Application for assessment of the Tasmanian Abalone Fishery for approval under the Environment Protection and Biodiversity Conservation Act 1999

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Introduction

This submission meets the requirements for the assessment of the Tasmanian Abalone Fishery under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).

This submission has been produced to enable the Department of Climate Change, Energy, the Environment and Water (DCCEEW) to assess the Abalone Fishery management arrangements against the *Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition* and the requirements set out in relevant sections of the EPBC Act.

The fishery

Description of the fishery

The Tasmanian Abalone Fishery operates within all State Waters of Tasmania south of 39° 12′, with jurisdiction granted to Commonwealth waters out to 200 nautical miles of the coastline under Offshore Constitutional Settlements (OCS) arrangements. The fishery is divided into five fishery parts to which total allowable catch (TAC) limits are applied—Western Blacklip, Eastern Blacklip, Northern Blacklip, Bass Strait Blacklip, and Greenlip—and further divided into blocks and subblocks for spatial management purposes. For the purpose of efficient and meaningful fishery assessment, there is further consolidation of some subblocks into discrete spatial assessment units (SAU).

The fishery parts are set under rule 9 of the <u>Fisheries (Abalone) Rules 2017</u> (hereafter referred to as 'the Rules'). A static map of the fishery parts is provided in Appendix 5, and an interactive map of the blocks and subblocks is accessible online at <u>LISTmap</u>.

Fishing methods and gear

The Tasmanian Abalone Fishery is exclusively a dive fishery, with divers permitted to use dive and snorkel gear which includes masks, snorkels, fins, wetsuits, compressed air and associated equipment including hookah lines and nitrox. With nitrox, divers can reach depths of up to 30 metres.

Abalone divers hand-collect abalone into netted bags by hand, and with the aid of an abalone iron or a commercially manufactured knife, the latter defined in $\underline{r17}$ of the Fisheries (Abalone) Rules 2017 (hereafter referred to as 'the Rules') as having a blade not less than 18 millimetres wide (excluding that part of the blade that is within 50 millimetres of the tip of the blade). No other forms of collection aids are permitted.

Abalone divers dive from licenced vessels of a range of sizes, including smaller dinghies and larger mother-boats or their tender vessels. vessel sizes. Divers are assisted by deckhands and may work singly or in pairs (a 'diving team' per \underline{r} 38 of the Rules), with catch identified to individuals. Diving may be conducted as day trips or as overnight mother-boating; mother-boating and dive teams are usual practice in this fishery. Vessel Monitoring Systems (VMS) are mandatory for all mother-boats, all overnight fishing trips, and all fishing within the Bass Strait area per division 3 of the Rules.

Target and byproduct species

The fishery exclusively targets Blacklip Abalone (*Haliotis rubra*) and Greenlip Abalone (*Haliotis laevigata*). Being a highly specialised dive fishery with targeted hand collection, bycatch/byproduct species are nil to negligible.

The target species are each managed with annual total allowable commercial catch limits (TACs) that are allocated between the relevant fishery parts. Smaller catch-caps may be applied annually to defined areas (usually a grouping of subblocks) to limit localised effort and spread effort to other parts of the fishery, but these caps are monitored internally by NRE Tas only and not made public. The TACs and spawning closures for the coming season are determined by 31 December of each year, and published online at Abalone Closures | Fishing Tasmania via notice made under r 9 of the Rules.

The TACs are further divided equally between 3,500 individually transferrable quota units (ITQs), to control access to the fishery.

Appendix 1 provides the weight of all retained catches of each species per year for the past five years. The overall TACC has been steadily trending downwards, with the largest reductions made between 2019 and 2020 in the Northern and Western Blacklip Abalone Zones, and for Greenlip. Catch levels reached a historical low in 2024, following reductions each year since 2010.

TACC reductions have been indicated by the Tasmanian Abalone Harvest Strategy and are not unexpected in the joint-context of the stock having previously been classed as transitionally-depleting, and with abalone requiring long generational timeframes to naturally recover.

Recent data indicate increasing stability across all zones particularly since 2021. Notably, 2025 marks the first overall increase in TACC since 2010, with signs of continued stability across most Zones.

Value of the fishery

The Tasmanian Abalone Fishery produces approximately 25% of the total annual global production of wild-caught abalone, and the Gross Value of Production (GVP) was estimated at \$86M in 2017-18 from a TAC of 1,473 tonnes per the <u>Tasmanian Fisheries and Aquaculture Industry 2017-18:</u> <u>Economic Contributions Summary</u>.

The Gross Value Added (GVA) was estimated at \$53.1M in 2021-22, with direct employment of 248 persons and indirect employment of 185 FTEs per the <u>Tasmanian Fisheries and Aquaculture Industry</u> 2020/21: Economic Contributions Technical Report.

The <u>Social-Economic Analysis of the Tasmanian Dive Sector: Snapshot Report 2024</u> estimated the value of the Tasmanian Abalone Fishery in the 2022/23 financial year as \$45.4M measured as total direct output, and \$46.4M measured as total Gross Value Added (GVA) of the dive sector plus \$16.7M GVA attributed to abalone processing.

Almost all catch is exported, primarily to China, Hong Kong, Singapore, Taiwan, and Japan. The product may be sold live, canned, frozen, dried, or vacuum packed, but live abalone is preferred.

Management regime

Description of the management regime

The Tasmanian Abalone Fishery is managed under the <u>Living Marine Resources Management Act</u> <u>1995</u> (LMRMA) and subordinate legislation including the <u>Fisheries (Abalone) Rules 2017</u> ('the Rules'; these Rules also act as the management plan), <u>Fisheries Rules 2019</u>, <u>Fisheries (Processing and Handling) Rules 2021</u>, <u>Fisheries (General and Fees) Regulations 2016</u>, <u>Fishing (Licence Ownership and Interest) Registration (Fees) Regulations 2022</u> and the <u>Fisheries (Penalty) Regulations 2021</u>.

Annual determination of TACs is supported with a <u>Harvest Strategy</u>, which uses an empirical harvest strategy (EHS) based on multi-criteria decision analysis (MCDA) methods, based on a selection of performance measures.

The fishery is further managed with consideration given to the 3,500 abalone deeds of agreement made between the State and ~450 quota holders. The primary considerations arising from the agreement is management to MSY and the payment of quarterly royalty fees to the State.

