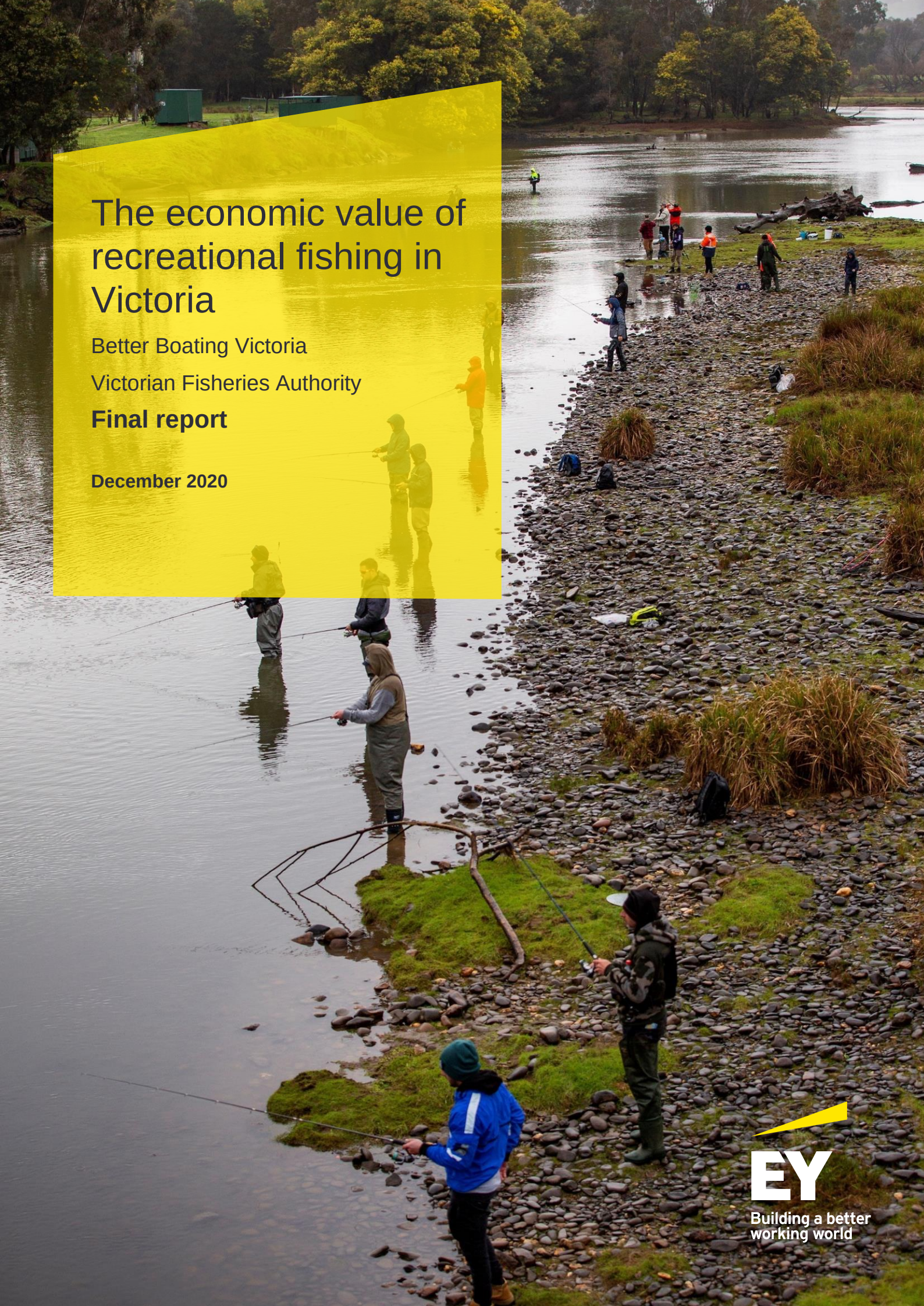

The economic value of recreational fishing in Victoria

Better Boating Victoria

Victorian Fisheries Authority

Final report

December 2020

Building a better working world

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Ernst & Young was engaged on the instructions of the Victorian Fisheries Authority ("the VFA" or the "Client"), with an equal funding contribution by Better Boating Victoria, to provide estimates regarding the economic value generated from recreational fishing and boating across Victoria in accordance with the engagement agreement dated 5 May 2019.

The results of Ernst & Young's work, including the assumptions and qualifications made in preparing the report, are set out in Ernst & Young's report dated December 2020 ("Report"). The Report should be read in its entirety including this notice, the applicable scope of the work and any limitations. A reference to the Report includes any part of the Report. No further work has been undertaken by Ernst & Young since the date of the Report to update it. The Report will be used for the purpose of supporting policy implementation, management planning, decision making and advocacy in the recreational fishing and boating sectors by the VFA and Better Boating Victoria (the "Purpose").

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Our work commenced on 1 May 2019 and was completed on 16 June 2020. Therefore, our Report does not take account of events or circumstances arising after the 16 June 2020 and we have no responsibility to update the Report for such events or circumstances.

In preparing this Report we have considered and relied upon information from a range of sources believed after due enquiry to be reliable and accurate. We have not been informed that any information supplied to us, or obtained from public sources, was false or that any material information has been withheld from us. We do not imply and it should not be construed that we have verified any of the information provided to us, or that our enquiries could have identified any matter that a more extensive examination might disclose. However, to extent required by our scope we have evaluated the information provided to us by the Client as well as other parties through enquiry and analysis and nothing has come to our attention to indicate the information provided was materially mis-stated or would not afford reasonable grounds upon which to base our Report.

The work performed as part of our scope considers information provided to us and only a combination of input assumptions relating to future conditions, which may not necessarily represent actual or most likely future conditions. Additionally, modelling work performed as part of our scope inherently requires assumptions about future behaviours and market interactions, which may result in forecasts that deviate from future conditions. There will usually be differences between estimated and actual results, because events and circumstances frequently do not occur as expected, and those differences may be material. We take no responsibility that the projected outcomes will be achieved, if any.

Our conclusions are based, in part, on the assumptions stated and on information provided by the VFA and Better Boating Victoria, the survey panel in July and August 2019 and other information sources used during the course of the engagement. The modelled outcomes are contingent on the collection of assumptions as agreed with the VFA and Better Boating Victoria and no consideration of other market events, announcements or other changing circumstances are reflected in this Report. Neither Ernst & Young nor any member or employee thereof undertakes responsibility in any way whatsoever to any person in respect of errors in this Report arising from incorrect information provided by the VFA, Better Boating Victoria, the survey panel or other information sources used.

Our work commenced on 1 May 2019 and was completed on 16 June 2020. Therefore, our Report does not take account of events or circumstances arising after the 16 June 2020 and we have no responsibility to update the Report for such events or circumstances.

The images displayed throughout in this report have been provided and approved by Better Boating Victoria and the Victorian Fisheries Authority.

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1. Executive summary

1.1 Introduction

Recreational fishing and boating are popular activities in Victoria and since 2015 the Victorian State Government has invested heavily in both the recreational fishing and boating industries through the Target One Million Plan.

In 2019, the Victorian Fisheries Authority (VFA), with an equal funding contribution by Better Boating Victoria, commissioned Ernst & Young (EY) to undertake a study to estimate the economic value generated by recreational fishing and boating across Victoria and the community participation in these sectors.

This study was commissioned in order to continue to support policy implementation, conduct management planning, support advocacy, and enable decision making in the recreational fishing and boating sectors.

1.2 Approach

The approach used to estimate the economic contribution of recreational fishing was developed in consideration of the previous 2015 EY economic study of recreational fishing in Victoria.

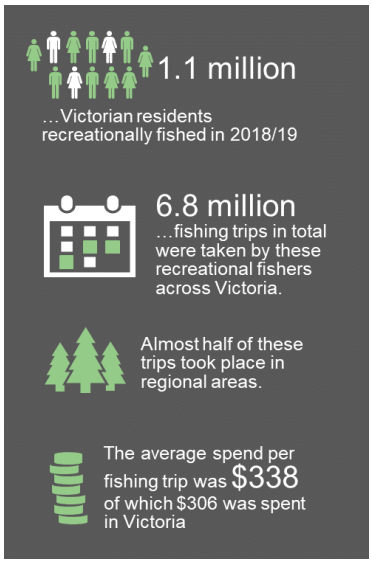
Results from one online internet survey and two phone surveys (totalling 6,039 people surveyed) were used to estimate the number of adult and junior (aged 5 to 17 years) recreational fishers and boaters in Victoria, as well as behaviour patterns related to recreational fishing (e.g. where people fish) and their expenditure patterns (e.g. per trip expenditure and annual expenditure).

Using the survey data and the estimation of total annual recreational fishing participation in Victoria, EY developed a model to estimate the direct expenditure related to recreational fishing. This direct expenditure was placed in an input – output model to determine the indirect, or flow-on, impact that the expenditure on recreational fishing has on the broader Victorian economy. This process then allowed for the calculation of the total economic contribution of recreational fishing on the Victorian economy.

1.3 Key findings

Key findings from the study include:

- In 2018/19, 1,113,506 Victorian residents (juniors and adults) participated in recreational fishing across Victoria. These fishers made 6.8 million recreational fishing trips across Victoria, with almost half of these trips occurring in regional areas
- An estimated $338 was spent per fisher on each trip. The majority of spend on each trip was on food, accommodation and transport in Victoria.
- Recreational fishing in Victoria in 2018/19 generated $7.51 billion combined direct and indirect output, and $3.49 billion combined direct and indirect value added
- Recreational fishing in Victoria in 2018/19 generated 27,322 combined direct and indirect full-time equivalent (FTE) jobs, including 14,282 direct jobs.
- Over the next 20 years recreational fishing in Victoria is projected to generate $97.24 billion combined direct and indirect output, $45.27 billion combined direct and indirect value added and an annual average of 32,374 combined direct and indirect full-time equivalent (FTE) jobs.



- The report also includes findings relating to recreational fishing expenditure, location and species preferences, forecast and unmet demand for recreational fishing.

1.4 Limitations

The methodology used to estimate the economic contribution of recreational fishing was developed under best practice principles. However, certain limitations should be considered when interpreting the results of this study. These limitations are outlined in Section 5 of the report.

2. Introduction

Recreational fishing and boating are popular activities in Victoria and since 2015 the Victorian State Government has invested heavily in both the recreational fishing and boating industries through the Target One Million Plan.

In 2019, the Victorian Fisheries Authority (VFA), with an equal funding contribution by Better Boating Victoria, commissioned Ernst & Young (EY) to undertake a study to estimate the economic value generated by recreational fishing and boating across Victoria and the community participation in these sectors.

This study was commissioned in order to continue to support policy implementation, conduct management planning, support advocacy, and enable decision making in the recreational fishing and boating sectors.

2.1 Recreational fishing in Victoria

Recreational fishing[1] is one of the most popular recreational pursuits in Victoria, with participation increasing year on year.

In 2015, it was estimated that 838,119 adult residents recreationally fished in Victoria.[2]

In 2018/19, this study has estimated that 1,113,506 residents (juniors and adults) recreationally fished in Victoria. These fishers made 6.8 million recreational fishing trips across Victoria, with over half of these trips occurring in regional areas.

2.2 Victorian Government commitment

The Victorian Government commits a significant amount of investment to improve the recreational fishing industry.[3] This includes establishing a new independent statutory authority, the VFA, to manage fisheries and resources state-wide and investing $81 million to grow participation in recreational fishing and improve resources (program referred to as Target One Million).[4]

The VFA is directly accountable for the administrative, licensing, compliance and enforcement functions that were previously undertaken by the former Fisheries Victoria, a business unit within the former Department of Economic Development, Jobs, Transport and Resources (DEDJTR).

The VFA is responsible for the management and regulation of fisheries including licensing, development of management plans and compliance and enforcement functions. The VFA also supports the development of recreational and commercial fishing and aquaculture in Victoria and provides advice to Government on a range of fisheries management opportunities. The VFA aims to deliver three outcomes:[5]

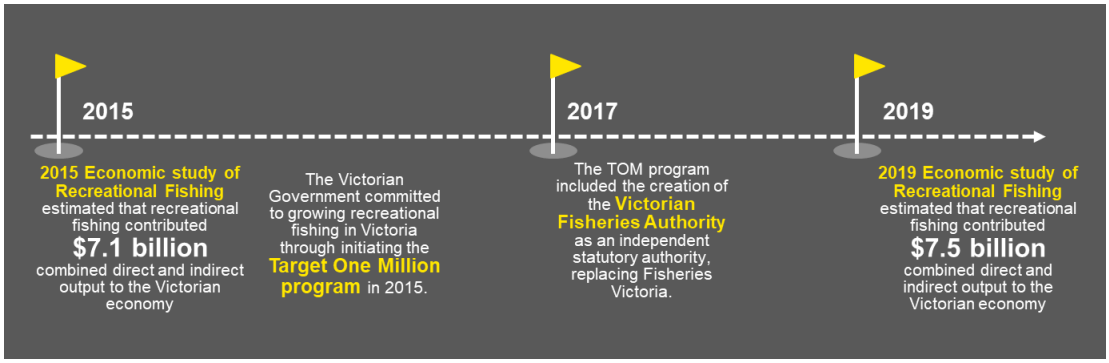
- Sustainable fishing and aquaculture
- Clear resource access and sharing arrangements
- Increased economic, social and cultural value.

