Australian Marine Parks as they transition their business to the new operating environment. Further discussed in section 2 below;

- grants to help marine users and industries engage in marine park management, including a sub-component of up to $2 million for infrastructure to provide recreational and charter fishers as well as other tourism operators with secure moorings. Further discussed in section 3 below;
- support to encourage uptake of vessel monitoring systems. Further discussed in section 3 below; and
- direct assistance to a limited number of commercial fishers through a licence buy-out in the Commonwealth managed Coral Sea Fishery. This applies to operators who are now unable to use either demersal trawl or trap methods at the whole fishery management scale as a result of marine park management arrangements. Further discussed in section 3 below.

2. Fishing Business Assistance

2.1 Rationale and overview

Fishing Business Assistance proposes a one-off formula-based payment to eligible commercial fishers who have a catch history directly affected by new Australian Marine Park management arrangements. The Fishing Business Assistance element of the Package is designed to:

1. provide fair and reasonable assistance to commercial fishers directly affected by new Australian Marine Park management arrangements to assist them in transitioning to the new operating environment;
2. be delivered within the funding provided for the Package;
3. be transparent in delivery including methods of calculating assistance and eligibility;
4. be equitable, evidence-based, and systematic in its application; and
5. be deliverable across relevant jurisdictions efficiently and within an appropriate timeframe.

In delivering Fishing Business Assistance, the Director will utilise the grant administration services of the Community Grants Hub of the Department of Social Services. The use of Grant Hubs is a whole-of-Government requirement to streamline and standardise grant delivery processes across the Australian Government. Following this consultation the terms outlined in this position paper will be detailed in guidelines that will form the basis of the Hub's administration of the scheme.

2.2. Eligibility to apply for Fishing Business Assistance

Consistent with the Australian Government's announcement, it is currently intended that a one-off formula-based payment will be available to eligible commercial fishers directly affected by the new Australian Marine Park management arrangements. A commercial fisher is proposed, subject to the guidelines, to be eligible to apply for a Fishing Business Assistance one-off formula-based payment if:

- they were authorised to fish (by the relevant fisheries management agency) holding a relevant entitlement that allowed them to operate in one or more of the affected Australian Marine Parks as at 11.59 pm on 1 July 2018. A definition of 'authorised to fish' and further details on eligibility will be included in the guidelines; and
- they have catch history associated with the relevant entitlement under which they were authorised to fish between the periods 1 July 2012 through 30 June 2017 in locations where the fishing method used is no longer allowed under the new Australian Marine Park management arrangements; and
- the assistance calculation (see below) determines a payment that is above a minimum threshold of $1,000 per entitlement.

Assessment of eligibility will be on the basis of information regarding fishing entitlements and catch history maintained by the relevant fisheries management agency. Use of fisheries management agency information allows the Director to efficiently target those fishers directly affected by new Australian Marine Parks management arrangements via methods that are

transparent, evidence-based and able to be consistently applied nationally. Note that the Director will not receive any confidential catch data unless the eligible applicant consents to the release of this information from the relevant fisheries management agency. Please see below for further information.

Why is the Director relying on information provided by fisheries management agencies?

As statutory records, fisheries management agency records represent the most reliable, accurate and commonly accepted account of entitlements and catch history data used for fisheries management throughout Australia.

Isn't my catch data confidential?

All commercial fishing data provided as part of this program will be de-identified until such time as an eligible applicant agrees to allow the release of the information (which will occur through the application process). All information provided will be treated consistently with the *Privacy Act 1998* and other relevant requirements.

Will commercial fishers who lease an entitlement be eligible to apply for assistance?

Yes. Subject to the guidelines and the definition of 'authorised to fish' the Director intends to consider both owned and leased entitlements in assistance decisions informed by fisheries management agency records as at 1 July 2018. Informal arrangements not recorded by the relevant fisheries management agency will not be considered and only one payment is available per entitlement.

What happens if a commercial fisher holds more than one entitlement?

If a commercial fisher holds more than one entitlement under which they are authorised to fish and is deemed eligible for assistance against more than one entitlement then assistance is proposed to be provided for each of those entitlements. Separate notification and application for assistance will be required for each entitlement.

Why must the assistance calculation be above $1000 for an entitlement to be eligible?

Commercial fishers otherwise eligible and entitled will not be eligible to apply for assistance where the assistance calculation determines a payment that is less than a minimum threshold of $1,000 per entitlement. This will reduce administrative costs associated with the program relative to total grants and ensure that the bulk of funds can be directed towards eligible fishers most affected by the new management plans.

What happens if a commercial fisher has only recently bought their entitlement?

The Director recognises that some commercial fishers may have only recently purchased their entitlement and may have only recently commenced fishing (or are in the process of commencing fishing). As long as the entitlement was held on 1 July 2018, the Director will consider all catch history recorded during the eligibility period of 1 July 2012 to 30 June 2017 by the fisheries management agency against that entitlement to determine eligibility.

What assistance is available to vertically integrated fishing businesses?

Fishing Business Assistance grants are not available to other sectors, or land based elements of a vertically integrated fishing business (a business that undertakes additional activities related to the primary fishing activity — such as processing and/or wholesaling). Other aspects of the package such as Our Marine Parks Grants and vessel monitoring systems assistance may be available to these businesses.