In addition to defined fishery parts, spatial closures, spawning closures, TACs, catch-caps, and ITQs described earlier in this document, the fishery is further managed with spatially-variable minimum size limits (MSL) for commercial fishers as prescribed under <u>Part 2 of the Fisheries (General and Fees)</u> Regulations 2016.

Currently, the commercial MSL provides for two years of spawning prior to entering the fishery. As outlined in the <u>Harvest Strategy</u>, the fishery has been undergoing systematic periodic increases to MSL, in line with the best available scientific advice from IMAS, to move towards spatially-variable MSLs that are set at where 50% of Blacklip Abalone in any given management areas have had the opportunity to grow for three years after reaching maturity. This process will be completed in 2026.

A plain English summary of the rules, regulations, size limits and TACs, and prevailing management arrangements are made publicly available online within the <u>Abalone Operational Information Paper 2025</u>. An updated copy of the guide is published online and provided to fishery stakeholders by the start of the fishing season, each 1 January.

Recreational catch is managed with mandatory licences, spatially-variable MSLs <u>published online</u> and a requirement to carry a measuring device, a requirement to use an abalone iron or knife that meets specifications, a daily bag limit of 10 abalone (combined species), and a possession limit of 20 abalone. Aboriginal fishers do not require recreational fishing licences or compliant tools, but they must comply with all other rules and regulations.

A range of conditions are applied to all abalone dive fishing licences to govern the use of the licence and loggers, and to limit overcatch. These read as:

- 1. It is a condition of this licence that the holder, or supervisor of the licence (both hereinafter referred to as the 'diver') must, whilst on a fishing trip not enter the water and dive without being in possession of:
 - an instrument supplied by the Institute for Marine and Antarctic Studies (hereinafter referred to as IMAS) for the purposes of automatically recording the depth to which a diver is diving) hereinafter referred to as the 'depth logger'; and
 - an instrument supplied by IMAS for the recording of the location of the diver (hereinafter referred to as the location logger) when entering the water.
- 2. It is a further condition of this licence that the diver must, whilst on a fishing trip not to enter the water without first manipulating and observing an instrument supplied by IMAS, that is in their possession, by:
 - activating the power switch of the location logger and observing a display of latitude, longitude and time and at least 30% remaining charge displayed on the power indicator; and
 - observing the depth logger for a period of greater than 90 seconds to ensure the power indicator light flashes orange or green but not red.
- 3. It is a condition of this licence that the only person with the authority to take abalone using this licence is the person specified in this fishing licence (abalone dive), and that the holder:

- complies with the LMRMA and all regulations and rules made thereunder, whilst carrying out any activity under the licence;
- does not carry out any fishing which is not authorised by a fishing licence pursuant to the LMRMA and subordinate legislation;
- must ensure the use of accurate measuring and weighing instruments throughout the period
 of this licence to determine the weight information to be entered into any original return or
 record when carrying on any activity under the licence as required by the LMRMA.
- 4. It is a condition of this licence that the holder, or the supervisor of the licence (both hereinafter referred to as the 'diver'):
 - who transfers or receives excess blacklip abalone, only transfers or receives blacklip abalone taken from the same part of the fishery;
 - who transfers excess abalone on completion of a fishing trip can only make one transfer to another holder of a fishing licence (abalone dive).

Consultation processes

The Marine Resources business unit of NRE Tas undertakes public consultation with a wide range of stakeholders when developing or updating fisheries management arrangements. These consultative processes are a requirement under Part 3">Part 3 of the LMRMA, and includes mandated periods of public comment together with targeted consultation with relevant recognised peak fishing bodies to modify or make a management plan. The prevailing management plan is the Fisheries (Abalone) Rules 2017 which is due to expire January 2028.

Scientific advice is provided contractually to NRE Tas by the Institute for Marine and Antarctic Studies (IMAS) via the <u>Sustainable Marine Research Collaboration Agreement</u> (SMRCA). Under the SMRCA, IMAS provides scientific advice regarding fishery performance and key indicators including CPUE and CPUA derived from catch records and mandatory GPS/depth loggers worn by commercial divers.

Operational advice is provided directly by the <u>Tasmanian Abalone Council Ltd</u> (TACL), <u>Seafood Industry Tasmania</u> (SIT), and the <u>Tasmanian Association for Recreational Fishing</u> (TARFish), who are all relevant recognised peak fishing bodies under <u>section 25</u> of the LMRMA. Open lines of communication are maintained with the peak bodies by NRE Tas fishery managers, with formal meeting opportunities currently facilitated via the Abalone <u>Fishery Consultative Group</u> and the Abalone Industry Advisory Meeting. These functions were previously performed by the Abalone Fishery Advisory Committee (AbFAC).

Consultative Groups and Industry Advisory Meetings are a formal mechanism by which NRE Tas facilitates open dialogue with scientific experts, peak bodies, and invited representatives of the fishery. The Consultative Group meets several times per year to consider IMAS scientific advice and evaluate management options, with the views of each group recorded and provided to the Minister. The Industry Advisory meetings will enable industry to receive scientific information and proposed management response, to discuss and consider issues and to represent the views of the people who it represents, in a written record to the Minister.

Performance against objectives, performance indicators and performance measures

The Tasmanian Abalone Fishery Harvest Strategy specifies objectives, performance indicators and performance measures for the fishery. The fishery's performance is monitored by IMAS and NRE Tas

throughout the year and formally reviewed by the Abalone Fishery Consultative Group in October and November of each year. Annual reports are published by IMAS at <u>Tasmanian Wild Fisheries</u> <u>Assessments</u>.

Performance measures used by the harvest strategy include:

- 1. Target CPUE: the current sCPUE scored against a target sCPUE defined by block;
- 2. Gradient 1: a measurement of the gradient of change in block-level sCPUE in the past 12 months (i.e., current year over the previous year); and
- 3. Gradient 4: a measurement of the gradient of change in block-level sCPUE over the past four years including year-to-date.

For each of these performance measures, scoring functions are used to assign a score between 0 and 10, with a score of 5 representing the target level. To calculate a combined performance index for each reporting block, the scores are weighted and composite score determined.

A control rule system is applied to the composite score to specify the minimum TACC reduction or maximum TACC increase possible, which can then be rationalised. Meta-rules apply if a decision is to be taken which departs from the empirical harvest strategy recommendation, and they account for extraneous factors.