[1] Recreational fishing is defined as fishing for pleasure or competition (excluding commercial fishing (i.e. fishing for profit))
[2] Victorian Recreational Fishing Peak Body and EY, Economic Study of Recreational Fishing in Victoria, 2015
[3] Victorian Fisheries Authority, Target One Million Budget 2015-2019, available at: https://vfa.vic.gov.au/recreational-fishing/targetonemillion2/target-one-million/budget# accessed: 22.01.2010
[4] Victorian Fisheries Authority, Target One Million Budget 2015-2019, available at: https://vfa.vic.gov.au/recreational-fishing/targetonemillion2/target-one-million/budget# accessed: 22.01.2010
[5] Victorian Fisheries Authority, available at: https://vfa.vic.gov.au/about, accessed: 10.10.2018

To support the Minister for Fishing and Boating as the responsible Minister for fisheries in Victoria, Department of Jobs, Precincts and Regions (DJPR) retains a role in coordination and strategic policy. DJPR and the VFA work closely together, as well as with the Commonwealth Government and other key stakeholders.

A timeline of events related to fishing in Victoria from 2015 to 2019 is outlined in Figure 1.[6]

Figure 1: Timeline of events (2015 – 2019)



Economic Study of Recreational Fishing in Victoria 2015

In 2015 an Economic Study of Recreational Fishing in Victoria ('2015 Economic Study') was conducted by EY which was commissioned and published by the Victorian Recreational Fishing Peak Body.[7] The 2015 Economic Study estimated that the industry generated $7.1 billion combined direct and indirect output and $3.9 billion in combined direct and indirect value added in Victoria and generated 33,967 direct and indirect FTE.

$7.1 billion
Direct and indirect **output**

It also estimated other key measures, such as the number of participants (838,199), number of fishing trips (6.1 million) and average catch size.

$3.9 billion
Direct and indirect **value add**

The 2015 Economic Study was an update to a 2009 Economic Study (also completed by EY). The intent of the economic study from 2015 was to replicate the outputs and approach of the original 2009 study, with only minor refinements and revisions to the original scope.

33,967
Direct and indirect **FTE**

The key findings of the 2015 Economic Study are outlined below.

Economic Study of Recreational Fishing in Victoria[8]

In 2013/14, recreational fishing in Victoria generated an estimated:

- $7.1 billion combined direct and indirect output, including $2.6 billion direct output
- $3.9 billion combined direct and indirect value added, including $1.6 million direct value added
- 33,967 combined direct and indirect full-time equivalent (FTE) jobs, including 16,257 direct jobs.

Between 2013/14 and 2033/34, recreational fishing in Victoria is estimated to generate the following:

- Output contribution (direct and indirect) from $7.1 billion (in 2013/14) to $9.6 billion (in 2032/33)
- Value added contribution (direct and indirect) from $3.9 billion (in 2013/14) to $5.3 billion (in 2032/33)
- Employment contribution (direct and indirect) from 33,967 (in 2013/14) to 45,992 (in 2032/33).

[6] Victorian Fisheries Authority, 2019
[7] EY, VRFish - Economic Study of Recreational Fishing in Victoria, 2015
[8] EY, VRFish, Economic Study of Recreational Fishing in Victoria, 2015

Target One Million – Phase 1

Recognising the important economic and social benefits of recreational fishing, the Victorian Government committed to growing recreational fishing in Victoria through initiating the Target One Million (TOM) in 2015.[9]

The TOM program was an election commitment announced as part of the Labor Government's campaign in the 2014 State election. The headline message of the TOM program was 'to get more people fishing, more often'. The program aimed to increase participation in recreational fishing in Victoria to one million anglers by 2020. The TOM program, which commenced in 2015, outlined a number of individual commitments designed to improve the recreational fishing experience for all Victorians. The election commitments were implemented by the then Fisheries Victoria, a business unit within the then DEDJTR. The Andrews Government committed $35 million to the initiative, which was later increased to $46 million to accommodate the requirements of the program.[10]

The TOM program included the establishment of a new independent statutory authority, the VFA to manage fisheries and resources state-wide. The VFA was established on 1 July 2017, replacing Fisheries Victoria[11], and has been responsible for continuing the delivery of the TOM program.

With the aim of increasing recreational fishers in Victoria to one million participants, some of the key initiatives from TOM Phase 1 include:[12]

- Establish a Better Fishing Facilities Fund and allocate 'Stronger Fishing Club' grants
- Halt commercial netting in Port Philip and Corio Bays over eight years
- Ban netting at the mouths of rivers in the Gippsland Lakes
- Increase fish stocking to 5 million fish per year
- Deliver school education and children's fishing programs.

Target One Million – Phase 2

The Government that committed to TOM Phase 1 was re-elected in the 2018 state election and committed a further $35 million to extend the TOM phase one plan into phase two.[13] The following recreational boating and fishing initiatives are included in Phase 2:[14]

[9] Victorian Fisheries Authority, Target One Million Budget 2015-2019, available at: https://vfa.vic.gov.au/recreational-fishing/targetonemillion2/target-one-million/budget# accessed: 22.01.2010
[10] Victorian Fisheries Authority, Target One Million Budget 2015-2019, available at: https://vfa.vic.gov.au/recreational-fishing/targetonemillion2/target-one-million/budget# accessed: 22.01.2010
[11] Fisheries Victoria are a former business unit within the Department of Economic Development, Jobs, Transport and Resources (DEDJTR).
[12] The Victorian Fisheries Authority, Target One Million – Phase 1, available at: https://vfa.vic.gov.au/recreational-fishing/targetonemillion2/target-one-million
[13] Victorian Fisheries Authority, Target One Million Budget 2015-2019, available at: https://vfa.vic.gov.au/recreational-fishing/targetonemillion2/target-one-million/budget# accessed: 22.01.2010
[14] Victorian Fisheries Authority, Target One Million Budget 2015-2019, available at: https://vfa.vic.gov.au/recreational-fishing/targetonemillion2/target-one-million/budget# accessed: 22.01.2010

Fishing commitments

- Phase out commercial fishing in the Gippsland Lakes through a compulsory buyout to give the Lakes back to recreational anglers, boost tourism and create jobs
- Construct a new $7 million native fish hatchery in Shepparton focussed on warm water species such as Murray cod and golden perch and release more native fish including Murray cod, golden perch and silver perch into suburban lakes
- Increase fish stocking to 10 million fish annually by 2020
- Mandate access for fishing and camping through opening up hundreds of kilometres of crown land river frontages, many covered by grazing licences and allow anglers to use boats and kayaks with electric motors on some lakes and reservoirs
- Stock Eastern King Prawns into Lake Tyers
- Invest in science and habitat restoration in the Gippsland Lakes to ensure the environment remains healthy
- Invest $1.5 million for a new on water café on Bullock Island in partnership with the Lakes Entrance Fishermen's Co-operative Society
- Invest $600,000, in addition to fishing licence fees, on fish cleaning tables and fishing platforms around Port Phillip including Corio Bay
- Improve fish habitat in Port Phillip by investing $2.5 million reef development
- Advocate for Southern Bluefin Tuna to protect the fishery from bag limit cuts by the Commonwealth
- Introduce a new Fishing for All program to get more people into fishing, including a further $200,000 into the Vic Fish Kids program
- Offer number plates for recreational fishers
- Invest $200,000 to develop a recreational fishing tourism plan with a focus on events and marketing regions and towns with specific species.

Boating commitments

- Abolish all boat ramp parking and launching fees at Victorian boat ramps
- Ensure every cent of licencing and registration fees is spent on improving boat ramps, boating safety and facilities
- Establish a Better Boating Fund to get to work immediately on urgent boat ramp upgrades across the state including Mordialloc, Queenscliff, Point Richards, Hastings and Rhyll
- Undertake critical maintenance at Cowes Jetty
- Provide eight new casual berths across Port Phillip that are accessible to the public
- Review management of boating infrastructure in Port Phillip and Western Port
- Establish a dedicated boating infrastructure authority.

2.3 This study

The 2015 Economic Study estimated that the economic contribution of recreational fishing to Victoria was $7.1 billion (combined direct and indirect output).

In order to continue to support policy implementation, conduct management planning, support advocacy, and enable decision making in the industry, the VFA commissioned EY in May 2019, with an equal funding contribution by Better Boating Victoria, to undertake a revised study on the economic contribution of recreational fishing, together with an additional study to estimate the economic contribution of boating to Victoria.

This study estimates the economic contribution[15] of recreational fishing in Victoria[16]. It also estimates other key measures, such as the number of fishing trips and average catch size.[17]

[15] This is an economic accounting exercise that captures all of the market-related expenditure for a specified industry or activity. The numbers generated by economic contribution studies would typically include all expenditures generated by an industry/project ("in-scope expenditures"), and can be expressed as both output (turnover) and value added. (The 2009 study identified industry value added only)
[16] The following activities are not included in the study: Recreation fishing by interstate and overseas fishers in Victoria, recreation fishing by Victorians that occurs outside Victoria and commercial fishing
[17] Estimated via EY's survey

This report focuses on the economic contribution of recreational fishing. The economic contribution of boating to Victoria is provided in a separate report.

The report proceeds as follows:

- **Economic contribution** (direct and indirect) of recreational fishing in Victoria (Chapter 3)
- **Participation** and other measures (Chapter 4)
- **Limitations** (Chapter 5).

2.4 Approach

As noted above, the approach used to estimate the economic contribution of recreational fishing was revised from the 2015 Economic Study and an additional study to estimate the potential economic contribution of recreational boating was developed. An overview of the approach is outlined below.

Whilst the 2015 survey included some questions on recreational boating, it was re-developed by EY in order to differentiate between fishing and boating related questions.

Survey design

A survey was administered by EY to a random sample of the Victorian population in order to obtain data on the number of children and juniors who recreationally fish, behaviour patterns related to recreational fishing (e.g. where people fish) and their expenditure patterns (e.g. per trip expenditure and annual expenditure).

The survey administered for the 2015 Economic Study was examined to assess if questions remained relevant for the current study. Certain questions were revised, and additional questions developed for the purposes of the current study as appropriate.

Survey implementation

The survey panel was selected by EY to best represent the Victorian population (individuals who both recreationally fish / boat and who do not recreationally fish / boat). A total of 2,991 individuals started the survey with 1,000 individuals completing the survey. The survey panel administered by EY included soft quotas for gender and age. The survey consisted of online questionnaires of and non-boaters. The survey reached 563 individuals who fished and 321 individuals who boat and 116 people who neither recreationally boat nor fish. The survey is outlined in in Appendix D.

Participation

EY used estimates provided by the 2018 Victorian Fishing Analytics Survey Report on recreational fishers as an estimate of the number of adult fishers in Victoria. These figures were applied to EY's survey results on behaviour patterns to determine the total number of recreational fishing trips taken.

The Victorian Fishing Analytics Survey was conducted via two phone surveys in March 2018 and April 2018. The survey was conducted on 5,039 individuals. Telephone numbers called were purchased as a random, geographically proportionate sample of Victoria. Following the completion of the surveys, the data was weighted by gender and age to reflect Victoria demographic proportions.

The estimation of the number of Victorian children and juniors (5-17 years of age) participating in recreational fishing was derived from EY's 2019 Survey.

Economic contribution

Utilising the survey data and other relevant inputs EY developed a model to estimate the direct expenditure related to recreational fishing, including:

- Average expenditure per trip (e.g. bait, food and accommodation, equipment hire etc.)
- Annual average expenditure (e.g. clothing, club administration fees etc.).

The methodology enabled clear separation between expenditure and activity generated from recreational fishing.

This direct expenditure was placed in an input – output model to determine the indirect, or flow-on, impacts that the expenditure on recreational fishing activities has on the broader Victorian economy. This process then facilitated the calculation of the total estimated economic contribution of recreational fishing on the Victorian economy.

2.5 Differences in recreational fishing surveys

The methodology used in this study adopted a statistical approach to estimate the number of people participating in recreational fishing and the economic contribution of recreational fishing. Data collection included:

- Desktop research, including relevant benchmark studies
- Market research through surveying
- Consultation.

These are outlined further in Appendix A.