What counselling services are available to affected fishers?

Commercial fishers are eligible clients to access the Rural Financial Counselling Service. The Rural Financial Counselling Service provides free agri-business guidance to clients suffering, or at imminent risk of suffering, financial hardship who have no alternative sources of impartial assistance to manage the challenges of change and adjustment. Typically counsellors will build a picture of the financial performance of the business before working through options for the future. The service also provides a referral process for those who wish to access family, emotional or social counselling. Further information on the service is available at http://www.agriculture.gov.au/ag-farm-food/drought/assistance/rural-financial-counselling-service. This includes details of the service areas of each of the 12 providers.

Commercial fishers can also contact 1800 686 175 or email rfcs@agriculture.gov.au to find out where their nearest provider is located. All services are provided on a confidential basis.

2.3 How will the amount of assistance be calculated for eligible commercial fishers?

It is intended that the amount of assistance will be calculated using a formula based on catch history records held by fisheries management agencies, catch displacement calculation methods developed by ABARES and the most recent beach prices available by fishery.

It is currently intended that the formula to be applied is as follows:

Assistance amount = (estimated average annual income forgone) X 25 per cent X 4 years

Where:

- *Estimated* ***average annual income forgone*** is the estimate of the average of annual income calculated to have been displaced (see below for further detail)
- ***25 per cent*** is the assumed profit retained by a commercial fisher
- ***4 years*** is the period over which the assistance is calculated.

The use of a formula to calculate the amount of assistance:

1. enables the Director to provide assistance to directly affected commercial fishers in an efficient manner; and
2. is transparent in its application and provides assistance informed by the level of impact calculated at the individual fisher level.

This formula has been informed by consultation on a previous 2012/13 proposed assistance scheme in relation to Australian Marine Parks. In comparison to the 2012/13 proposed formula, the present formula is likely to provide higher levels of assistance through:

1. an increase in the profit assumption (from 20 to 25 per cent); and
2. an increase in the years of assistance for which assistance is paid (from three years to four).

How will the estimate of average annual income forgone be calculated?

The calculation of the estimate of average annual income forgone will be undertaken using three main methods: a) calculating catch displacement, b) calculating the associated income displaced and c) working out which fishing years the assistance calculation should be based on.

a) Calculating catch displacement

ABARES will analyse catch history information provided by fisheries management agencies and will first determine for each relevant financial year in the period between 1 July 2012 and 30 June 2017 what species and weight of an entitlement's reported catch came from areas of Australian Marine Parks where it can no longer be fished in the same manner (i.e. because the gear used is no longer allowed under the management plan). In undertaking this analysis ABARES will use the displacement methods as refined over a number of years and developed with input from the Australian commercial fishing sector. For more information on the methods see Attachment A.

b) Calculating the forgone income associated with the displaced catch

Following the determination of the amount of a commercial fisher's catch displaced by the new park management arrangements (by both weight and species) for each relevant year in the period between 1 July 2012 and 30 June 2017, it is intended that ABARES will apply 'beach prices' to determine displaced income. Beach prices are the value received for the fisher's catch 'at wharf' and prior to other costs being considered such as transport, storage or further processing. The latest beach price rate will apply across the five financial years.

Beach prices by fishery (and by species) will be determined by ABARES in discussion with fisheries management agencies using the most current publicly available information at the time final guidelines are produced. The Director considers this approach is appropriate as it delivers assistance that is transparent and consistent across all affected fisheries.

c) Determining the fishing years to be used.

The Director recognises the variable nature of some fisheries and that any one year of catch history may have been affected by a range of factors. To gain a better estimate of the impact on a commercial fisher, the Director proposes to use an averaging approach of the three financial years (if available) in the assessment period 1 July 2012 to 30 June 2017 with the highest calculated income foregone. This means the Director will disregard the two financial years with the lowest estimated foregone income associated with the displaced catch.

Hypothetical example:

Robert holds a relevant entitlement in a relevant fishery and undertakes part of his fishing effort in areas which are now under the new Australian Marine Park management plans. However, the fishing method that Robert has traditionally used can no longer be undertaken in some areas of the marine parks. Based on the methods above, ABARES calculates Robert's income displacement for each financial year from 1 July 2012 through to 30 June 2017 as:

Year	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**
Calculated displaced income	$20,000	$5,000	$3,000	$15,000	$13,000

Applying the step in paragraph (c) above, the Director will only consider financial years 2012/13, 2015/16 and 2016/17. The Director will add the three years together and then divide the total by the number of years used (e.g. 3) to work out the estimated average annual income displaced

$20,000 + $15,000 + $13,000

= $48,000 ÷3

Estimated average annual income foregone = $16,000

In this example, Robert would be eligible to apply for **$16,000** of assistance to transition to the new management arrangements based on the following:

Assistance payment = (Estimated average annual income forgone) X 25 per cent X 4 years

= $16,000 X 25 per cent X 4 years

= $16,000

Why has an assumed profit been used and why is it set at 25 per cent?