The total TACC for each fishery zone is then determined by summing the recommended catches from all the reporting blocks within that zone.

Controlling the level of harvest

The commercial abalone fishery is limited entry with only 121 abalone dive licences, and approximately 70 active divers at any one time. Harvest is primarily controlled through the application of minimum size limits and TACCs divided between ITQs. Minimum size limits (MSL) are spatially-variable and currently provide for between two and three years of spawning, on average, prior to entering the fishery.

The <u>Tasmanian Abalone Fishery Harvest Strategy</u> is applied to determine annual TACs, which uses an empirical harvest strategy (EHS) based on multi-criteria decision analysis (MCDA) methods, based on a selection of performance measures. The Harvest Strategy is conditioned with regards to LMRMA sustainability considerations, as well as requirements for MSY under the 3,500 abalone deeds of agreement between the State and approximately 450 individual quota holders.

NRE Tas consults with IMAS and the Abalone Fishery Consultative Group regarding outputs of the Harvest Strategy, and further considers estimates of all sources of mortality on each stock including recreational and Aboriginal fishing, the data for which is collected via a <u>periodic phone survey</u> coordinated by IMAS.

TACCs are set for each of the five fishery parts, and smaller catch-caps are informally applied by fishery managers to specific subblocks to constrain localised effort and spread effort to other parts of the fishery. Once the limits/caps are reached, closures are instated with 24 - 48 hours' notice provided to divers.

Catch limits, catch-caps, and species/area closures are determined under notice at <u>Tasmanian</u> <u>Government Public Notices</u>, and are published online at <u>Catch and Closures</u> | <u>Fishing Tasmania</u>. Predetermined spawning closures to protect spawning stock are also implemented via the same mechanism.

Commercial catch is recorded at species-level in an approved fishery logbook, the Commercial Abalone Dive Docket and Diving Team Docket book (Figure 5 of Appendix 6). Dockets must be completed by the diver and receiver of the fish prior to leaving the landing area, and they must be posted to NRE Tas within 48 hours of completion. Licensed seafood processors verify catch weights and report these independently using an approved logbook, the Abalone Processors Return (Figure 6 of Appendix 6), which is submitted to NRE Tas monthly. Records are required to be stored for 5 years and made available to Fisheries Officers and NRE Tas upon request.

All Dockets and Processor Returns are entered into the Fisheries Integrated Licensing and Monitoring System (FILMS) electronic database by NRE Tas staff and reviewed for errors or instances of non-compliance.

Harvest strategy

The Tasmanian Abalone Fishery is managed in accordance with the *Fisheries (Abalone)* Rules 2017 (which is the Management Plan) and the Tasmanian Abalone Harvest Strategy which includes target reference points, limit reference points, performance measures and decision rules.

The empirical harvest strategy for the Tasmanian abalone fishery was first developed and tested by Management Strategy Evaluation (MSE) in 2014-15. It was reviewed and first trialled in 2017. In 2018, following public consultation and advice of the Abalone Fishery Advisory Committee (AbFAC) and the Recreational Fishing Advisory Committee (RecFAC), the then-Minister of Primary Industries and Water approved the use of a harvest strategy to guide management of the fishery.

The strategy was reviewed in 2019, and then again most recently in 2021 by Dr Richard Little from the Commonwealth Scientific and Industrial Research Organisation (CSIRO), who set out a number of recommendations to be reviewed and adopted. This led to the 2023-25 review process to produce the second iteration of the Tasmanian Abalone Fishery Sustainable Harvest Strategy. It has been developed with consideration given to the review recommendations, historical harvest levels, and characteristics of the fishery including abalone biology and ecology. It has been enhanced by improvements to data collection, scientific understanding, and changing social expectations of fishery management.

The 2025 version of the Harvest Strategy provides a formal framework for harvest-related management decisions for commercial and non-commercial activities in the abalone fishery. A further review is expected five years after implementation, with amendments to the harvest strategy able to be made at any time if necessary.

Performance measures used by the harvest strategy include:

- 1. Target CPUE: the current sCPUE scored against a target sCPUE defined by block;
- 2. Gradient 1: a measurement of the gradient of change in block-level sCPUE in the past 12 months (i.e., current year over the previous year); and
- 3. Gradient 4: a measurement of the gradient of change in block-level sCPUE over the past four years including year-to-date.

For each of these performance measures, scoring functions are used to assign a score between 0 and 10, with a score of 5 representing the target level. To calculate a combined performance index for each reporting block, the scores are weighted. The total TACC for each fishery zone is then determined by summing the recommended catches from all the reporting blocks within that zone.

A control rule system is applied to the composite score to specify the minimum TACC reduction or maximum TACC increase possible, which can then be rationalised. Meta-rules apply if a decision is to

be taken which departs from the empirical harvest strategy recommendation, and they account for extraneous factors.

Recovery strategies for overfished stocks

The stock status for all species is classified as sustainable per the State of Australian Fisheries Stocks (SAFS) latest <u>reports</u>, and there are no active recovery plans in place at this time.

Notwithstanding the SAFS classifications, subblocks 16, 22, 23, 24, 27, and 28A have been commercially closed in the Tasmanian Eastern Zone Fishery since 2020. This is in response to reduced biomass and recruitment impairment that has resulted in a meaningful and manageable TACC not being able to be set. The pause in commercial fishing is effectively resting the stocks and allowing for recovery via natural recruitment.

Both Tasmanian species are characterised by limited juvenile and adult movement, with individuals likely to remain within a few hundred metres of the spawning site. Larvae are lecithotropic with a short larval duration (5 to 10 days) leading to restricted larval dispersal and localised recruitment at scales of 100s of metres. Both species are relatively long-lived (estimated > 25 years). The combined biological and ecological characteristics of these two species mean the fishable Tasmanian abalone 'stock' is a metapopulation comprised of many hundreds, or more, functionally independent subpopulations distributed across the Tasmanian coastline.

Given the biological and ecological characteristics of both abalone species, natural recovery via local recruitment is the preferred approach for Tasmanian abalone stocks. Other standard approaches are not applicable; they are not habitat limited (i.e., habitat intervention is not required owing to the highly variable rocky reef structure accentuating Tasmanian coastlines), and reseeding/translocation activities increase the risk of diluting critical localised adaptations (i.e., genetics or metabolomics) or expression of stress-induced Abalone Viral Ganglioneuritis (AVG).