As outlined previously, the survey was administered by EY to a random sample of the Victorian population in order to obtain data on the number of children and juniors who recreationally fish behaviour patterns related to recreational fishing (e.g. where people fish) and their expenditure pattern (e.g. per trip expenditure and annual expenditure). EY then estimated the total annual recreational fishing trips taken by applying the average number of trips taken per participant to the total number of adult participants reported in the 2018 Victorian Fishing Analytics Survey Report.

Other studies have used different methodologies to estimate the proportion of people in a population who recreationally fish. It is expected that different methodologies adopted may yield varying results. Approaches adopted in other studies have included:

Review of recreational fishing licence sales in Victoria[18]

Over 40% of the Victorian population are not aware that a licence is needed to recreationally fish in Victoria. This number is consistent across Victorians who both fish and do not fish. [19] As such, an overview of trends of recreational fishing licence sales in Victoria is not an accurate representation of the number of people who recreationally fish in the State.

However, a review of recreational fishing licences is outlined below for information purposes. To allow a detailed comparison of trends in fishing licence sales the most accurate measure is analysing total licence days per year, rather than total licence sales. Aggregating the licences held by day removes the variance of licence type from the equation (i.e. purchasing a 3 day, 28 day, 1 year or 3 year licence).[20] In 2017 there were 84,134,471 fishing licence days per year and this compares with 82,747, 689 in 2016, 83,357,718 in 2015 and 84,357,718 in 2014.

[18] Victorian Fishing Analytics Survey Report 2018, available at: https://vfa.vic.gov.au/about/publications-and-resources
[19] Victorian Fishing Analytics Survey Report 2018, available at: https://vfa.vic.gov.au/about/publications-and-resources
[20] Fish licence types and prices can be found at: https://vfa.vic.gov.au/recreational-fishing/fishing-licence, accessed: 13.10.2018

It is to be noted that there are a number of people who are exempt from requiring a fishing licence including those under 18 years of age and over 70 years of age, those who hold a seniors card, those who hold a veterans affairs pensioner concession card and those who are the traditional owner under a natural resource agreement.

Key aspects that explain the variation between sales of fishing licences and total anglers include:[21]

- The VFA reported that record rainfall and extreme weather events in September, October and November of 2016 significantly affected the number of recreational fishers during that period, eliminating the traditional spring bounce. Victorians did not resume fishing in significant numbers until January 2017.

- The Recreational Fishing Licence fee was increased from $24.50 to $35 in 2016. As a result of this increase, a number of people sought to purchase a three-year licence prior to the increase and consequently, there was a spike in licence purchases in that year

- VFA are also finding that a relatively large older demographic of fishers are now progressing into an exempt category meaning that they no longer require a licence.

[21] Victorian Fishing Analytics Survey Report 2018, available at: https://vfa.vic.gov.au/about/publications-and-resources

Queensland Recreational Fishing Survey[22]

The 2013/14 Queensland Recreational Fishing Survey performed by the Queensland Department of Agriculture and Fisheries collected reliable estimates of recreational participation rates, state-wide and regional annual catch, common species caught by recreational fishers and regions where recreational fishing activities took place.

The survey results estimated that 15% of Queenslanders (642,000 people) aged five years and older had engaged in recreational fishing. The survey combined diary and telephone surveys to collect high-quality data over 12 months. The Queensland Department of Agriculture and Fisheries estimates that the commercial equivalent for recreational catch in Queensland in 2016/17 was $94 million.

Australia-wide Recreational Fishing Survey[23]

Comprehensive national recreational fisheries statistics are not available for recent years. The last Australia-wide survey of the sector was the 2000/01 National Recreational and Indigenous Fishing Survey (NRIFS) conducted by Australian Government and state/territory fishery management agencies (Henry & Lyle 2003). The study used a telephone screening survey of the general population (March to April 2000) to estimate the number of recreational fishers in each state and territory and a diary survey of recreational fishers (May 2000 to April 2001) to gather information on the extent of their activities.

The survey results indicated that 3.4 million fishers participated in recreational fishing in the 12 months to May 2000.

[22] Australian Government Department of Agriculture, available at: http://www.agriculture.gov.au/abares/research-topics/fisheries/fisheries-and-aquaculture-statistics/recreational-and-charter-fishing-2017#western--australia, accessed: 04.10.19
[23] Australian Government Department of Agriculture, available at: http://www.agriculture.gov.au/abares/research-topics/fisheries/fisheries-and-aquaculture-statistics/recreational-and-charter-fishing-2017#western--australia, accessed: 04.10.19

3. Economic contribution

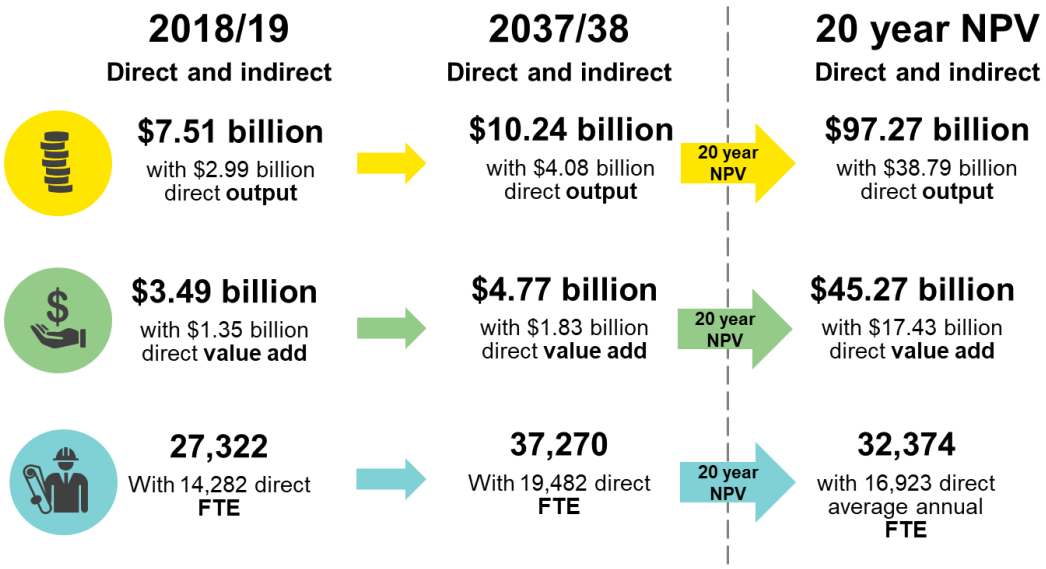
An economic contribution is defined as the gross changes in a region's existing economy that can be attributed to a given industry, event, or policy,[24] in this case the Victorian recreational fishing industry.

This chapter presents the results of the economic contribution analysis and proceeds as follows:

- Direct industry output, value added and employment
- Combined direct and indirect contribution
- Future contribution.

The detailed assumptions underpinning this analysis are presented in Appendix A.

Figure 2: Summary of estimated outputs



3.1 Direct industry output, value added and employment

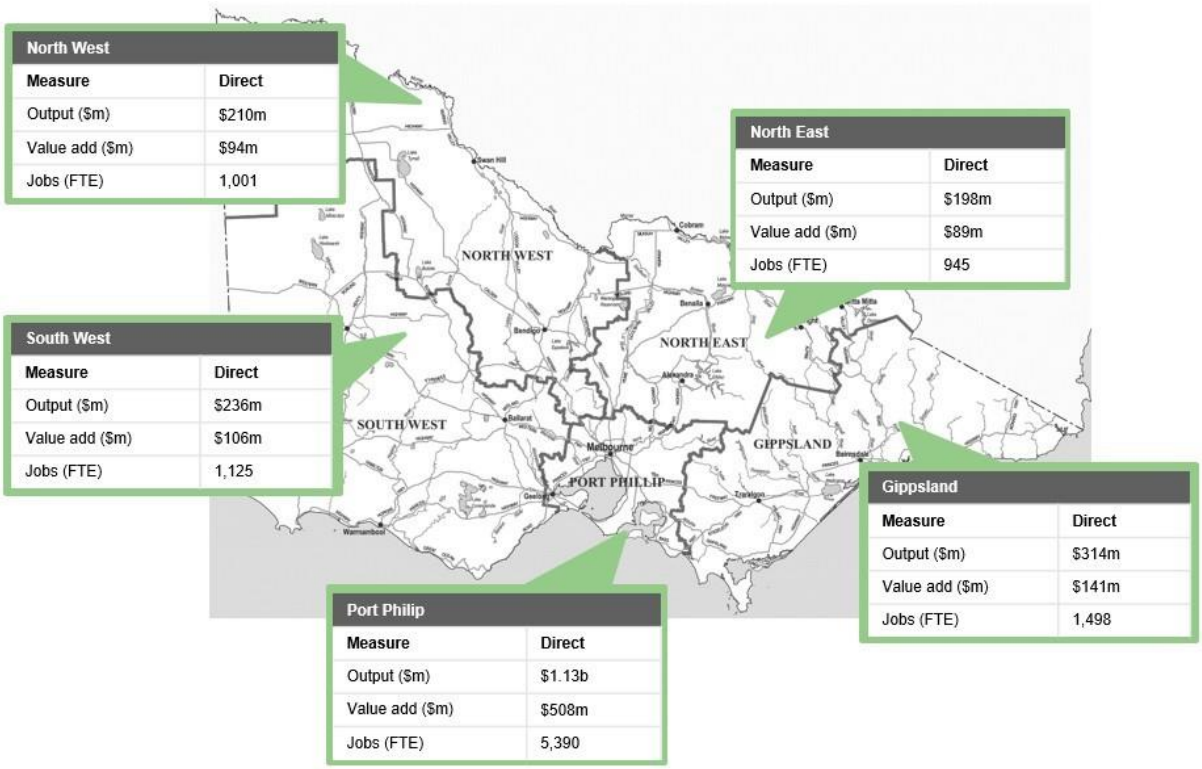
In 2018/19, recreational fishing in Victoria directly generated an estimated:

- $2.99 billion direct industry **output**
- $1.35 billion direct **value added**
- 14,282 direct FTE **jobs**.

The direct contribution estimated to be generated per region is outlined in Figure 3 below. This has been shown excluding the cost of the boat. The distribution across regions has been generated based on the estimated spend from each region, on the basis of the survey responses.

[24] Watson, P; Wilson, J; Thilmany, D, 'Determining economic contribution and impact: What is the difference and why do we care', 2007

Figure 3: Direct economic output, value added and employment, by region



3.2 Indirect contribution

In 2018/19, recreational fishing in Victoria generated an estimated indirect[25] contribution of:

- $4.51 billion indirect **industry output** (out of a total $7.51 billion direct and indirect).
- $2.15 billion indirect **value added** (out of a total $3.49 billion direct and indirect).
- 13,040 indirect **jobs** (out of a total 27,322 direct and indirect).

3.3 Future estimated contribution

Between 2018/19 and 2037/38, recreational fishing in Victoria is estimated to generate:

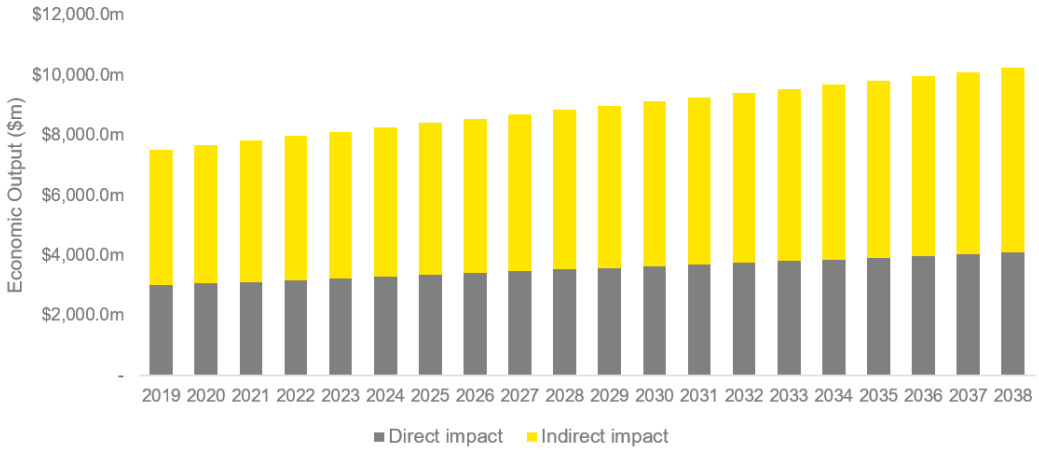
- **Output contribution** from $7.51 billion (in 2018/19) to $10.24 billion (in 2037/38)
- **Value added contribution** from $3.49 billion (in 2018/19) to $4.77 billion (in 2037/38)
- **Employment contribution** from 27,322 (in 2018/19) to employment of 37,270 (in 2037/38).