In providing assistance to eligible commercial fishers the costs associated with generating income (such as depreciation, crew costs, fuel and supplies) were also considered. Basing

assistance only on income would not reflect the actual loss to a commercial fisher directly affected by the new Australian Marine Parks management arrangements.

The Director is aware of the variable nature of profits across and within fisheries and by fishing event. In informing its position the Director has considered the average profit that would be recorded on a year-to-year basis informed by all reasonable costs of operating a fishing business. This has been informed by research undertaken by ABARES and fisheries management agencies.

Based on analysis of average profits recorded across commercial fishers and considering the issue of variable and fixed costs incurred by commercial fishers, the Director intends to use an assumed profit of 25 per cent in assistance calculations. Based on available information it is considered that this is a reasonable percentage.

Why is assistance only available for four years?

The Australian Government has committed to providing fair and reasonable assistance to commercial fishers directly affected by the new Australian Marine Parks management arrangements. Four years is considered a reasonable time to allow for directly affected fishers to transition to the new operating environment.

What happens if a commercial fisher has less than three years of catch history between 1 July 2012 and 30 June 2017?

If an eligible commercial fisher has less than three years of catch history the averaging approach to determining the estimated average annual income foregone is proposed to be applied to the years available. For instance, if an eligible commercial fisher only fished for one year, the average will be taken as the total displacement for that one year.

By way of example, based on catch history records and the methods described above, commercial fisher Alice has the following forgone income associated with her displaced catch across the relevant financial years.

Year	2012/13	2013/14	2014/15	2015/16	2016/17	Total
Calculated foregone income associated with displaced catch	$0	$0	$10,000	$0	$0	**$10,000**

This means that the estimated average annual income forgone in this scenario is $10,000.

Note that if the Director were to average across all relevant years the total average income forgone would be considerably lower, i.e. $10,000 divided by five equals $2000.

Why is ABARES calculating income displacement?

ABARES is the preeminent national body in Australia with expertise in fishery analysis and economics. Due to longstanding arrangements between fisheries management agencies and ABARES, ABARES is the best placed organisation to both access and analyse the required information.

2.3 Applying for Fishing Business Assistance

The Director will liaise directly with fisheries management agencies to determine who is eligible to apply and the estimated amount of assistance the eligible fisher will be entitled to receive. Only those eligible fishers invited to apply and who make an application will be considered for assistance. Using this process allows the Director to minimise the costs of administering the program and allows assistance to be provided in a timely manner for those eligible commercial fishers with a proven history of fishing in Australian Marine Parks.

Fishers who hold an entitlement that has catch history from a new Australian Marine Park but where the formula, when applied, results in an assistance calculation below $1,000 for the entitlement will also be informed by letter of the calculation but will not be invited to apply and will not be eligible for assistance.

How will assistance be delivered?

Assistance will be delivered through one-off payments that will be administered by the Community Grants Hub of the Department of Social Services. The use of Grants Hubs is an Australian Government requirement to streamline the delivery of grants. This process will be governed by more detailed guidelines which will be released after consultation. The application will be by an online process which is consistent with the streamlining of government grants. Only one application can be made per affected entitlement.

How will I know if I am eligible to apply for assistance?

Eligible commercial fishers will be informed by a letter.

Fishers who hold an entitlement that has catch history from a new Australian Marine Park but where the formula, when applied, results in an assistance calculation below $1,000 for the entitlement will also be informed by letter but will not be invited to apply and will not be eligible for assistance.

When will payment be made?

The Director currently intends to open the grant round for application in December 2018. We will seek to commence payment of assistance to successful applicants in accordance with the guidelines from December 2018 to close of the application period (February 2019).

3. Other elements of the Fisheries Assistance and User Engagement Package

In addition to Fishing Business Assistance, the Package also includes a number of other elements, which are briefly described below. While these elements are not part of the current consultation process and will be administered separately to the Fishing Business Assistance Program, respondents are welcome to provide views on these elements.

3.1 Our Marine Park Grants Program

Our Marine Park Grants will provide funding on a competitive basis for projects to help marine users and industries engage in marine park management. Projects will include those that allow marine users to plan for and continue to deliver sustainable fishing and conservation outcomes within the context of the Australian Marine Parks. Note that the Our Marine Parks Grants program is not limited to the commercial fishing sector and the program is proposed to be open to a wide range of other groups representing marine park users including recreational fishers, tourism associations and individuals, Indigenous and community organisations. A dedicated amount of up to $2 million has also been set aside to provide recreational and charter fishers as well as other tourism operators with secure moorings.

Grants are proposed to be available over two grant rounds. It is anticipated that we will open the first round in late 2018 and the final round in mid-2019. There are no eligibility restrictions between the two rounds e.g. an applicant will be eligible for both rounds of grants.

Grants would be expected to engage industry and users in the management of Australian Marine Parks against a range of outcomes. Of particular relevance to fishing, the successful projects would be expected to enhance the ability of the commercial fishing sector to plan for and continue to deliver sustainable fishing and conservation outcomes within the context of the Australian Marine Parks.