The Tasmanian Abalone Fishery is currently in the preliminary stage of Marine Stewardship Council (MSC) certification, and a recovery strategy for the Eastern zone, which may also be applicable to the other zones, is being drafted to support the application. Progress will be reported in future.

Enforcement of the management arrangements

NRE Tas contains a dedicated Marine Resources Compliance and Monitoring team who are responsible for ensuring fishery operators adhere to management arrangements. The team monitors harvest data submitted by harvesters and processors, and are aided with a sophisticated electronic database with automated error and non-compliance detection rules.

The Marine Resources Compliance team investigate all matters of referred non-compliance in the first instance, with responses varying from education to infringement/prosecution and the application of demerit points upon convictions. Some matters may be escalated to the Tasmanian Marine Police (TasPol) for further investigation.

Fisheries Officers within the Marine Resources Compliance team conduct scheduled inspections/audits of fish processing premises with a focus on records and equipment. Fisheries Officers from TasPol routinely conduct spot inspections of fish processors, conduct at-sea and inport inspections of catches and vessels.

Mitigating impacts on the wider ecosystem

An ecological risk assessment has not been undertaken for this fishery, however, the nature of the fisheries operations—highly selective hand collection of targeted species by diving—renders the risk very low.

Through the <u>Abalone Industry Reinvestment Fund</u> (AIRF), the Tasmanian Abalone industry is actively involved in projects to protect east coast marine habitats from incursion of Longspined Sea Urchins (*Centrostephanus rodgersii*), and to restore threatened Giant Kelp ecological communities.

Abalone divers must not intentionally damage other organisms, and they must avoid dragging catch bags along the bottom or onto boulders. This is outlined in the <u>Australian Wild Abalone Quality</u>
<u>Assurance Code of Practice Master Manual</u>, to which divers must adhere.

A review of ecosystem impacts of abalone fishing was published in 2004 by Gregory Jenkins, which found that ecosystem impacts are relatively minimal compared to the effects of trawling and dredging, with no significant bycatch or discards. In 2010, Joseph Valentine published an investigation into the potential interactions between benthic under-storey organisms and *Haliotis rubra*, in south-eastern Australia. The available correlative evidence of the study suggests limited ecosystem effects of Blacklip Abalone depletion at the scale of individual reefs.

National policies, plans and strategies

The fishery's management arrangements are compliant with national policies and strategies.

• Threat abatement plans:

Compliance is not explicitly required for this fishery, with only one plan relevant: *Threat abatement plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (2018)*. The fishery is consistent owing to limited gear types (hookah, hand-held/rope-attached bags, and compliant knives and abalone irons).

• Recovery plans:

Compliance is not explicitly required for this fishery, with none of the plans being relevant.

• National Policy on Fisheries Bycatch:

The fishery is consistent with the policy. Bycatch and discards are not practiced within the fishery because harvested fish are individually hand selected by divers. The fishery is managed with ITQs that act to minimise overcatch. Any resultant incentive to high-grade or discard catch to avoid over-catching quota limits is strongly deterred by severe penalties for failure to measure abalone prior to detaching them from the strata, and failure to land all abalone taken above the size limit (r 34 of the Rules).

On-water mortalities are negligible, with abalone highly resilient to managed cold-chain transport. Post-harvest mortalities are recorded by licenced abalone processors, with those fish having already been included on diver catch records and abalone processor records, and having counted towards the catch limits and quota.

Changes since the previous assessment

A range of changes have been implemented since the previous assessment. These include:

Introduction and Updates to the Abalone Fishery Harvest Strategy

An empirical harvest strategy for the Tasmanian abalone fishery was first developed and tested in 2014-15, and consulted, reviewed and trialled in 2017, and later approved for use in

2018. The strategy was reviewed in 2019 and then comprehensively reviewed by CSIRO in 2021 who set out a number of recommendations to be reviewed and adopted. Following review and incorporation of the findings, the second iteration of the Tasmanian Abalone Fishery Sustainable Harvest Strategy was released in 2025.

The 2025 version of the Harvest Strategy provides a formal framework for harvest-related management decisions for commercial and non-commercial activities in the abalone fishery. A further review is expected five years after implementation, with amendments to the harvest strategy able to be made at any time if necessary.

Mandatory use of GPS and Depth Loggers

The use of diver GPS location and depth loggers is mandatory, with CPUA and depth data being incorporated into catch limit setting considerations.

Minimum Size Limits

The fishery has been undergoing systematic periodic increases to MSL in all areas and for both species, in line with the best available scientific advice from IMAS. The aim is to move towards spatially-variable MSLs that are set where 50% of Blacklip Abalone in any given management area have had the opportunity to grow for three years after reaching maturity, rather than the two years of protection previously provided by the MSLs. This process will be completed in 2026.

Fishery Map Changes

Several new fishery subblocks have been added over the past decade to enable application of smaller TACs and efficient closures, where relevant, and to accommodate adoption of the abalone fishery subblocks map by the Commercial Dive (Urchins and Periwinkles) fishery in September 2022.

The Central Western Zone—encompassing blocks 6, 7, and 8—was initially created in 2008 by splitting the Western Zone. In 2018, following a period of declining catch rates, it was incorporated back into the Western Zone to reduce the overall catch taken from blocks 6, 7, and 8, which are less desirable areas for harvesting with limited quota compared to other Western Zone blocks.

Changes to VMS Requirements

Approved Vessel Monitoring Systems (VMS) have been required to be fitted to any abalone vessels operating in Bass Strait and the Northern fishery parts since 2000, but this was extended to include all abalone mother-boats (i.e., those capable of overnighting) in 2017.

Following consultation with affected commercial fishing bodies, the *Fisheries Rules 2019* were amended in January 2024 to:

- Enable NRE Tas to receive VMS data using mobile networks, resulting in better management of VMS airtime costs;
- o Enable VMS requirements to be issued by Published Notice;
- Enable commercial fishing supervisors to seek authorisation from a Fisheries Officer to continue fishing, subject to terms and conditions, if their approved VMS unit stops working while undertaking a fishing trip; and
- Enable the Department to provide approval for the supervisor to switch off the approved VMS under a broader range of circumstances.