The estimated net present value (NPV) of the recreational fishing industry over the 20-year evaluation period is $97.27 billion output, of which $45.27 billion is value-added to the Victorian economy. Average estimated annual employment over the period is 37,374 FTE jobs.

This assumes no material change in the structure of the economy.

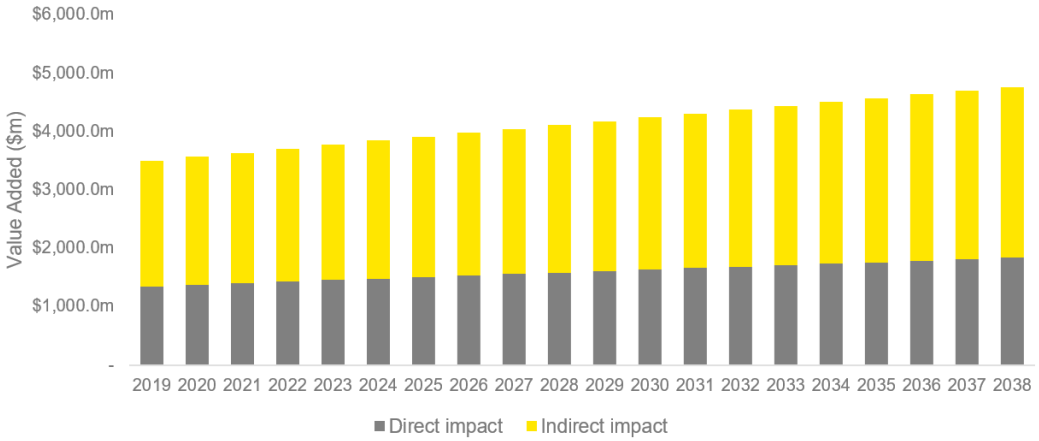
[25] Although many studies apply multipliers to direct industry expenditure to capture the flow on or 'indirect' impacts of industries, the Victorian Department of Treasury and Finance (DTF) is critical of this approach. Generally, when comparing the contribution of industries, it is standard practice (by statistical agencies such as the ABS) to focus solely on direct industry value added (i.e. without multipliers). The direct value added measure enables meaningful comparisons of industry size to be made between industries. While the use of multipliers will provide a wider contribution estimate of an industry it will not take into account substitution effects (i.e. impacts). As such, indirect contribution should be read and interpreted with caution.

Figure 4: Forecast output ($ billion)



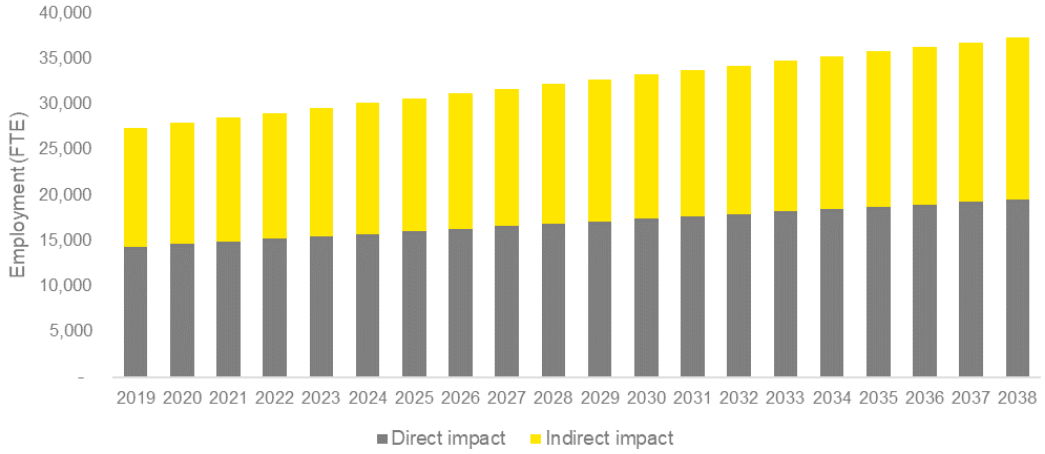
Source: EY analysis of survey data

Figure 5: Forecast value added ($ billion)



Source: EY analysis of survey data

Figure 6: Forecast employment (FTE)



Source: EY analysis of survey data

3.4 Additional health benefits not quantified in this study

Numerous studies have investigated the social benefits attributed to fishing. Research includes studies on the health and psychological benefits of fishing, the health benefits of sport and the benefits of exposure to the natural environment and open space.

Health

International research has been conducted on the social benefits attributed to fishing:

- Research undertaken for the Fisheries Research and Development Corporation found that participation in recreational fishing generates a number of psychological, physiological and social benefits. Fishing also promotes general health and well-being, reduces stress and improves mental health. The study also found significant health and wellbeing benefits related to youth development, breast cancer recovery and mental health while also being a viable option for people with disabilities.[26]

- A survey undertaken by the Centre for Research and Action in Public Health acknowledged a direct link between recreational fishing and wellbeing. The study concluded that happiness/enjoyment of fishing and people's sense of wellbeing are intrinsically linked.[27]

- In 2011, the Recreational Fishing Advisory Committee developed a national industry development strategy for recreational fishing in Australia. The Committee acknowledged that recreational fishing is as an important activity that contributes to the health and wellbeing of Australian society.[28]

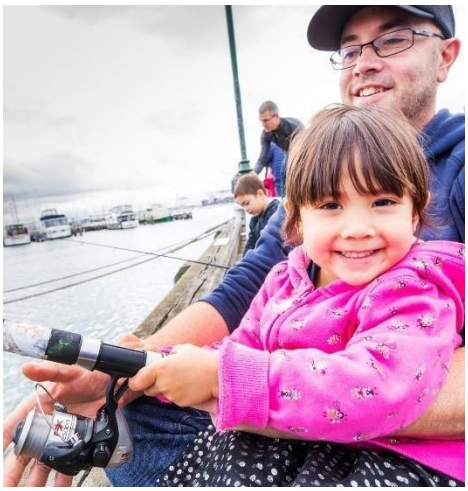
Psychological benefits

It was found that interacting with animals lead to multiple positive physiological effects on human health. These include:[29]

- Observing native animals, having them nearby, or interacting with them improves quality of life

- Interacting with animals can decrease blood pressure, heart rate and cholesterol

- Interacting with animals reduces anxiety and stress and provides protection against stress-related diseases.



[26] McManus, Hunt, Storey,Fisheries Research and Development Corporation, Identifying the health and wellbeing benefits of recreational fishing F White, 2013, p. 7, 12
[27] Schirmer, J, Centre for Research and Action in Public Health, University of Canberra, Understanding the social dimensions of recreational fishing in South Australia, 2012
[28] Deparmtne of Agriculture, Recreational Fishing, available at: https://www.agriculture.gov.au/fisheries/recreational, accessed: 23.01.2020
[29] Deakin University, School of Health and Social Development and Faculty of health, Medicine, Nursing and Behavioural Sciences, Healthy parks, healthy people, 2008, p. 54

4. Participation and other measures

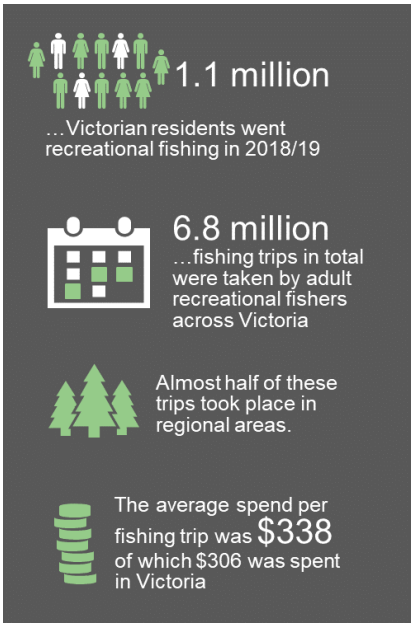
This section outlines participation estimates and other key metrics that were determined and estimated as part of the study, including:

- Participation in recreational fishing
- Expenditure on fishing trips
- Other measures on fishing demographics and preferences
- Unmet demand for fishing.

4.1 Participation and fishing incidence

Participation metrics

As outlined in Section 2.4, the total number of Victorians participating in recreational fishing was estimated by applying the proportion of survey respondents that recreationally fished to the Victorian population.[30] Some of the key participation stats for 2018/19 are as follows:



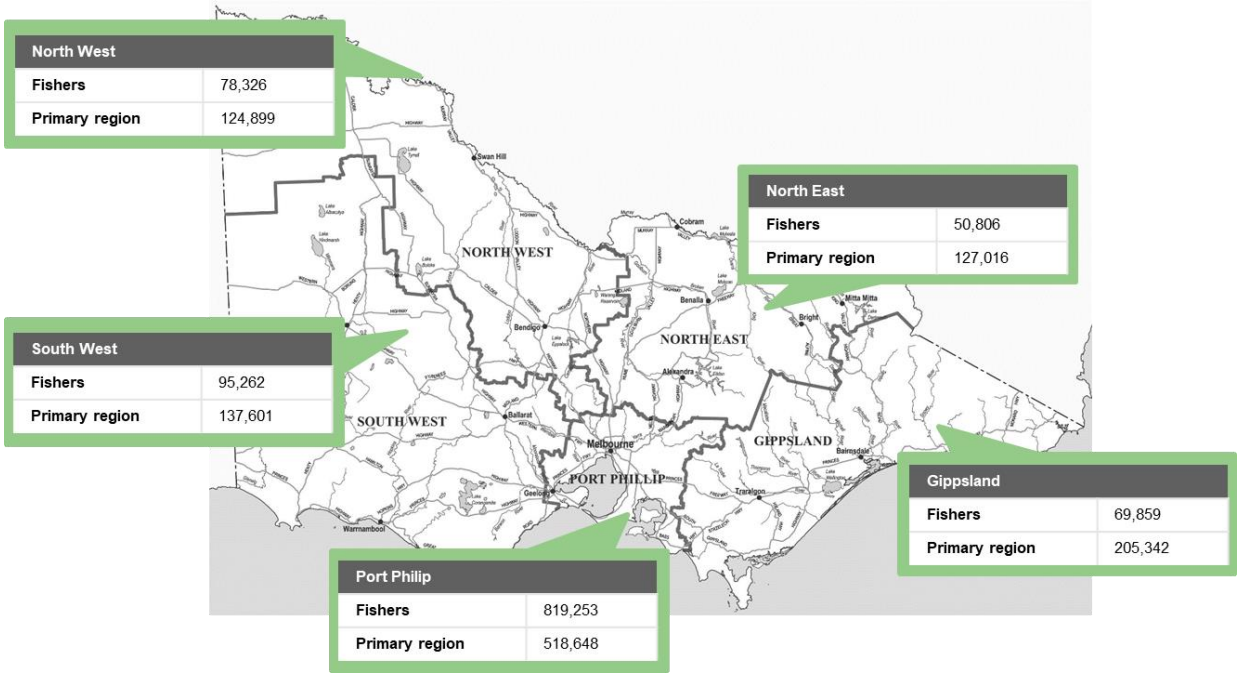
- In 2018/19, 1,113,506 Victorian residents (juniors and adults) participated in recreational fishing across Victoria.
- Adult recreational fishers made 6.8 million recreational fishing trips across Victoria, with almost half of these trips occurring in regional areas
- The primary location for fishing trips in Victoria is Port Phillip, with Gippsland being the second most popular location.

This study did not account for the proportion of male verses female recreational fishers as the panel was representative of the population. However, recent studies have shown that between 20% and 30% of recreational fishers are female.[31]

Figure 8 below shows for each region:

- **Fishers:** The estimated number of recreational fishers who reside in that region
- **Primary region:** The estimated number of people who note that region as their primary recreational fishing destination.

Figure 7: Number of fishers and primary region for fishing (2018)



[30] Victoria in Future – Planning, available at: https://www.planning.vic.gov.au/land-use-and-population-research/victoria-in-future, accessed: 03.10.2019
[31] Victorian Fishing Analytics Survey Report 2018, available at: https://vfa.vic.gov.au/about/publications-and-resources

Fishing incidence

The figures below present key participation and fishing incidence measures from the survey results of the study.