The Our Marine Parks Grants program is intending to achieve the following outcomes:

- improve the long-term sustainability of commercial fishing, and the user experience of recreational fishers, in Australian Marine Parks;
- provide safe moorings to enable Australians to enjoy wilderness fishing experiences and iconic reefs in the Coral Sea;
- engage stakeholders in activities to support the management of marine parks;
- promote opportunities for tourism, including by the dive, charter fishing and nature watching sectors; and
- engage stakeholders in citizen science programs in Australian Marine Parks.

The Director would welcome preliminary views from the commercial fishing sector on opportunities for projects under the Our Marine Parks Grants Program. Respondents are invited to contribute those through feedback on this Position Paper. Without limiting or committing to any ideas for projects, such projects could include: marketing of locally caught and sustainably sourced seafood, fisheries certification, research into new fishing gear or

practices or industry training programs. Further information on Our Marine Park Grants, including guidelines, will be released separately.

3.2 Vessel Monitoring System Assistance

Through Vessel Monitoring System Assistance, funding is proposed to assist in increasing the use of remote vessel monitoring systems within Australian Marine Parks by commercial vessels, including commercial fishers and tourism operators. This part of the Package will be through direct negotiation between the Director and relevant state and territory agencies.

Increasing the use of vessel monitoring systems has a number of benefits to both park users and the Director. Increased uptake will:

- assist users in complying with Australian Marine Park management requirements through alert services that provide information to fishers when they enter a zone for which their fishing activity is not allowed; and
- provide efficiencies in the Director's compliance activities, allowing the Director to focus compliance resources to other activities.

While having a vessel monitoring system is not a requirement for entry into Australian Marine Parks (beyond those users with current existing vessel monitoring system requirements), this component of the Package will make funds available to state and territory jurisdictions on a negotiated basis to enhance existing capabilities.

3.3 Coral Sea Fishery Licence Buy-out Program

The Director also proposes to provide direct assistance for the removal of a limited number of licences in the Coral Sea Fishery that can no longer be used at the whole fishery scale as a result of marine park management arrangements.

While the Fishing Business Assistance grants are designed to assist commercial fishers to make adjustments to their operations to comply with the new marine park management arrangements, the Director recognises that in some limited circumstances the new management arrangements result in some fishers not being able to utilise some fishing methods at the whole fishery scale. While under no constitutional or legal obligation to do so, the Director considers that in these circumstances the buy-out of entitlements may be warranted.

The Director will only consider a licence buy-out in the following circumstances:

- the new marine park management arrangements result in the closure of an entire fishery to certain fishing methods due to the boundaries of the marine park matching the boundaries of the fishery; and
- the buy-out of licences is agreed with the relevant fisheries management authority.

Following analysis by ABARES and discussion with the Australian Fisheries Management Authority, the Director has determined to conduct a limited buy-out of trawl and trap endorsements in the Coral Sea Fishery. This is because based on the new marine park management arrangements, fishers operating in the Coral Sea Fishery will no longer be able to use demersal trawl or traps in any part of the fishery. The Australian Fisheries

Management Authority has agreed to the buy-out of both whole licences (where all methods on the licence cannot be used) and assistance for the removal of an endorsement where multiple methods are allowed on a licence but which one or more can no longer be used.

The Director will engage independent valuers to determine the market value of the licences and negotiate directly with those licence holders in the coming months.

Attachment A

1 Catch displacement calculation methods

The following is a catalogue of methods that will be used to generate the catch record summary and calculate catch displacement for the purposes of calculating Fishing Business Assistance. The application of this methodology within each jurisdiction is specified in the table below.

- Analysis methods will apply to each fishery as a whole and will not be 'customised' to the circumstances of individual businesses.
- Ancillary data and information that is held by fisheries management agencies may be used in displacement estimates, for example research sampling data, bathymetric information and vessel monitoring system data. However, data held by individual fishing businesses or other entities will not be used in displacement estimates.
- Calculating displacement will rely on catch data collected by each jurisdiction, much of which is collected on large scale reporting grids (up to 60 minutes). In all cases, some degree of data processing will be required with the objective of providing the most accurate estimate of displacement.

The methods fall into two types based on the whether the available data are shot-by-shot (containing position information for each fishing operation) or grid based.

1.1 Shot-by-shot data

1.1. a. Single Position (point)

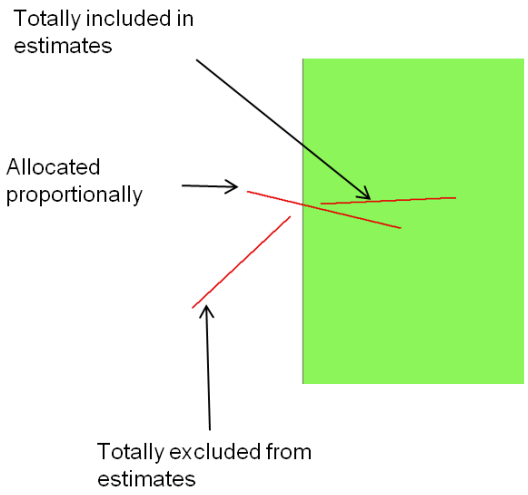
Fishing operations will be wholly within an Australian Marine Park or not based on the point position information of each operation. Fishing methods are then included or excluded from the assistance calculations based on the zoning framework (as per the new management Australian Marine Park management arrangements).