Monitoring and data collection

Data collection, data validation and data monitoring programs

Commercial Abalone Dive Docket and Diving Team Docket books are issued per fishery zone to individual divers by NRE Tas for completion of daily catch records (Figure 5 of Appendix 6). Completion of all relevant sections is mandatory, with divers required to complete details pertaining to their personal identification; prior fishing telephone report number; vessel; GPS and depth loggers; subblock fished; dive time; estimated weight of catch per species; place of landing; transfer date, time, and location; quota details for deduction; and diver team information.

Dockets must be completed by the diver and receiver of the fish prior to leaving the landing area, and they must be posted to NRE Tas within 48 hours of completion. Divers are also required to maintain records for five years and make them available to Fisheries Officers if requested.

Abalone Processor Returns must be submitted monthly by licensed abalone processers, as is mandatory (Figure 6 of Appendix 6). All data are entered into the Fisheries Integrated Licensing and Monitoring System (FILMS) electronic database by Marine Resources staff. FILMS auto-validates data entered against other sources of data, including telephone reports, and raises flags if details appear invalid.

FILMS tracks the harvest against catch limits and catch-caps and notifies fishery managers when a limit is approaching caught. FILMS also flags any fishing that has occurred within a closed area, or any other breach of a management plan or fishing rule. The program works exceptionally well for fisheries management and monitoring purposes.

Data is not captured for byproduct or bycatch as these are negligible to nil in this fishery. Likewise, protected species interactions are not recorded as the gear type and fishing methods mitigate against entanglements or trapping.

Commercial divers must use GPS and depth loggers when commercially diving. This fine-scale spatial data is housed with IMAS for the purposes of measuring the spatial distribution of the fishing effort and producing an annual fishery assessment, and it is made available to NRE Tas or Fisheries Officers for validation of catch data upon request.

IMAS collect size structure data using digital measuring boards located within processing premises, with fish measured upon receipt into the processing premises. This is a voluntary program that has captured size structure data from all parts of the fishery throughout the fishing season. Some commercial divers are equipped with measuring boards that allow for the collection of more spatially refined length composition data, closer to the actual capture location.

Subblocks 16, 22, 23, 24, 27, and 28A have been closed to commercial harvest in the Tasmanian Eastern Zone Fishery since 2020. Fishery-independent surveys using a timed-swim approach are conducted in those areas annually to directly assess abalone abundance. Similarly, periodic surveys of stocks have been undertaken in priority areas of the fishery, including the Actaeon's and the Northwest region, as part of abalone research projects.

Stock Assessments

Key target and byproduct species

The annual stock assessment of the Tasmanian abalone fishery by IMAS informs the Empirical Harvest Strategy (EHS) for the fishery by providing the necessary performance measures based on standardised CPUE. Standardised CPUE is considered as a proxy for available biomass at the level of blocks for the stock assessment and the harvest strategy.

The primary data inputs for the annual stock assessment are fishery-dependent data collected from commercial fisher logbooks—including daily records of catch reported in whole weight, fishing effort in hours, and fishing locations by subblock level—and fine-scale spatial and depth data from diverworn and vessel-attached loggers.

IMAS collects biological data on the size structures, growth rates, and reproductive maturity of Tasmanian abalone species to inform the annual assessment process. In areas that have been closed to fishing, fishery-independent surveys are conducted to directly assess abalone abundance. Commercial catch sampling is undertaken to gather data on the size structure of the harvested abalone populations.

Stock status is reported every few years in the Status of Australian Fish Stocks (SAFS) reports. All Tasmanian stocks were assessed as sustainable in the most recent reports for each species in 2023 (Table 1), with the improvement directly attributed to robust and adaptive management strategies.

Table 1. Stock status, both current and from the previous two assessments, for Blacklip Abalone and Greenlip Abalone caught in the Tasmanian Abalone Fishery as determined from catch data and CPUE. Colours reflect those used in SAFS reporting: red = depleted, yellow = depleting, green = sustainable.

Reference → Tasmanian Stock ↓	SAFS Blacklip 2023 SAFS Greenlip 2023	SAFS Blacklip 2020 SAFS Greenlip 2020	SAFS Blacklip 2018 SAFS Greenlip 2018
Greenlip Zone	Sustainable	Depleting	Depleting
Eastern Zone	Sustainable	Sustainable	Depleting
Northern Zone	Sustainable	Sustainable	Depleting
Bass Strait Zone	Sustainable	Sustainable	Sustainable
Western Zone	Sustainable	Depleted	Sustainable
Central Western Zone	*Now in Western Zone	*Now in Western Zone	Depleted

Distribution and spatial structure of key stocks

Blacklip Abalone are distributed across South Australia, Victoria, Tasmania and New South Wales, with multiple distinct and independent biological stocks across that area and within Tasmania. For management purposes, it is considered to be a single stock as defined by the management area.

Greenlip Abalone is distributed across southern mainland Australia and northern Tasmania. There is genetic evidence that Greenlip Abalone comprise numerous independent biological stocks, but at a spatially broader scale than the biological stock structure evident for Blacklip. For management purposes, it is considered to be a single stock as defined by the management area.

Refer to the linked Status of Australian Fish Stocks (SAFS) Reports for a summary of regional management: <u>Blacklip Abalone 2023</u>, <u>Greenlip Abalone 2023</u>.

Estimates of total removals

Refer to Table 3 of Appendix 1 for a summary of total commercial catches across the previous five complete fishing season (2019 to 2024; also represented in Figure 1 of Appendix 1), together with the applicable TACCs and instances of their exceedance. All catch exceedances have been minor relative to the TACC, and in recent years the Harvest Strategy has effectively (as evidenced by SAFS sustainability ratings) taken account of exceedances during new season TACC-setting.

Refer to Appendix 4 for a summary of the fishing effort in the fishery between 2019 to 2024. There has been a steady decrease in the number of hours fished in all parts of the fishery (Table 5 and Figure 2 of Appendix 4) and the number of active divers (Table 6 and Figure 3 of Appendix 4) in the fishery, commensurate with the TACC and catch reductions.

Recreational and Indigenous catch is not required to be reported. However, periodic telephone surveys are conducted by IMAS to determine the extent of recreational fishing in Tasmania. The most recent results are published in the 2022-23 Survey of Recreational Fishing in Tasmania, which states that approximately 20,000 abalone were recreationally caught, with a standard error of 7,800 abalone, with only 3% released.