Figure 8: Type of fishing

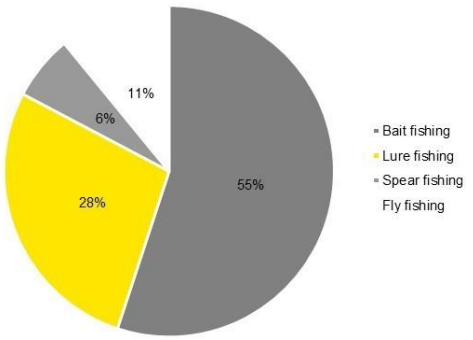


Figure 9: Distribution of fishing trips: Regions

Figure 10: Percentage of time spent fishing Inland verses Marine / Estuarine

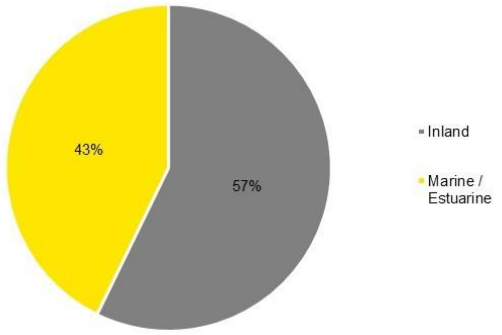


Figure 11: Fish caught: Inland

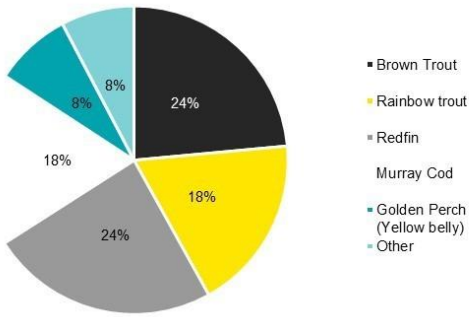


Figure 12: Fish targeted: Estuarine / Marine

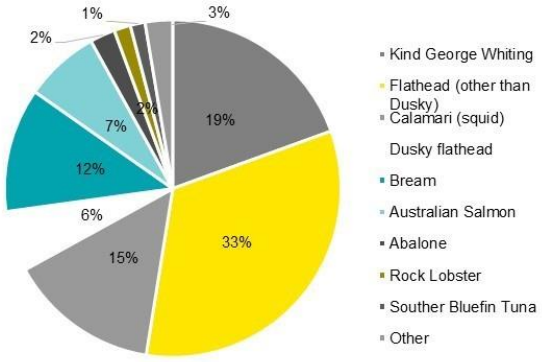
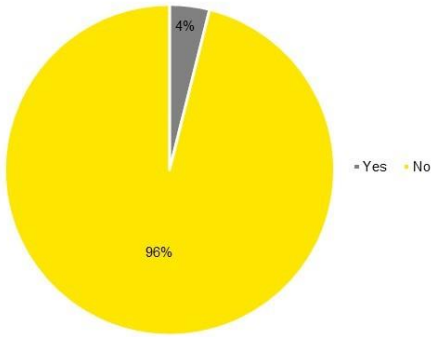


Figure 13: Fishing club membership



Source: EY analysis of survey data

4.2 Expenditure

Expenditure was calculated across three categories:

- Average spend per fishing trip (trip related expenses) e.g. food and accommodation, tackle, equipment and bait
- Average spend per year (annual ad-hoc expenditure items) e.g. clothes for fishing, club fees and camping gear
- Expenditure on boats that are used for fishing.[32]

Each expenditure category is adjusted for the proportion of spending that occurred in Victoria.

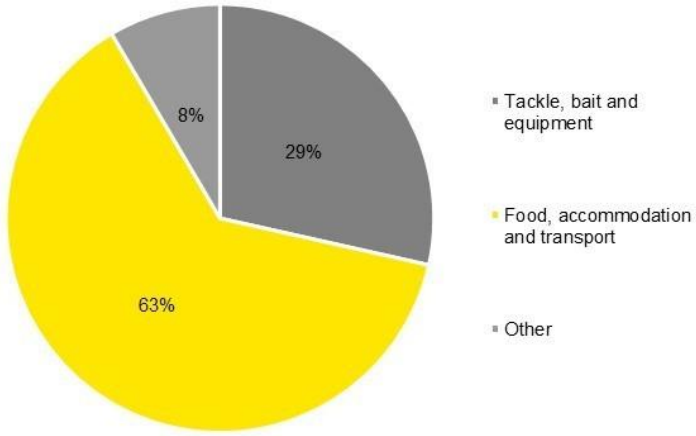
The results found that in 2018/19, on average, a recreational fisher:

- Spent $244 per fishing trip with 91% of this incurring in Victoria ($221 per fishing trip in Victoria)
- Spent $643 per year on annual ad-hoc expenses with 91% of this incurring in Victoria ($585 annually in Victoria). This equates to $95 on a per trip basis ($86 of which is spent in Victoria)
- Spent $1,302 in Victoria on boats that related to fishing. This equates to 48% of total boat spend ($2,724).

On a per trip basis, on average, an estimated $306 was spent in Victoria per fisher. In addition, on an annual basis, an estimated $1,302 was spent on boats per fisher (for fishing related use).

The figure below presents key expenditure measures.

Figure 14: Spend profile (excl. boat purchase)



Source: EY analysis of survey data

[32] This spend does not relate to the total spend of fishers on boats. The spend by fishers on boats reflects the percentage of time that fishers use the boat for fishing trips (as opposed to non-fishing boating activities).

Calculation of average expenditure for recreational fishers

Average expenditure was calculated based on survey results on the expenditure of recreational fishers across all spend categories (e.g. vessel hire, berth fees, food and accommodation etc.). The total spend of each category was divided by the total number of recreational fishers to provide an average spend per recreational fisher per category. This total was then divided by the total number of trips per recreational fisher to provide an average per trip spend.

As the expenditure of recreational fishers varies greatly depending on their choice of recreational activity (e.g. boat owners, boat hirers, equipment owners etc.), the average expenditure per trip (i.e. $306 per trip) is not an exact estimation of expenditure for each recreational fisher user group.

For further detail on the spend per category, refer to Appendix B.

4.3 Unmet demand for recreational fishing

The survey identified the issues that are preventing Victorians from participating in recreational fishing more often and also the actions that would motivate people to spend more time recreationally fishing.

The majority of respondents reported that no issues prevented them from going recreational fishing and they fish as much as they want to. However, lack of time and being too far from a fishing location were the top two issues preventing people from fishing more. This was followed by recreational fishing being too expensive.

The majority of respondents noted that no specific actions would motivate them to fish more and they fish as much as they want to. Improved facilities and improved access are the top two actions that would motivate some people to recreationally fish more often.

5. Limitations

The methodology used to estimate the economic contribution of recreational fishing was developed under best practice principles. However, the following limitations should be considered when interpreting the results of this study:

- The outputs of this study are based on the results of a survey conducted by EY on the Victorian population, in combination with participation figures provided by the 2018 Victorian Fishing Analytics Survey Report. This method assumes that the survey panels selected were a representation of the Victorian population.

- The results for the number of Victorian children and juniors participating in recreational fishing from EY's survey were extrapolated against Victorian Government population estimates in 2018/19 in order to estimate the impact on the State. This method relies on the Victorian Government population estimates.

- In order to calculate the estimated future contribution of recreational fishing to Victoria from 2018/19 to 2037/38, the survey results were extrapolated against Victorian Government future population projections over the 2018/19 to 2037/38 period.[33]

- To estimate the economic contribution of recreational fishing in Victoria to the Victorian economy, an input-output (I-O) methodology is applied to calculate flow-on impacts of users on the economy. The operation of Victorian recreational fishing participants and the range of activities associated with these operations highlight the complex way the modern economy operates. It involves the use and provision of infrastructure, a variety of administrative and regulatory functions of government and a variety of services provided by operators that are supported by a vast array of specialist support services.

- Impact studies of particular industries or user groups are normally best carried out through the construction of specific sectors to be included in the I-O table. This is because the sector specification used in the tables involves the aggregation of a number of related activities to make them manageable. Thus, the industry may not be appropriately represented by the aggregated sector as not all of the industries in a sector are homogeneous in terms of products produced, markets served, technologies used or source of inputs used. The industry segments used in this study are outlined in Appendix A.

- Given that the multipliers are derived from a general equilibrium model, the outcomes should not be overstated and will be more defensible than standard I-O multipliers. The I-O multipliers are developed with price and labour constraints inbuilt and provide a more realistic output when calculating estimated economic contribution.

- This study does not measure the economic impact of recreation fishing and boating. It is important to distinguish economic contribution and economic benefit studies from economic impacts. Economic impact requires the consideration of a counter factual scenario (that is, what would people spend their money on in the absence of a recreational boating / fishing sector?).

[33] https://www.planning.vic.gov.au/land-use-and-population-research/victoria-in-future

6. Comparison to previous studies

The table below compares the key outputs between this study, the 2015 and the 2009 EY studies on the estimated economic contribution of recreational fishing in Victoria. Note that due the limited model time period of the 2009 and 2014 study, a comparison cannot be drawn between estimates for 2039. As such, the estimates for 2029 have been displayed.

Table 1: Comparison to previous studies

Study:	2009 study*		2014 study		2019 study	
Year of output estimate:	2019	2029	2019	2029	2019	2029
Economic contribution: Direct						
Output ($bn)	$2.6	$2.9	$2.8	$3.3	$3.0	$3.6
Gross State Product ($bn)	$1.6	$1.8	$1.8	$2.1	$1.3	$1.6
Employment	16,268	18,512	17,766	20,821	14,282	17,077
Economic contribution: Indirect						
Output ($bn)	$4.5	$5.1	$4.9	$5.8	$4.5	$5.4
Gross State Product ($bn)	$2.3	$2.6	$2.5	$3.0	$2.1	$2.6
Employment	17,722	20,167	19,354	22,682	13,040	15,592
Economic contribution: Total						
Output ($bn)	$7.0	$8.0	$7.8	$9.1	$7.5	$9.0
Gross State Product ($bn)	$3.9	$4.4	$4.3	$5.1	$3.5	$4.2
Employment	33,991	36,679	37,120	43,503	27,322	32,670

**To allow for a meaningful comparison of results between the 2009, 2015 and 2019 study, results from the 2009 study have been updated to reflect current leading practice and recent improvements in the sophistication of I-O multipliers.*

Source: EY Analysis

While it is important to keep the approach consistent as far as possible (to enable us to maintain a time series of information that will demonstrate trends over time etc.), EY has made a number of refinements to the previous methodology. The methodology and detailed assumptions are presented in Appendix A and Appendix B.

Appendix A Methodology

The methodology applied in this study is summarised in Figure 15 and outlined below.

Figure 15: Methodology

Stage 1: Define scope and key measures

In Stage 1, the following were discussed and agreed by EY and the VFA:

- Scope – The scope of the economic analysis
- Key measures – Common indicators of an industry or economic size or value.

These are discussed below.

Scope of study

This study provides an estimate of the economic contribution (not impact) of recreational fishing in Victoria. This is an economic accounting exercise that captures all of the market-related expenditure for a specified industry or activity. The numbers generated by economic contribution studies would typically include all expenditures generated by an industry/project ("in-scope expenditures") and can be expressed as both output (turnover) and value added. These are generally descriptive studies to measure the size and/or "importance" of an industry in terms of their output, value added and employment.

Scope exclusions

This study does not measure the economic impact of recreation fishing. It is important to distinguish economic contribution and economic benefit studies from economic impacts. Economic impact requires the consideration of a counter factual scenario (that is, what would people spend their money on in the absence of a recreational fishing sector?).

Key measures of economic contribution

Three common indicators of an industry or economic size or value are:

- Gross output – Market value of goods and services produced, often measured by turnover/revenue. Gross output is also referred to as 'gross economic contribution'
- Value added – Market value of goods and services produced, after deducting the cost of goods and services used
- Employment – Number of FTE jobs generated by an industry or attraction.

All three measures are valuable in their own right. Industry output is a measure of production, value added is a measure of wealth generation, and arguably, employment is a measure of the distribution of income.

In comparing an industry's size against others, it is generally accepted to discuss this in terms of its industry value added. Industry value added measures net of the costs of production (that is, inputs sourced from other sectors) from the industry's outputs. This avoids the inclusion of revenues to other industries and any associated double counting. In practice, industry value added largely comprises wages, salaries and the operating surplus of an industry (i.e. the industry's income). The Study looks at all three measures, but attention should be placed on industry value added measures when making

comparisons to other industries. The value-added measure is commonly put forward as the most appropriate measure of an industry's contribution to the national economy.