1.1. b. Start and end position (lines)

The position information of each operation should be converted to a line, generated from start and finish coordinates. Calculations of potential displacement are derived from operations that intersected with, or are wholly within, an Australian Marine Park. Where an operation's line intersects a marine reserve but does not fall entirely within the Australian Marine Park, the catch and GVP for that operation should be allocated in proportion to the length of line within the reserve (Figure 1).

Fishing methods are included or excluded based on the zoning framework (as per the new management Australian Marine Park management arrangements).

Figure 1 Illustration of treatment of fishing operations (lines) in relation to reserve boundaries



Note: The green area represents an Australian Marine Park, and the red lines indicate lines of fishing operations. Fishing operations can be entirely in the park, entirely outside it, or partially inside it; those that cross the park boundary should have their potentially displaced catch and GVP allocated proportionally. Source: ABARES

1.2 Grid data

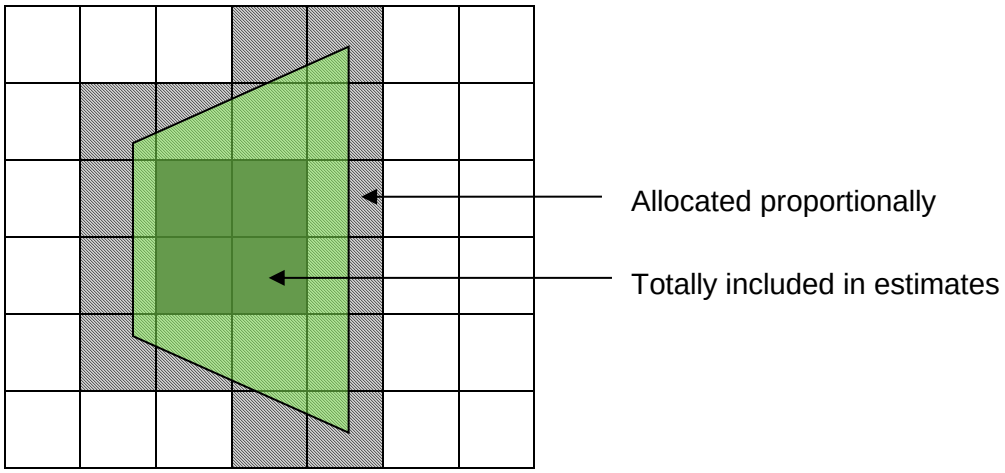
Grid data is available at different scales for different fisheries and jurisdictions (6 minute, 10 minute, 30 minute and 60 minute grids). The following spatial processing methods will be adopted to calculate catch displacement.

In all cases, fishing methods are included or excluded based on the zoning framework (as per the new management Australian Marine Park management arrangements).

1.2. a. Basic proportional area

The displaced catch from a grid cell is in proportion to the area of the grid that is occupied by the Australian Marine Park. This approach assumes fishing was distributed uniformly within the block. Most of the other calculation methods (itemised below) rely to some extent on a proportional area calculation.

Figure 2 Illustration of treatment of grid-reported fishing data in relation to Australian Marine Park boundaries



Note: The green area represents an Australian Marine Park, the black grid represents the grid fishers report on, the hatched cells represent cells that partially overlap the park, and the darkest cells represent cells completely inside the park. Cells that are entirely inside the park have their entire catch or GVP included in calculations, while those that partially overlap a park have their catch or GVP included in proportion to the amount of overlap (e.g. if 20% of a cell was inside a park, 20% of its catch or GVP would be allocated to the park). Source: ABARES

1.2. b. Depth stratified (simple)

Where information is available on the depths in which fishing occurs, the reporting grids will be cropped to include only those fishing depths so as to more accurately reflect where fishing activity occurred. The proportional area approach is then applied to the cropped grids.

1.2. c. Depth stratified (advanced)

A more advanced approach to depth stratification will be applied where there is data on the proportion of fishing within several depth ranges—allowing catches within a larger grid cell to be allocated to multiple depth strata within the cell (e.g. within a cell 70% of catch occurred in 0-50m depth, 25% in 50-90m depth and 5% beyond 90m depth). The proportional area approach is then applied to the bathymetric strata within the grids.

An equivalent method will be used where habitat mapping data exists and there is information on proportion of fishing by habitat.

1.2. d. Fishery footprint from shot position data

A fishery footprint is a set of boundaries (mapping) that encompass where the operations of a fishery occur. It may be based on a subset or complete set of detailed fishing position information, such as from a research log or vessel monitoring system. The spatial processing of the position points may include some form of buffering (say 2 nautical miles) to generate an outer boundary of fishing operations. Grid cells are cropped to include only the fishery footprint and the proportional area approach is then applied to the cropped grids.

1.2.e. Commonwealth/state split

For fisheries that straddle Commonwealth and state/territory waters there may be data on the proportion of fishing that occurs within Commonwealth waters, for each grid cell. In this case, grid cells may be cropped to include only Commonwealth waters and the catch assigned to each grid is adjusted to reflect only Commonwealth catches. The proportional area approach will be then applied to the cropped grids.