Further, IMAS annually surveys a proportion of recreational rock lobster and abalone fishers for estimates of catches, days fished, and social information including stock status perceptions, fishing quality and management. The 2023-24 Fishing Season Report estimated the recreational harvest at 27.2 tonnes, equivalent to 3.5% of the 2024 TACC (773.5 tonnes), with 90% of that comprising Blacklip Abalone.

Refer to Table 4 of Appendix 1 for a summary of total estimated recreational catches across the previous five recreational fishing/reporting seasons (2019-20 to 2023-24). There is a consistent trend towards increasing catches, however it remans minor compared to the commercial catch.

Indicator byproduct species

Not applicable.

Being a dive fishery with targeted hand collection, byproduct species are not permitted. There is low occurrence of biofouling of marine algae species on abalone shells, however this is not quantified or considered problematic.

Bycatch

Bycatch composition

Not applicable.

Being a dive fishery with targeted hand collection and no quota, bycatch including discards (i.e. high-grading) is negligible to nil. There is low occurrence of biofouling of marine algae species on abalone shells, however this is not quantified or considered problematic.

Risk assessment on the effects of fishing on bycatch

Not applicable.

Being a dive fishery with targeted hand collection and no quota, bycatch including discards (i.e. high-grading) is negligible to nil. There is low occurrence of biofouling of marine algae species on the shells of periwinkles, however this is not quantified or considered problematic.

Bycatch mitigation measures

Not applicable.

Being a dive fishery with targeted hand collection and no quota, bycatch including discards (i.e. high-grading) is negligible to nil. There is low occurrence of biofouling of marine algae species on the shells of periwinkles, however this is not quantified or considered problematic.

Indicator bycatch species

Not applicable.

Being a dive fishery with targeted hand collection and no quota, bycatch including discards (i.e. high-grading) is negligible to nil. There is low occurrence of biofouling of marine algae species on the shells of periwinkles, however this is not quantified or considered problematic.

Management actions

Not applicable.

Being a dive fishery with targeted hand collection and no quota, bycatch including discards (i.e. high-grading) is negligible to nil. There is low occurrence of biofouling of marine algae species on the shells of periwinkles, however this is not quantified or considered problematic.

Protected species and threatened ecological communities

Fishery impacts on protected species and communities

The Tasmanian Abalone fishery is highly targeted, with two readily-identifiable species hand collected by divers. The nature of the fishery naturally mitigates against capture, killing, or injuring of protected species and ecological communities, including by way of bycatch and entanglement. Interaction with threatened, endangered, or protected species (TEPS) data is not collected in this fishery.

Mitigating risks to protected species and communities

Protected Species

Within the fishery's Operational Guide, divers are provided information about what to do if they encounter Threatened, Endangered, or Protected Species (TEPS). Divers are requested to contact NRE Tas' 24-hour Marine Wildlife (Whale) Hotline to report sightings and strandings of whales and dolphins, or interactions with whales, dolphins, seals, or seabirds. Guidelines are also provided in the Operational Guide for viewing and approaching whales and dolphins, based on those provided by NRE Tas Marine Conservation Section for all water users including commercial operators and recreational boaters.

The only TEPs that are regularly sighted in the fishery are sharks, including white sharks and grey nurse sharks. Overall, the threat to the diver is greater than the threat to the shark.

Protected Communities

Abalone are often found in close proximity to seagrass beds, but not within them, and thus divers avoid seagrass communities. Sponges and corals are found near abalone habitats but are not targeted by divers.

The Giant Kelp Marine Forests of South East Australia ecological community are listed under the Threatened Species Action Plan. The abalone fishery is unlikely to operate in giant kelp forest due to the harvest method being hookah assisted diving, with a real risk of entanglement to divers if they were to operate within the forests.

Some Tasmanian abalone divers are contracted to assist with giant kelp restoration efforts led by IMAS, The Nature Conservancy (TNC), and Eaglehawk Dive Centre (EDC). After attending training, divers assist with clearing of other marine plant species and outplanting of lines seeded with baby giant kelp plants. Operators within the Tasmanian Abalone Dive fishery are, therefore, highly cognisant and involved in the protection and restoration of giant kelp communities.

CITES-listed species

Not applicable. The fishery does not harvest CITES-listed species.

Ecosystem

Ecosystem management actions

There are minimal concerns relating to ecosystem impacts from harvesting within this fishery, while catches are managed to sustainable levels.

Abalone divers must not intentionally damage other organisms, and they must avoid dragging catch bags along the bottom or onto boulders. This is outlined in the <u>Australian Wild Abalone Quality</u> <u>Assurance Code of Practice Master Manual</u>, to which divers must adhere.

A <u>review of ecosystem impacts of abalone fishing</u> was published in 2004 by Gregory Jenkins, which found that impacts are relatively minimal compared to the effects of trawling and dredging, with no significant bycatch or discards. In 2010, Joseph Valentine published an <u>investigation</u> into the potential interactions between benthic under-storey organisms and *Haliotis rubra*, in south-eastern Australia. The available correlative evidence of the study suggests limited ecosystem effects of Blacklip Abalone depletion at the scale of individual reefs.

Management responses

There are no formal decision rules that trigger management responses when monitoring detects significant impacts on associated ecosystems. However, harvest conditions are reviewed annually and spatial/temporal closures would be implemented in the first instance if detrimental ecosystem impacts were reasonably suspected or detected.

Marine bioregional plans

The fishery operates within Tasmanian waters, however, under an Offshore Constitutional Settlement (OCS) agreement the boundary extends into Commonwealth waters of the <u>South-East Marine Bioregion</u>. This bioregion is not currently subject to a bioregional plan, and any catch from within the South-East Marine Bioregion would be negligible owing to natural diver-depth limits (i.e., divers cannot realistically harvest below 30 metres depth).