Stage 2: Industry definition

The Victorian recreational fishing industry is defined as fishing by Victorian residents for pleasure or competition.[34]

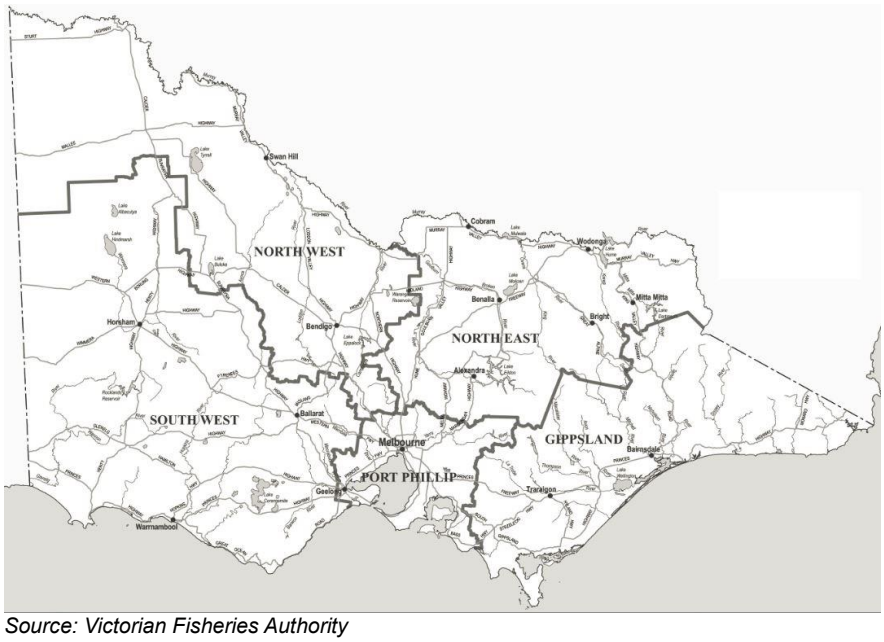
The following activities are not included in the study:

- Recreation fishing by interstate and overseas fishers in Victoria
- Recreation fishing and/or expenditure by Victorians that occurs outside Victoria (e.g. some online purchases)
- Commercial fishing.

The Victorian Fisheries Authority recognises the following regions which were included our analysis:

- Port Phillip[35]
- South West[36]
- North East[37]
- North West[38]
- Gippsland[39].

Figure 16: Victorian Fisheries Authority regions



Source: Victorian Fisheries Authority

[34] Victorian Fisheries Authority, 2015
[35] Melbourne/Port Phillip Bay is made up of the following LGAs: Greater Geelong, Wyndham, Melton, Hume, Whittlesea, Nilliubik, Cardinia, Casey, Mornington Peninsular, Frankston, Greater Dandenong, Dandenong, Bayside, Glen Ira, Monash, Knox, Whitehorse, Maroondah, Manningham, Banule, Darebin, Moreland, Mooney Valley, Brimbank, Boroondara, Stonnington, Port Phillip, Yarra, Melbourne, Maribyrnong and Hobson's Bay
[36] South West region is made up of the following LGAs: Yarriambiack, Hindmarsh, West Wimmera,Horsham, Northern Grampians, Central Goldfields, Mount Alexander, Hepburn, Moorabool, Ballarat, Pyrenees, Glenelg, Southern Grampians, Ararat, Moyne Corangamite, Golden Plains, Colac-Otway, Surf Coast
[37] North East region is made up of the following LGAs: Mansfield, Murrindindi, Strathbogie, Greater Shepparton, Benalla, Wangaratta, Alpine, Towong, Indigo
[38] North West region is made up of the following LGAs: Mildura, Swan Hill, Buloke, Gannawarra, Loddon, Greater Bendigo
[39] Gippsland region is made up of the following LGAs: East Gippsland, Wellington, La Trobe, South Gippsland, Baw Baw

Stage 3: Data gathering

This stage of the study involved collecting the data required to undertake the economic modelling. Data used in this study was obtained from the following:

- Desktop research, including relevant benchmark studies
- Market research through surveying
- Consultation.

These are outlined below.

Desktop research

The desktop research captured existing available data on:

- Relevant benchmark studies, including the URS study comparing economic analysis methodologies applied in a sample of existing studies (see Appendix C)
- Wider benefits of recreational fishing, including health benefits
- Other supporting information (e.g. ABS's historical consumer price index and catch and bag limits imposed through Victorian fisheries regulations).

Findings from the desktop research informed the market research (i.e. survey design (see below)) and economic analysis/modelling (Stage 4).

Market research

To gain a detailed understanding of the nature of recreational fishing in Victoria, we undertook detailed market research using an internet-based market research approach.

Survey design

The survey, designed by EY, was broadly consistent with the 2015 Economic Study of Recreational Fishing in Victoria[40], however refinements and enhancements were made in order to accurately capture the recreational boating component.

The survey administered for the 2015 study was examined to assess if questions remained relevant for the current study. Certain questions were amended and additional questions were added to the original survey for the purposes of the current study.

The 2015 survey included questions on recreational boating. As the economic contribution of recreational boating is being examined separately as part of this study, the 2015 survey was re-developed in order to different between fishing and boating related questions.

The survey included questions relating to:

- Demographics, including age, gender, pre-tax income, usual place of residence
- Activity profile of recreational fishers (for the previous 12 months), including number of fishing trips/days, type of fish targeted, quantity and type of fish caught, primary fishing location, and motivations for recreational fishing.
- The expenditure profile of recreational fishers (for the previous 12 months) measures, including average expenditure per trip (e.g. bait, food and accommodation, boat hire), annual average

[40] Victorian Recreational Fishing Peak Body, Economic Study of Recreational Fishing in Victoria, 2015

expenditure (e.g. fishing club fees, boating club fees, clothes) and boat related expenditure (e.g. purchase price and maintenance).

The survey is presented in Appendix D.

The survey was administered by EY to a random sample of the Victorian population in order to obtain data on the number of people who recreationally fish, behaviour patterns related to recreational fishing (e.g. where people fish) and their expenditure pattern (e.g. per trip expenditure and annual expenditure).

This data was used to complement participation figures from the 2018 Victorian Fishing Analytics Survey Report. The EY survey results were used in reference to these figures, in order to derive a total number of fishing trips from the number of participants.

EY Survey implementation

The survey panel was selected by EY to best represent the Victorian population (individuals who both recreationally fish / boat and who do not recreationally fish / boat). A total of 2,991 individuals started the survey with 1,000 individuals completing the survey. The survey panel included soft quotas selected by EY for gender and age. The survey included 563 individuals who fished and 321 individuals who boat and 116 people who neither recreationally boat nor fish.

The number of surveys completed provides a statistically significant result which means that the outcomes can be transposed to the general Victorian population. The sample size gives a confidence level of ± 3.08% at the 95% confidence level. The 95% confidence interval for this estimate is p% ± 3.08%. This means that if this survey were completed 100 times, for 95 of these times the results would be within (p% + 3.08%, p% - 3.08%).

Table 2 provides an overview of the demographic profile of the 563 recreational fishers that responded to the survey.

Table 2: Demographic characteristics of survey respondents (recreational fishers)*

	Number	%*
Gender		
Male	295	52.40%
Female	268	47.60%
Total	**563**	**100.00%**
Age		
18 to 34 years	176	31.26%
35 to 54 years	179	31.79%
55+ years	208	36.94%
Total	**563**	**100.00%**
Primary place of residence		
Melbourne/Port Phillip	400	71.05%
South West	45	7.99%
North West	37	6.57%
North East	24	4.26%
Gippsland	33	5.86%
Interstate	13	2.31%
Unknown/Not stated	11	1.95%
Total	**563**	**100%**

**Totals may not add due to rounding*

Victorian Fishing Analytics Survey Report

The Victorian Fishing Analytics Survey was conducted via two touch-tone response automated phone survey conducted in March 2018 and April 2018. The number of respondents in the primary survey was 4,018 giving a margin of sample error of 1.6%. The secondary survey targeted 1,021 respondents giving a margin of sample error of 3.1%. This twin-survey methodology allowed for a

greater degree of accuracy regarding information pertaining to fishers, by increasing their participation in the study and thus the confidence placed in their answers. Telephone numbers called were purchased as a random, geographically proportionate sample of Victoria. Following the completion of the surveys, the data was weighted by gender and age to reflect Victoria demographic proportions.

Consultation

In addition to the survey, EY consulted with and received input from the following:

- Dallas D'Silva (Director, Fisheries Policy, Management, Science and Licensing - Victorian Fisheries Authority)
- Katherine Grech (Director, Better Boating Victoria).

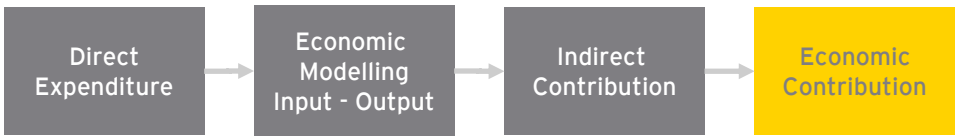
Stage 4: Economic modelling

In this stage, EY developed an economic model to analyse the data collected in Stage 3. The calculation and estimation methods applied in this study are outlined below.

Economic contribution

Economic contribution is a measure comprising all market-related expenditure generated by a specified industry or an activity. An illustration of the methodology used in this assessment to capture the economic contribution of the recreational fishing industry is presented in the figure below.

Figure 17: Economic contribution methodology



Direct expenditure represents the transaction levels within the Victorian economy (i.e. excluding expenditure that is not incurred in Victoria, such as some online purchases). The detailed direct expenditure assumptions applied in the economic modelling are presented in Appendix B.

This direct expenditure is placed in an input – output model to determine the flow on impacts that the expenditure on recreational fishing activities has on the broader Victorian economy. This process then allows for the calculation of the total economic contribution of recreational fishing on the Victorian economy.

To estimate the economic contribution of recreational fishing in Victoria to the Victorian economy, an input-output (I-O) methodology has been chosen as the appropriate method for calculating flow-on impacts of users on the economy (see Box A1).

Box A1: Input-output (I-O) methodology

To estimate the economic contribution of recreational fishing in Victoria to the Victorian economy, an input-output (I-O) methodology is applied to calculate flow-on impacts of users on the economy.

The operation of Victorian recreational fishing participants and the range of activities associated with these operations highlight the complex way the modern economy operates. It involves the use and hence provision of infrastructure, a variety of administrative and regulatory functions of government and a variety of services provided by operators that are supported by a vast array of specialist support services.

Impact studies of particular industries or user groups are normally best carried out through the construction of specific sectors to be included in the I-O table. This is because the sector specification used in the tables involves the aggregation of a number of related activities to make them manageable. Thus, the industry may not be appropriately represented by the aggregated sector as not all of the industries in a sector are homogeneous in terms of products produced, markets served, technologies used or source of inputs used.

The compilation of specific sectors that are superior to the sector in the I-O table is a considerable task and requires access to detailed information on the cost structure of the industries. Further, if the industry to be studied comprises a dominant part of the relevant sector in the input output table, then that sector will tend to reflect the characteristics of the dominant sector. For some sectors, there is likely to be little variation in its characteristics from region to region, such as the retail sector. For this study, the recreational fishing industry has been constructed from the following industry segments:

- Fishing, hunting and trapping
- Accommodation and food services
- Transport equipment and parts manufacturing
- Transport
- Retail trade
- Public administration.

The multipliers used for this study have been derived from REMPLAN[41] I-O modelling software, based on the relative significant (i.e. expenditure split) of the above industry segments. The table below presents the direct value added and employment, and indirect output, value added and employment generated by every $1 million of direct output generated by recreational boating.

Recreational fishing industry multipliers

	Direct Effect	Industrial Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Output ($m)	$2,993	$2,015	$2,499	$7,506	1.673	2.508
Employment (FTE)	14,282	5,388	7,652	27,322	1.377	1.913
Wages and Salaries ($m)	$834	$469	$555	$1,858	1.562	2.227
Value-add ($m)	$1,345	$875	$1,273	$3,493	1.651	2.597

The economic contribution analysis has been undertaken for two periods of time:

- For a single period in time, being 2018/19 (financial year)
- Over a 20-year evaluation from 2018/19 to 2038/39 (financial year).

Stage 5: Finalisation

In this stage, EY distributed the draft economic modelling outputs to, and received feedback from the following:

- Dallas D'Silva (Director, Victorian Fisheries Authority)
- Katherine Grech (Director, Better Boating Victoria).

[41] REMPLAN Economy provides insights into the performance of key sectors in a region's economy. It is underpinned by the latest data from the Australian Bureau of Statistics. REMPLAN Economy delivers estimates of employment, output, wages & salaries, imports, exports and gross regional product for 114 industries. Information available at: https://www.remplan.com.au/, accessed 15.04.2020

Appendix B Direct economic contribution assumptions

This appendix presents the detailed assumptions and estimate methodology that is used to generate the direct economic contribution. This section presents to detailed assumptions used to generate the following:

- Total number of fishing trips (i.e. the number of Victorian residents who have recreationally fished in Victoria in the last 12 months multiplied by average number of trips taken by each participant)
- Expenditure per adult fisher (excluding boat purchase and maintenance), including an estimate of the expenditure incurred in Victoria (i.e. accounting for online purchases)
- Boat ownership and purchase price.