1.2.f. Cropping to management boundaries

Fishery management boundaries determine where fishing can occur for a particular fishery. This may affect the interpretation of displaced catches from some grid cells that intersect with these boundaries. For a specific fishery, grid cells will be cropped to contain only areas within the fishery management boundaries. The proportional area approach will then be applied to the cropped grids.

1.2.g. Proportions from VMS data

Unidentified vessel monitoring system (VMS) data aggregated at a fishery level will be used to directly determine the proportion of fishing activity that occurs inside a park for each grid where the grid is partially within an Australian Marine Park (in place of the proportional area approach). VMS position data should pertain to the reference period (1 July 2012 through 30 June 2017) and be processed to include only polls that represent likely fishing activity (e.g. at trawling speed of say 0–2.8 knots). A proportion will then be calculated for each grid cell by counting the number of VMS polls that occur inside and outside the park boundary (proportion = number of polls inside park/total polls for the grid). For a fishery, a single proportion would apply for each grid, encompassing all years in the reference period.

All calculation will be undertaken at the fishery/sector level and not for individual fishers

1.2. h. Proportions from research data

Research data (e.g. observer data or research logbooks) that provides latitude/longitude position information for some or all operations in a fishery will be used to directly determine the proportion of fishing activity that occurs inside a park for each grid where the grid is partially within a park (in place of the proportional area approach). A proportion will be calculated for each grid cell by counting the number of reported fishing operations that occur inside and outside the park boundary (proportion = number of position reports inside park/total position reports for the grid). For a fishery, a single proportion would apply for each grid, encompassing all years in the reference period.

1.2. i. Landings adjusted catches

Where there is a known discrepancy between logbook records and catch disposal records, the logbook data will be adjusted using appropriate species specific scalars. Calculations should use complete fishery/sector catches from logbooks and from landings during the reference period such that a single adjustment scalar will apply to all logbook catch of a species within that fishery/sector.

1.2. j. Data at two scales

Some fisheries data may be reported at one of two grid scales (e.g. 6 or 30 minute). In these cases, the different data sets may be analysed separately depending on the scale and the results from the two spatial scales summed if necessary. All other things being equal there is a preference for using finer scale data.

1.2. k. Imputing fishing patterns from fine scale data

There may be cases where fine scale logbook data (say 6 minute) is available for recent years of the reference period but only coarser scale data (say 60 minute) is available earlier in the reference period. In this circumstance the spatial pattern of catch from the fine scale data may be used to spatially apportion the catches in the years of coarse scale data. All the fine scale data from within the reference period should be used to calculate total catch within each fine scale grid cell, nested within a coarse scale grid cell. From this, the proportion of catch represented by each fine scale grid can then be calculated (proportion = catch in fine scale grid / catch from all fine scale grids nested in the coarse scale grid). To impute the distribution of catches for coarse scale data, the total catch from a coarse scale grid is assigned to the small scale grid in the proportions calculated above. All calculation is undertaken at the fishery/sector level and not for individual fishers.

Based on the above, tables 1 – 10 below detail the methods to be used by both jurisdiction and by fishery.

Table 1: Commonwealth Fisheries Business Assistance catch displacement calculation methods

Fishery	Spatial resolution of data	Processing method[1]
Coral Sea Fishery	Shot-by-shot	1.1.b (Lines)
Eastern Tuna and Billfish Fishery	Shot-by-shot	1.1.b (Lines), 1.2.i
North West Slope Trawl Fishery	Shot-by-shot	1.1.b (Lines)
Northern Prawn Fishery	Shot-by-shot	1.1.a (Points)
SESSF Commonwealth Trawl Sector	Shot-by-shot	1.1.b (Lines), 1.2.i
SESSF East Coast Deepwater Trawl	Shot-by-shot	1.1.b (Lines), 1.2.i
SESSF Gillnet, Hook and Trap sector	Shot-by-shot	1.1.a (Points) and 1.1.b (Lines) as appropriate, 1.2.i
SESSF Great Australian Bight Trawl sector	Shot-by-shot	1.1.b (Lines), 1.2.i
Small Pelagics Fishery	Shot-by-shot	1.1.a (Points) and 1.1.b (Lines) as appropriate, 1.2.i
Southern Bluefin Tuna Fishery	Shot-by-shot	1.1.a (Points)
Southern Squid Jig Fishery	Shot-by-shot	1.1.a (Points), 1.2.i
Western Deepwater Trawl Fishery	Shot-by-shot	1.1.b (Lines)
Western Skipjack Tuna Fishery	Shot-by-shot	1.1.a (Points)
Western Tuna And Billfish Fishery	Shot-by-shot	1.1.b (Lines), 1.2.i

Table 2: South Australian Fisheries Business Assistance catch displacement calculation methods

Fishery	Spatial resolution of data	Processing method[1]
Marine Scalefish Fishery – fish trap method	60 minute grid	1.2.b. grids cropped to 60-200m depth strata
Marine Scalefish Fishery – dropline, handline & longline	60 minute grid	1.2.a. Basic proportional area
Northern Zone Rock Lobster	60 minute grid	1.2.e. Commonwealth/state split using Ward et al. 2012[1]

[1] Ward, T.M., Burch, P., Gorman, D. and Begg, G.A. 2012, *Estimates of historical commercial fishery catches/effort in final sanctuary and habitat protection zones in South Australia's Marine Parks.* Report to PIRSA Fisheries and Aquaculture. South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication No. F2011/000307-8. SARDI Research Report Series No. 670. 77pp.