Research

The <u>Abalone Industry Reinvestment Fund</u> (AIRF) continues as a joint initiative between NRE Tas and the Tasmanian Abalone Council Limited (TACL) to fund abalone and longspined sea urchin projects. Please visit the webpage to view the complete table of abalone fishery projects funded by the AIRF, with linked project outlines for current projects and final reports for completed projects. The AIRF is due to end in July 2026. The most significant projects for management purposes include:

- 1. Development of a voluntary Recreational Catch Reporting and Fishing Tas App
- 2. Marine Stewardship Council Certification for commercial abalone industry
- 3. <u>Testing size limits in the abalone fishery which has high heterogenous growth and productivity</u>
- 4. Assessing growth dynamics and connectivity of blacklip abalone populations
- 5. Extensions to the aMSE Management Strategy Evaluation software to address specific Tasmanian needs (i.e., improvements to the empirical abalone harvest strategy)
- 6. A 3 year Toxins in Abalone Industry PhD Program 2024-27
- 7. Assessment of <u>Abalone fleet behaviour: does spatial structure of fishing follow stable</u> patterns or do management changes significantly alter spatial structure of effort
- 8. Quantifying potential of the IMAS Timed-Swim program to detect change in stock levels

A range of projects related to are also underway with funding from the Fisheries Research and Development Corporation (FRDC), for both <u>Blacklip Abalone</u> and <u>Greenlip Abalone</u>.

Progress Against Current Conditions

Table 2: Progress on conditions and/or recommendations since the last assessment.

CONDITIONS FOR TASMANIAN ABALONE	DUE DATE	PROGRESS AGAINST THE CONDITION AS
FISHERY		OF JULY 2025
The harvest from the Tasmanian Abalone	Unclear. Have	The operation of the abalone fishery has
Fishery will be carried out in accordance	aligned report	continued to be carried out in full
with the Fisheries (Abalone) Rules 2017	with end of	accordance with the Fisheries (Abalone)
(Tas) in force under the Living Marine	fishing season	Rules 2017 (Tas) in force under the
Resources Management Act 1995 (Tas).	for data	Living Marine Resources Management
	consistency.	Act 1995 (Tas).
The NRE Tas to advise [DCCEEW] of any	Unclear. Have	Any material changes within the
intended amendments to the abalone	aligned report	Tasmanian abalone fishery management
fishery management arrangements that	with end of	arrangements, which may affect the

could affect the criteria on which EPBC Act decisions are based, within three months of that change being made.	fishing season for data consistency.	assessment against which Environment Protection and Biodiversity Conservation Act 1999 (Cth) decisions are made, have been outlined within this document and have been made to strengthen fishery arrangements and improve stocks.
Reports to be produced and presented to [DCCEEW] annually, as per Appendix B to the Guidelines for the Ecological Sustainable Management of Fisheries – 2nd Edition.	Unclear. Have aligned report with end of fishing season for data consistency.	Annual submissions have been made and accepted.
The Tasmanian Abalone Fishery targets stocks that were previously classed as 'transitional-depleting'. Changes to the fishery's management regime should be positive for recovering abalone, and to ensure the new management regime is successful in reversing the negative trend in abalone stocks, [NRE Tas] should review the performance of the Tasmanian Abalone Fishery within the next few years. Recognising the need to evaluate success of the revised management arrangements, [NRE Tas] will conduct a review of the Abalone Fishery in 2020 and provide a report of the results to [DCCEEW]. Maintaining export approval until 2026 is conditional on this 2020 review and report being completed, as the review will substantiate progress from the recent management developments and help ensure the Tasmanian Abalone Fishery continues to be sustainable in the long term.	2020	The report was made and accepted, with export approval ongoing.

References

Please use the links provided throughout the report.

Appended Data Tables

APPENDIX 1 – Retained catch data (target and byproduct species)

Table 3: Comparison of commercial Tasmanian Abalone Dive Fishery harvests across recent seasons, noting that a season runs from 1 January to 31 December of a calendar year, and the reported unit is kilograms. The TACC is in italics under the total catch, with over-catch shaded yellow and under-catch shaded green.

	Season (1 Jan – 31 Dec) Catch and TACCs in kilograms									
		2019	2020	2021	2022	2023	2024			
	Eastern Blacklip Zone	248,969	220,360	219,025	221,558	225,041	227,578			
		-	-	-	-	-	-			
		252,000	220,500	220,500	224,000	227,500	231,000			
	Northern Blacklip Zone	97,429	70,235	63,705	58,625	59,457	62,801			
		-	-	-	-	-	-			
		98,000	73,500	63,000	59,500	59,500	63,000			
	Western Blacklip Zone	702,612	541,826	379,007	335,844	304,940	290,086			
es		-	-	-	-	-	-			
Species		717,500	549,500	378,000	339,500	311,500	294,000			
Sp	Bass Strait Blacklip Zone	91,004	93,341	87,510	80,667	83,010	80,985			
		-	-	-	-	-	-			
		91,000	91,000	<i>87,500</i>	80,500	84,000	80,500			
	Greenlip Abalone Zone	109,194	85,439	83,359	90,073	91,273	88,836			
		-	-	-	-	-	-			
		108,500	84,000	84,000	91,000	91,000	87,500			
	Totals	1,249,208	1,011,201	832,606	786,767	763,721	750,286			
		-	-	-	-	-	-			
		1,267,000	1,018,500	833,000	794,500	773,500	756,000			

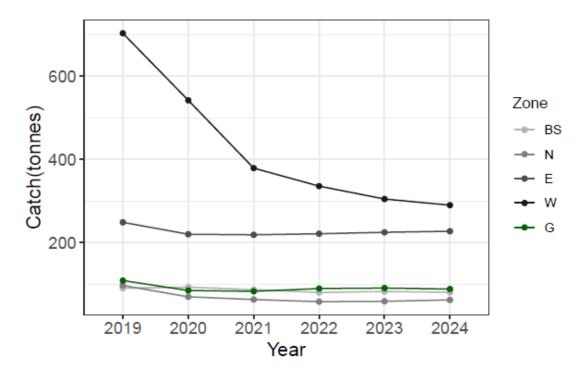


Figure 1: Total catch (tonnes) of Blacklip Abalone and Greenlip Abalone taken in the commercial Tasmanian Abalone Dive Fishery. Lines colour coded by current zones.

Table 4: Comparison of estimated recreational Tasmanian Abalone Dive Fishery harvests across recent seasons, noting that a recreational fishing season runs from 1 November to 31 October of the following year, but the telephone reporting period is inclusive of November to April. The reported unit is kilograms.

	Reporting Season (1 Nov – 30 Apr)									
	2019-20 2020-21 2021-22 2022-23									
S	Blacklip Abalone	11,340	14,104	18,291	20,944	24,480				
Species	Greenlip Abalone	1,260	3,096	1,809	2,856	2,720				
	Total	12,600	17,200	20,100	23,800	27,200				

APPENDIX 2 - Discarded catch data (target and non-target species)

This section is not applicable in this fishery.