Total number of fishing trips

To determine the total number of trips taken in Victoria, the following information was sourced:

- **Adult participation numbers** – The estimated number of Victorian adults who have participated in recreational fishing in the last 12 months was derived from the 2018 Victorian Fishing Analytics Survey Report.
- **Junior participation numbers –** The estimated number of Victorian children/juniors (5 to 17 years of age) who have participated in recreational fishing over the past 12 months was derived from the 2019 EY Survey.
- **Number of fishing trips** - The average number of trips survey respondents undertook for purposes of recreationally fishing per annum was derived from the 2019 EY Survey. EY estimates the average number of trips taken per fisher to be 6.8 per annum.
- **Victorian population** - The size (current and forecast) of the Victorian population was taken from Victoria In Future 2018. The Victorian population is estimated to be 6,460,675, at the beginning of the period of 2019 (increasing to 8,844,131 million in 2038). This is based on information extracted from Victoria In Future 2019.

The total number of trips taken in the first time period (2018/19) can thus be derived by multiplying the adult participation figure by the average number of trips taken per participant – 6.81. EY estimates that fishers therefore made 6.82 million fishing trips over 2018/19.

Using the Victorian population numbers from Victoria in Future 2018, we can determine the percentage of Victoria's population that participates in recreational fishing. EY thus estimates the percentage of the Victorian population involved with recreational fishing to be 17.2%.

Expenditure per adult fisher (excluding boat purchase and maintenance)

The expenditure estimates applied in the economic modelling are based on the results from the 2019 survey. The 2019 survey defined two broad categories of expenditure:

- **Per trip** - Expenditure items that are typically incurred every trip (e.g. bait, food, accommodation and transport related costs)
- **Annual** - Expenditure items that are typically used for a longer period of time (i.e. multiple trips) (e.g. clothing, licensing costs and vessel maintenance). Average annual expenditure on these items are converted to per trip estimates (based on the average fisher embarking on 7.3 fishing trips per year).

Based on the results of the 2019 survey, the average adult fisher spends $244 per fishing trip. Of this, $221 (i.e. 91%) is incurred in Victoria. The average adult fisher spends $94 on annual expenditure items for each trip, of this $86 is incurred in Victoria.

For the economic contribution assessment, only expenditure that is incurred in Victoria is modelled (i.e. expenditure incurred interstate/overseas is not modelled, such as some online purchases)[42].

Table 3: Average per trip expenditure per fisher, by expenditure type and primary purchase location

Average expenditure per trip - Fishing	Primary purchase location		Total expenditure per trip (average)
	Victoria	Other	
Tackle and equipment	$25.51	$2.75	$28.25
Bait	$17.12	$2.47	$19.59
Food & accommodation	$56.36	$5.75	$62.11
Transport to & from fishing venue	$39.48	$4.21	$43.70
Other	$13.38	$0.82	$14.20
Boat hire	$19.36	$2.19	$21.56
Fuel for boat	$49.37	$4.74	$54.11
Total	**$220.59**	**$22.93**	**$243.52**

Source: Based on EY Analysis

Table 4: Average annual expenditure per fisher (per trip), by expenditure type and primary purchase location

Average expenditure annual - Fishing	Primary purchase location		Total expenditure per trip (average)
	Victoria	Other	
Clothing for fishing	$7.77	$1.86	$9.62
Fishing club fees	$1.59	$0.28	$1.87
Licensing costs	$5.54	$0.59	$6.12
Camping gear	$11.11	$0.90	$12.02
Other	$6.18	$0.20	$6.38
Boating registration	$21.96	$3.09	$25.05
Boat maintenance	$30.90	$2.52	$33.41
Total	**$85.64**	**$8.83**	**$94.46**

Source: Based on EY Analysis

Boat ownership and purchase price

Based on the results of the Victorian Recreational Fishing Survey 2019, the average adult fisher owns 0.27 boats (purchased in Victoria), 48% which are used for recreational fishing purposes. These boats are either:

- **Primarily used for recreational fishing** - 36% of all boats are primarily used for recreational fishing
- **Mix use of recreational fishing and general use** - with 12% used as a mix of general use and recreational fishing.

Based on the above, the average boat is used for recreational fishing 48% of the time.

Based on the results of the Victorian Recreational Fishing Survey 2019, the average purchase price of recreational fishing boats (including general use boats) in Victoria is $15,849. Given the average boat replacement time of 5.82 years, the annual / amortised value of spend on boats in Victoria is $2,724 per annum.

Given the average boat is used for recreational fishing 48% of the time, the annual/amortised value of spend related to fishing related use is $1,302 per annum.

[42] For both traditional retail and online fishing related purchases, survey respondents were asked to identify their primary location of fishing related purchases (i.e. within my region, rest of state, interstate or overseas)

Appendix C Literature review

Report	Methodology	Key findings	Relevance to this study
Economic impact/contribution: Victoria			
National Institute of Economic and Industry Research, 'The Economic Significance of Recreational Fishing in Victoria', June 1997	► 790 field surveys of persons fishing, conducted through on-site interviews of fishers from mid-January 1997 to the end of April 1997. ► Expenditure data allocated by their relationship to the given activity of fishing[43]. ► Total economic value determined using an input-output methodology.	► Estimated contribution of the recreational fishing industry to Victoria's GSP in 1996 was $1,265 million and created approximately 27,000 jobs. ► Total value of expenditure on recreational fishing in Victoria in 2007 was estimated at $1,037.1 million. ► 2007 current expenditure was valued at $277.5 million. ► 2007 expenditures on annual and capital items were estimated to total $759.5 million.	► Consistencies with EY approach in the current study.
EY, 'Economic Study of Recreational Fishing in Victoria', November 2009	► Sample size of 1,000 web-based surveys (500 general population responses and 500 fishers' responses). ► To verify the expenditure levels determined through the survey, the survey was compared to responses provided by 207 members of VRFish. ► Total economic value determined using an input-output methodology.	► Average expenditure per trip per fisher is estimated to be $250 inclusive of variable costs (such as accommodation, bait, fuel etc.) and fixed costs (such as equipment and capital). ► Total direct expenditure was valued at $2.3 billion in 2008-09. ► The industry produced an estimated total Gross State Product (GSP) of $825 million in 2008-09. ► The recreational fishing industry contributed 5,200 jobs in Victoria in 2008-09 (including flow on jobs).	► Approach consistent with EY's approach in the current study.
Department of Primary Industries (now DEPI), 'Goulburn River Trout Fishery: Estimates of Catch, Effort, Angler-Satisfaction and Expenditure', July 2007	► 338 people interviewed for the 2003/04 fishing season. Data from questions on angler expenditure were summed and a mean and variance calculated for all interviews in each level of stratification. Total expenditure for each stratum was estimated by multiplying the mean expenditure by weighting factors. Estimates of the number of accommodation nights away from home were also made by calculating the average for each stratum and multiplying by the appropriate weighting factor.	► The individual expenditure varied widely (from $0 to $2,660), resulting in total expenditure of anglers fishing of $418,320 (+/- $496), or an average of $1,390 per person.	► Approach consistent with EY's approach in current study.
Ezzy, E and Scarborough, H (Deakin University), 'Estimation of the recreational use value gained from recreational fishing of Southern Bluefin tuna at Portland', February 2011	► Travel cost study was undertaken to estimate the recreational use value of the fishery. ► 257 surveys were completed, with 200 of these used in the travel cost analysis (included average car costs, boat fuel costs, gear costs and opportunity cost of time). Data collected during four randomly selected weeks (23 survey days) between April and June 2010.	The on-site recreational use value (consumer surplus) per person per visit is estimated to be between $33 and $132 and the on-site annual recreational use value of the fishery for this one season is estimated to be between $449,533 and $1,325,124.	► Approach consistent with EY's approach in the current study (non-market value based on benefit transfer approach).

[43] All purchases of fishing equipment and related clothing, bait and tackle were allocated 100% to fishing expenditure. Expenditure which were made by persons fishing but not incurred solely for fishing, such as travel costs, boat fuel, food and drink, were allocated to fishing at a rate of 50%

Report	Methodology	Key findings	Relevance to this study
	► An estimate of the total economic value was not included in this study (i.e. direct expenditure only).		
Deloitte Access Economics, 'Assessing the Economic Value of the 2012 Victorian Recreational Southern Bluefin Tuna Fishery in Portland', May 2013	► Travel cost approach, supplemented by contingent valuation (for non-market value), used to assess the direct value of the recreational SBT fishery in Portland. ► 497 surveys, delivered through face-to-face interviews, collected from recreational anglers (330 surveys) and anglers on charter boats (167 surveys). ► Interviews were conducted in four blocks of five days across May and the first half of June 2012.	► The total observed expenditure associated with the 2012 SBT season in Portland is on average $381 per angler fishing day. However, total willingness to pay, consisting of the travel cost expenditure and additional stated willingness to pay, adds to a total value per angler fishing day of about $454. This represents the average valuation of the experience per angler fishing day, of which $73 represents surplus value. ► Industry value of the 2012 recreational SBT fishery in Portland of between $5.64 million and $7.58 million. After accounting for the anglers' additional willingness to pay, the industry estimate could increase to between $6.72 million and $9.03 million in 2012.	► Approach consistent with EY's approach in the current study.
Economic impact/contribution: Other Australian jurisdictions			
Department of Agriculture, Fisheries and Forestry, 'National recreational and indigenous fishing survey: Economic Report', 2005	► General population screening survey[44]: Telephone survey of 9,055 Victorian households (44,000 surveys across Australia). ► Diary survey[45]: All respondents with an intention to go recreational fishing in the 12 months following the screening interview were invited to participate in the diary survey. The diary survey was conducted between May 2000 and April 2001. ► Attitudinal survey: An attitudinal telephone survey was conducted with diarists at the completion of the diary survey, in May/ June 2001. ► An estimate of the total economic value was not included in this study.	The results indicated that from May 2000 to April 2001 Victoria: ► Had the second highest total expenditure on recreational fishing in Australia ($396 million) ► Realised the highest level of per fisher expenditure on travel of any state or territory ($177) ► Had an average expenditure of $721 per fisher, the highest of any state or territory in Australia ► Had 549,803 fishers, accounting for 16% of fishing participants in Australia, whilst having 25% of Australia's population.	► Survey: Approach consistent with EY's approach in the current study. ► Fishing diary: Outside EY's agreed scope of work for the current study. Recall bias to be addressed by applying an adjustment factor to survey results (based on existing studies).
URS, 'Final Report: Review of techniques for the valuation of recreational fishing', 2011	This study examines a range of techniques used to estimate the value of recreational fishing, including: Revealed preference techniques ► Travel Cost Method uses actual direct and indirect expenditure including transport to the activity site, access fees, equipment and the opportunity cost of time as a guide to the value of the activity. Expenditure data is collected through surveys of a sample of visitors ► Random Utility Modelling is commonly used as an extension to the Travel Cost Method. Travel costs and site attribute data are	► The most important determinant of the right valuation technique to use is the reason why a value of recreational fishing is being sought. ► Revealed preference methods such as the Travel Cost Method and Random Utility Modelling are the most cost effective and have the lowest potential for respondent bias, however, as they are based on expenditure data they do not capture consumer surplus or non-use value. ► Stated preference methods such as Contingent Valuation and Choice Modelling are best for capturing the total use and non-	► Report findings reflected in the net benefit assessment, particularly in relation to stated preference (see Appendix D). To mitigate the risk of response bias from poorly constructed studies, EY applied the average of three

[44] Data quality issues were addressed through a series of calibration surveys designed to provide adjustments for non-response and to assess the extent of behavioural change (unexpected fishing) during the diary period. Australian Bureau of Statistics (ABS) resident population information was used to benchmark survey data for coverage and representation and to provide the basis for expansion of data to 'population' estimates

[45] On-site (creel) surveys were also conducted in each State and Territory to assess fish identification skills of recreational fishers, determine the size distribution of common species and provide independent verification of certain recreational fishing activities

Report	Methodology	Key findings	Relevance to this study
	collected through surveys for a number of substitute sites, mathematical relationships are then developed to capture the considerations of a respondent for a range of alternative sites as single decision events. This method enables the estimation of the probability that a respondent will visit a particular site and the value they will derive based on the site's attributes. Stated preference techniques ► Contingent Valuation requires a survey asking respondents a series of questions with the intention of creating a 'hypothetical' market for a non-priced good or service in their mind. Respondents express their willingness to pay for, or accept compensation for, a change in the good or service being valued. ► Choice Modelling uses a survey presenting a number of 'choice sets' associated with changes to the good or service being valued. Random Utility Modelling is used to analyse the responses to the choice sets with the aim being to assign a value to the individual attributes of the good or service.	use value to recreational fishers, however, they have the potential for respondent bias so it is important to minimise this through survey and questionnaire design. ► If all that is required is the value that recreational fishers derive from the use of a particular site to inform management, the Travel Cost Method may be most appropriate. Random Utility Modelling can be introduced if assessing multiple sites. ► If a change in value arising from a change in the overall state of the site is sought, i.e. marginal value, Contingent Valuation may be most appropriate. ► If the valuation is sought in order to evaluate the effects of a variety of potential changes to the site that may affect individual attributes differently, Choice Modelling will be most effective. An example of when this may be appropriate is the assessment of a variety of proposed policy changes.	relevant studies. (see Appendix D).
Fisheries Research and Development Corporation, 'Part 2: Final Submission: A coordinated and participatory solution to the rezoning of the Moreton Bay Marine Park', 2007	► Expenditure estimates from the *National recreational and Indigenous fishing survey: Economic Report (2005)* were used, with assumptions being made about the proportion of expenditure that could be attributed to fishing within the Moreton Bay Marine Park.	An estimated $48 million of recreational fishing expenditure can be attributed to areas proposed as green zones by the Queensland Environmental Protection Agency compared to an estimate of approximately $6 million of recreational fishing expenditure attributable to the areas proposed as green zones by the Moreton Bay Access Alliance.	► Approach consistent with EY's approach on the current study.
Various other studies that estimate the benefit values per recreational fishing trip	► See Appendix D for commentary and references.		