Table 3: Western Australian Fisheries Business Assistance catch displacement calculation methods

Fishery - gear type	Spatial resolution of data	Processing method
Kimberley Prawn Managed Fishery - Otter trawl net	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Fishery footprint from shot position data approach (1.2.d). Proportional area within trawl grounds (area fished 1997, 1999, 2000 and 2002–10, with 2 nm buffer and January 2009 to June 2012, with 3 nm buffers). Catch data: 10 minute and 60 minute
Nickol Bay Prawn Managed Fishery - Otter trawl net	10 minute grids	Basic proportional area (1.2.a). Data: 10 minute
Northern Demersal Scalefish Managed Fishery - Fish trap	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Imputed fishing patterns from fine scale data approach (1.2.k). The imputed 10 minute catches will be analysed using the proportional area approach (1.2.a).
Northern Demersal Scalefish Managed Fishery - hand line	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Imputed fishing patterns from fine scale data approach (1.2.k). The imputed 10 minute catches will be analysed using the proportional area approach.
Northern Demersal Scalefish Managed Fishery - set (drop) line	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Imputed fishing patterns from fine scale data approach (1.2.k). The imputed 10 minute catches will be analysed using the proportional area approach.
Pilbara Fish Trap Fishery - Fish trap	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f) Data: 60 minute Depth strata 0–200 m
Joint Authority Northern Shark Fishery and North Coast Shark Fishery - Demersal longline	10 minute grids	Data previously provided was combined for JANSF and NCS; all at 10 minute scale. 2008 onwards: proportional area from 10 min scale data

Table 4 cont.: Western Australian Fisheries Business Assistance catch displacement calculation methods

Fishery - gear type	Spatial resolution of data	Processing method
Joint Authority Northern Shark Fishery and North Coast Shark Fishery - pelagic gillnet	10 minute grids	Data previously provided was combined for JANSF and NCS; all at 10 minute scale. Proportional area from 10 min scale data
Shark Bay Prawn Fishery - Otter trawl net	10 minute grids	Proportional area from 10 minute scale data, cropped to management boundaries (1.2.f).
South West Trawl Fishery - Otter trawl nets	60 minute grids	Fishery footprint from shot position data approach (1.2.d). Footprint derived previously from research fishing positions (latitude – longitude) during the 5-year reference period with a 2 nm buffer on each position. Catch data: 60 minute
West Coast Deep Sea Crustacean (Interim) Fishery - Crab trap/pot	Shot-by-shot 60 minute grids	Shot by shot data: start and end positions (lines, 1.1.b) 60 minute data: Fishery footprint from shot position data with a 2 nm buffer on each position (1.2.d).
West Coast Demersal Scalefish (Interim) Fishery - Hand line	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Imputed fishing patterns from fine scale data approach (1.2.k).
West Coast Demersal Scalefish (Interim) Fishery - Set (drop) line	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Imputed fishing patterns from fine scale data approach (1.2.k).
West Coast Demersal Gillnet and Demersal Longline (Interim) Fishery - demersal longline	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Imputed fishing patterns from fine scale data approach (1.2.k).

Table 5 cont.: Western Australian Fisheries Business Assistance catch displacement calculation methods

Fishery - gear type	Spatial resolution of data	Processing method
West Coast Demersal Gillnet and Demersal Longline (Interim) Fishery - demersal gillnet	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Imputed fishing patterns from fine scale data approach (1.2.k).
West Coast Purse Seine Fishery - Purse seine	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–40 m
West Coast Rock Lobster Managed Fishery (Abrolhos) - Lobster pot	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Depth stratified (0-200 m; 1.2.b), cropped to management boundaries (1.2.f).
West Coast Rock Lobster Managed Fishery (excluding Abrolhos) Lobster pot	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Depth stratified (0-200 m; 1.2.b), cropped to management boundaries (1.2.f).
Esperance Rock Lobster Fishery - Lobster pot	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–200
South Coast Trawl Fishery - Otter trawl nets	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Fishery footprint from shot position data approach (1.2.d). Footprint derived from research fishing positions (latitude – longitude) during the 5-year reference period with a 2 nm buffer on each position.
Joint Authority Southern Demersal Gillnet and Demersal Longline Fishery - Demersal gillnet & demersal longline	10 minute grids 60 minute grids	Basic proportional area (1.2.a). Data: 10 minute

Table 6 cont.: Western Australian Fisheries Business Assistance catch displacement calculation methods

Fishery - gear type	Spatial resolution of data	Processing method
Windy Harbour – Augusta Rock Lobster Fishery - Lobster pot	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–200
FBL condition 20 - Octopus Fishery - Octopus Pot and Potting	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–40 m
FBL condition 105 - South Coast Deep Sea Crab Fishery - Lobster pot	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–200
FBL condition 105 - South Coast Deep Sea Crab Fishery - crab trap	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 400–1000
Southern Rock Lobster Fishery – Lobster Pot	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–200
South Coast Purse Seine Fishery – Purse Seine	SCPS grid	Proportional area (1.2.a) Data: SCPS grid (various sizes)
Mackerel Managed Fishery - Trolling	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Imputed fishing patterns from fine scale data approach (10 minute data; 1.2.k).
Mackerel Managed Fishery - hand line	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) 60 minute data: Imputed fishing patterns from fine scale data approach (10 minute data; 1.2.k).