Being a dive fishery with targeted hand collection and no quota, bycatch including discards (i.e. high-grading) is negligible to nil.

APPENDIX 3 – Protected species interaction data

Interactions would be limited to vessel-strikes or hookah-line entanglement, the latter of which poses greater risk to divers than other species; there have been no such reports.

The risk of vessels striking TEPS is no greater than any other water users and the risk of hookah airhose entanglements is negligible.

APPENDIX 4 – Fishing effort

Table 5: Summary of total hours fished (rounded to nearest whole hour) by zone in the commercial Tasmanian Abalone Dive Fishery, noting that a season runs from 1 January to 31 December of a calendar year.

	Season (1 Jan – 31 Dec) Catch and TACCs in kilograms								
		2019 2020 2021		2022	2023	2024			
	Eastern Blacklip Zone	4,181	2,817	2,570	2,873	2,528	3,094		
	Northern Blacklip Zone	3,754	1,346	1,197	931	955	867		
Species	Western Blacklip Zone	7,932	5,865	3,889	3,235	2,569	2,515		
gs	Bass Strait Blacklip Zone	1,882	1,723	1,167	1,104	1,163	1,023		
	Greenlip Abalone Zone	4,328	2,267	1,740	1,598	1,808	1,542		
	Totals	22,078	14,019	10,563	9,742	9,024	9,041		

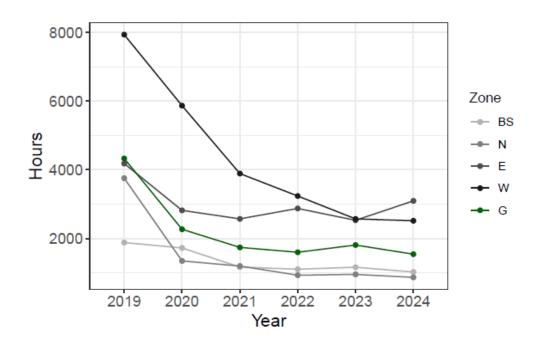


Figure 2: Annual hours fished for Blacklip Abalone and Greenlip Abalone in the commercial Tasmanian Abalone Dive Fishery. Lines colour coded by current zones.

Table 6: Summary of the number of active divers in the commercial Tasmanian Abalone Dive Fishery, noting that a season runs from 1 January to 31 December of a calendar year.

Year	Blacklip Abalone	Greenlip Abalone
2019	87	53
2020	85	50
2021	77	51
2022	71	51
2023	70	49
2024	68	44

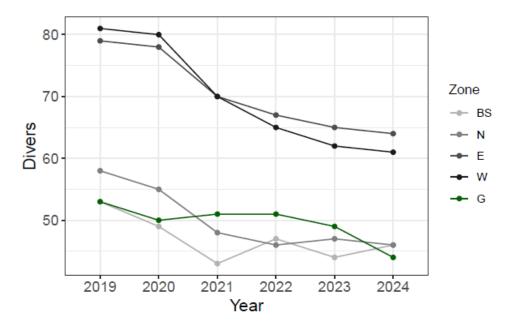


Figure 3: Annual number of individual divers actively fishing for Blacklip Abalone and Greenlip Abalone in the commercial Tasmanian Abalone Dive Fishery. Lines colour coded by current zones.

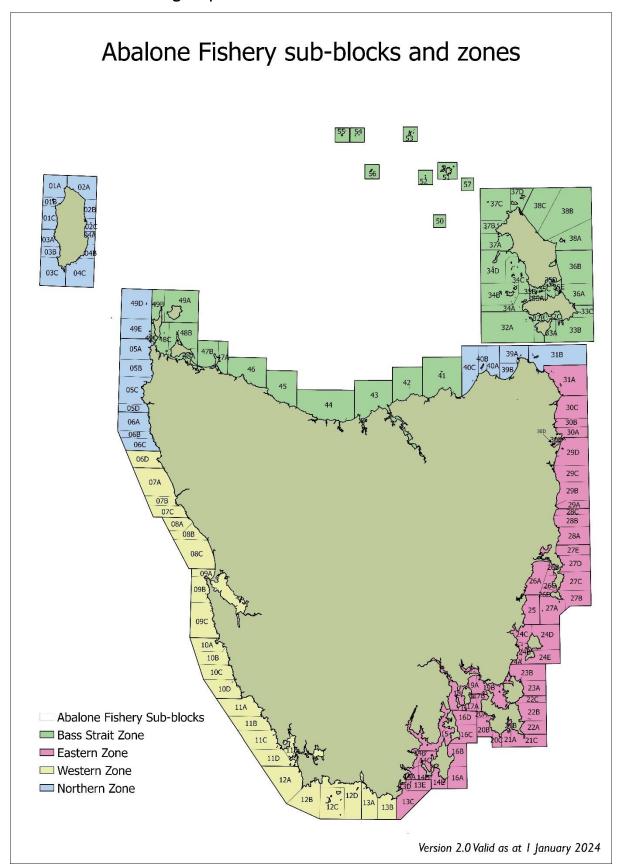


Figure 4. Map of the five current Tasmanian Commercial Abalone fishery parts.

APPENDIX 6 – Approved Logbooks

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before	commencing fishing trip)	GPS Logger No.	Depth Logs	er No.	- Details	Ent No.	declare that I	Docke		Team
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	Quota Add	led or Subtracted	+/_	kg	Givin	g Excess Abalone		Receiving	Excess Abal	one
	Pric	or Fishing Balance	=	kg	Other Diver's	Name				
Landing Details	Quota Ad	Ided or Subtracted During Fishing Trip	+/_	kg	Details	Ent No.	Do	ocket No.		
		r Landing Balance	=	kg	Total Kilogra	ms Transferred				kg
										=
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	Total Amount to be Deducted From Your Quota Limit Through This Docket (exact weight written in full)									
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Figure 5. Copy of the Commercial Abalone Dive Docket and Diving Team Docket to capture fishing data upon receipt at a licenced fish processing premises. One book per fishing zone is issued to individual divers.

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Name								
Address								
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						*Daily Av pr	ice pd \$/kg	Fees
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Figure 6. Copy of the approved Abalone Processor Monthly Return to capture fishing data upon receipt at a licenced fish processing premises.