Table 7 cont.: Western Australian Fisheries Business Assistance catch displacement calculation methods

Fishery - gear type	Spatial resolution of data	Processing method
Open Access and other conditions – Crab Pot	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–40 m
Open Access and other conditions – Other	10 minute grids 60 minute grids	10 minute data: Basic proportional area (1.2.a) Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–200 m
Developing Crab Fishery (Pilbara) - Crab traps	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–40 m
Developing Crab Fishery (Mandurah to Bunbury) - Crab traps	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 min Depth Strata: 0–40 m
Developing Octopus Fishery - Trigger traps	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–40 m
Developing Octopus Fishery - Shelter pots	60 minute grids	Depth stratified (1.2.b), cropped to management boundaries (1.2.f). Data: 60 minute Depth Strata: 0–40 m
Marine Aquarium Fishery – Diving and wading	10 minute grids	Basic proportional area (1.2.a) Data: 10 minute
Specimen Shell Fishery	60 minute grids	Cropped to management boundaries (1.2.f) Data: 60 minute

Table 8: Northern Territory Fisheries Business Assistance catch displacement calculation methods

Fishery	Spatial resolution of data	Processing method
A4 Spanish Mackerel Fishery	Shot-by-shot	Single position points, 1.1.a
A5 Offshore Net & Line Fishery	Shot-by-shot	Single position points, 1.1.a
A6 Demersal Fishery	Shot-by-shot	Single position points, 1.1.a
A16 Finfish Trawl	Shot-by-shot	Single position points, 1.1.a
A18 Timor Reef Fishery	Shot-by-shot	Single position points, 1.1.a

Table 9: Queensland Fisheries Business Assistance catch displacement calculation methods

Fishery	**Spatial resolution of data**	**Processing method**
Gulf of Carpentaria Developmental Finfish Trawl	6 minute grids 30 minute grids	Proportional area (data at 6 min and 30 min scales, method 1.2j)
Line (QFJA)	6 minute grids 30 minute grids	Proportional area (data at 6 min and 30 min scales, 1.2j)
Line (L4) (line fishing)	6 minute grids 30 minute grids	Proportional area (data at 6 min and 30 min scales, 1.2j)
Net—N3	6 minute grids 30 minute grids	For operations with the N3 Symbol. 1. Crop grids (30 min) and sites (6 min) to the management boundary of the N3 fishery (7 nm seaward of the territorial sea baseline, Figure 1). 2. Proportional area of cropped grid and site data (1.2j).
Net—N9	6 minute grids 30 minute grids	For operations with the N9 Symbol. 1. Crop grids (30 min) and sites (6 min) to an area between 7 and 25 nm from the territorial sea baseline. (Figure 1). 2. Proportional area of cropped grid and site data (1.2j).
Net – N12	*Queensland DAF to advise spatial scale*	*Processing method to be based on spatial scale of data*
Net – N13	*Queensland DAF to advise spatial scale*	*Processing method to be based on spatial scale of data*
Net—QFJA	6 minute grids 30 minute grids	Proportional area (data at 6 min and 30 min scales, 1.2j)
Deep Water Fin Fish Fishery (L8 sector)	6 minute grids 30 minute grids	Proportional area (data at 6 min and 30 min scales, 1.2j)
Deep Water Fin Fish Fishery (Developmental fish trap sector)	6 minute grids 30 minute grids	Proportional area (data at 6 min and 30 min scales, 1.2j)

Fishery	Spatial resolution of data	Processing method
East Coast Otter Trawl Fishery (T1 sector)	6 minute grids 30 minute grids	Proportional area (data at 6 min and 30 min scales, 1.2j) (VMS data indicate the impacts to reference period catches in the deepwater prawn trawling ground in the southern Swains area has been eliminated by introducing a General Use Zone in that vicinity.)
Harvest fisheries	6 minute grids 30 minute grids	Include data in the vicinity of Marion Reef and exclude data in the vicinity of Shark Reef. For Marion Reef, fishing data at 6 min and 30 min scales that intersects with the Marion Marine National Park zone is assumed to be 100 per cent impacted (rather than using the proportional area method 1.2j).

Table 10: New South Wales fisheries Transitional Business Assistance catch displacement calculation methods

Fishery (method)	Spatial resolution of data	Processing method
Lobster Fishery	6 minute data[2]	Basic proportional area (1.2.a).
Ocean Trawl (Otter trawl net–fish)	6 minute data[2]	Basic proportional area (1.2.a).
Ocean Trawl (Otter trawl net–prawns)	6 minute data[2]	Basic proportional area (1.2.a).
Ocean Trap and Line (All displaced methods)	6 minute data[2]	Basic proportional area (1.2.a).

[2] Previously included coarse scale data, however it is understood with the updated reference period (1 July 2012–30 June 2017) that all data will be at the 6 minute grid scale