Report	Methodology	Key findings	Relevance to this study
Other benefits			
McManus, A; Hunt, W; Storey, J, and White, J (Curtin University), 'Identifying the health and well-being benefits of recreational fishing', December 2011	► Literature review: A search of 156,776 references identified 705 references relating to 'health and well-being' and 147 references relating to 'recreational fishing' (3 of the references focussed on the health and well-being benefits of recreational fishing). ► Consultation: 48 organisations and contacts. ► Pilot survey: Survey provided to a random sample of 40 participants (29 valid surveys completed).	► There is little published research looking at the link between recreational fishing and health and well-being, both within Australia and internationally. ► Emergent areas of health benefit identified in: mental health, recreation for the disabled, outdoor recreation for youth, antisocial behaviour deterrents, outdoor recreation for seniors and intergenerational transfer of knowledge and skills.	See Chapter 3.2

Appendix D Victorian Recreational Fishing and Boating Survey 2019

Victorian Recreational Fishing and Boating Survey

INTRODUCTION

The purpose of this survey is to collect data to establish the nature and scale of vessel ownership and recreational fishing in Victoria, and the contribution it makes to Victoria's economy. For the purpose of this study, we define recreational fishing as any fishing which is not undertaken for commercial purposes.

Thank you for your time, this survey will take less than 7-15 minutes to complete, depending on your answers.

How To Complete The Survey…

Use your mouse to "Click" the relevant circles or boxes to mark your selection with a black dot or a cross. Some questions require you to type in your answers.

You may close the survey down and re-enter at the point you left off using the link emailed to you.
Once you have completed all questions on a page you will need to click the "Next" Button to proceed to the next screen.
In order for your answers to be sent you must click the "Submit" button at the end of the survey.

We hope you enjoy the survey!

Please press **NEXT** to continue

SECTION 1. SCREENING

PROGRAMMER: DO NOT TERMINATE RESPONDENTS UNLESS SPECIFIED

We would like to ask you a few short questions to make sure we are talking to the right people.

Q1. Are you… **SINGLE RESPONSE**	Male O1 Female O2
Q2. Which of the following age groups do you fit into? **(PLEASE CLICK ONE RESPONSE ONLY)**	Under 18 years **TERMINATE** O 01 18 to 24 years O 02 25 to 34 years O 03 35 to 44 years O 04 45 to 54 years O 05 55 to 64 years O 06 65 to 69 years O 07 70+ years O 08

SECTION 2. VESSEL OWNERSHIP

Thank you. Welcome to the main survey.

Q6.	Do you own a boat (e.g. motor boat or yacht) which you use for recreational fishing purposes?	Yes ○1 No **[GO TO Q12]** ○2

ASK IF Q6=1 (YES – OWN A BOAT FOR RECREATIONAL FISHING)

Q6a.	For each of the following types of vessels, please type in the number you currently own. **PROGRAMMER NOTE: ALLOW RESPONDENT TO ENTER UP TO A MAXIMUM OF 5 PER BOAT TYPE** **PROGRAMMER NOTE: ALLOCATE TO 'BOATING' QUOTA IF THEY TYPE IN ANY ANSWER OTHER THAN CODE 99**	Motorised trailered fishing boat Motorised non-trailered fishing boat Yacht Pleasure power boat Fishing boat Personalised watercraft (PWC) Dive boat House boat Unregistered craft (i.e. kayak or canoe) Other (please specify) None **[GO TO Q12]** ○99

Q48.	How many people, on average, accompany you on each boating trip in Victoria?	None ○99 1 ○1 2 ○2 3 ○3 4 ○4 5 ○5 6 ○6 7 ○7 8+ ○8

IF Q48 = 99 (NONE) – SKIP Q49

Q49. What is the age of each accompanying person?
PIPE THROUGH NUMBER INDICATED AT Q14 (MAXIMUM OF 8)

First Name	Person 1	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7	Person 8
Age								
< 13 years	○ 1	○ 1	○ 1	○ 1	○ 1	○ 1	○ 1	○ 1
13 - 18 years	○ 2	○ 2	○ 2	○ 2	○ 2	○ 2	○ 2	○ 2
18 - 24 years	○ 3	○ 3	○ 3	○ 3	○ 3	○ 3	○ 3	○ 3
25 - 34 years	○ 4	○ 4	○ 4	○ 4	○ 4	○ 4	○ 4	○ 4
35 – 44 years	○ 5	○ 5	○ 5	○ 5	○ 5	○ 5	○ 5	○ 5
45 – 54 years	○ 6	○ 6	○ 6	○ 6	○ 6	○ 6	○ 6	○ 6
55 - 64 years	○ 7	○ 7	○ 7	○ 7	○ 7	○ 7	○ 7	○ 7
65 – 70 years	○ 8	○ 8	○ 8	○ 8	○ 8	○ 8	○ 8	○ 8

70+ years	○ 9	○ 9	○ 9	○ 9	○ 9	○ 9	○ 9	○ 9
Relation to you								
Immediate family	○ 13	○ 13	○ 13	○ 13	○ 13	○ 13	○ 13	○ 13
Extended family	○ 14	○ 14	○ 14	○ 14	○ 14	○ 14	○ 14	○ 14
Other (e.g. friend)	○ 15	○ 15	○ 15	○ 15	○ 15	○ 15	○ 15	○ 15

Q7a. Please provide the cost (incl. modifications) for each vessel type. Your best guess is all we are after.

PIPE THROUGH TOTAL NUMBER OF VESSELS INDICATED AT Q6A AND NAME AS E.G. MOTOR BOAT 1, MOTOR BOAT 2 AND YACHT 1 ETC.

Details	**UP TO 15 BOATS**							
Cost of Vessel (Including any modifications) [SEPARATE SCREEN]								
$_____	○ 9	○ 9	○ 9	○ 9	○ 9	○ 9	○ 9	○ 9
Don't know/can't remember	○ 10	○ 10	○ 10	○ 10	○ 10	○ 10	○ 10	○ 10

\Q8a On average, how often do you replace each of the following types of Vessels?

PROGRAMMER NOTE: PIPE THROUGH ANSWERS FROM Q6A

XXX **ASK IF Q6a=1 (OWN A MOTOR BOAT)**	Every ____ years ○ 1	Have not replaced any motor boat ○ 2	Don't know/can't remember ○ 3

\Q8a Did you replace the following vessels with new or old vessels?

PROGRAMMER NOTE: PIPE THROUGH CODES FROM ABOVE – ONLY CODE 1

Motor boats **ASK IF Q6a=1 (OWN A MOTOR BOAT)**	New ○ 1	Second had ○ 2	Both new and second hand ○ 2

Q9. How many times in the last 12 months have you used each vessel?	**SHOW OPTIONS FOR EACH OF THE VESSELS OWNED. E.G. MOTOR BOAT 1, MOTOR BOAT 2 AND YACHT 1** _____ times a year

Q10. What is the primary purpose of each of the vessel? **PLEASE SELECT ONE RESPONSE ONLY**	**SHOW OPTIONS FOR EACH OF THE VESSEL OWNED. E.G. MOTOR BOAT 1, MOTOR BOAT 2 AND YACHT 1** Recreational fishing ○1 General Use ○3 A mix of General use including recreational fishing ○2

ASK Q11 IF Q10 = 2 (GENERAL USE - FOR ANY OF THE VESSELS SELECTED)

Q11.	What percentage of your usage for each general use vessel is for recreational fishing? (Your best guess is all we are after)	**SHOW OPTIONS FOR EACH OF THE VESSEL OWNED. E.G. MOTOR BOAT 1, MOTOR BOAT 2 AND YACHT 1** _____ % Don't know O1

Q50. Where do you usually use your vessel in Victoria?

(PLEASE SELECT ONE RESPONSE PER STATEMENT IN COLUMN)

PROGRAMMER NOTE: SHOW MAP AT THIS QUESTION. LOCATIONS ON Y AXIS – WITH A DROP DOWN FOR EACH LOCATION

		Primary Location	Secondary Location	Other Location
1.	Melbourne/Port Phillip Bay	O 1	O 2	O 3
2.	North west	O 1	O 2	O 3
3.	North east	O 1	O 2	O 3
4.	South west	O 1	O 2	O 3
5.	Gippsland	O 1	O 2	O 3
6.	None/Not applicable	O 1	O 2	O 3

SECTION 3. EXPENDITURE OF REGISTERED VESSELS IN VICTORIA

Please note the following questions relate to expenditure IN VICTORIA ONLY.

Q51. Approximately how much do you spend on recreation per week? This includes all expenditure on items such as movies, theatre, restaurants, hobbies, holidays and any other expenditure that is directly related to recreation.	$_____per week

Q52. Approximately, what would be spend on the following items over the last 12 months (in Victoria)? (Please enter zero if you have no spend on each item)

[SPLIT INTO TWO SCREENS]

Item	**Per Trip Expenditure ($)**
Vessel hire and equipment	$
Trailers and trailer maintenance	$
Berth fees	$
Launching or parking fees	$
Food and accommodation on trips in Victoria	$
Transport to and from boating venue (either fuel costs or public transport costs)	$
Boat fuel costs	$
Boat maintenance	$
Equipment to support boating activity (e.g. safety gear, tow sport equipment, fishing gear etc)	$
Other	$

F PER TRIP SPEND FOR ANY OF THE ITEMS AT Q52 = 0, THEN DO NOT SHOW AT Q52A

Q52a. What is the primary location where you purchase each of these items?

PLEASE SELECT ONE RESPONSE PER ROW ONLY

Primary Location of Purchase(s) – Please select only 1 response per row								
Traditional Retail Outlet				**Online Store**				
Within my region	**Rest of the state**	**Interstate**	**Overseas**	**Unknown ware-house location**	**Within my region**	**Rest of the state**	**Interstate**	**Overseas**

O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9

Q53. Approximately, what would be your **per year** spend on the following items for vessels? What is the primary location where you purchase each of these items?

(PLEASE SELECT ONE RESPONSE PER STATEMENT IN COLUMN)

[SPLIT INTO TWO SCREENS]

Item	**Per Year Expenditure ($)**	**Primary Location of Purchase(s) – Please select only 1 response per row**								
		Traditional Retail Outlet				**Online Store**				
		Within my region	**Rest of the state**	**Interstate**	**Overseas**	**Unknown warehouse location**	**Within my region**	**Rest of the state**	**Interstate**	**Overseas**
Clothing (e.g. wetsuit, wet weather gear, jackets etc)	$	O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
Vessel club fees	$	O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
Licensing costs	$	O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
Vessel registration	$	O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
Vessel maintenance	$	O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
Trailer maintenance	$	O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
Other	$	O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9

Q12.	Have you gone fishing (without a vessel) for recreational purposes in the past 12 months in Victoria?	Yes [ALLOCATE TO 'FISHERS' QUOTA] O1 GO TO Q42 O2

SECTION 4. FISHING ACTIVITY (WITHOUT A VESSEL)

Please note that the following questions relate to fishing in Victoria Only

Q14.	How many people, on average, accompany you on each fishing trip in Victoria?	None O1 1 O2 2 O3 3 O4 4 O5 5 O6 6 O7 7 O8 8+ O9

IF Q14 = 1 (NONE) – SKIP Q15

Q15. What is the age of each accompanying person, and do they participate in recreational fishing?
PIPE THROUGH NUMBER INDICATED AT Q14 (MAXIMUM OF 8)

First Name	Person 1	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7	Person 8
Age								
< 13 years	O 1	O 1	O 1	O 1	O 1	O 1	O 1	O 1
13 - 18 years	O 2	O 2	O 2	O 2	O 2	O 2	O 2	O 2
18 - 24 years	O 3	O 3	O 3	O 3	O 3	O 3	O 3	O 3
25 - 34 years	O 4	O 4	O 4	O 4	O 4	O 4	O 4	O 4
35 – 44 years	O 5	O 5	O 5	O 5	O 5	O 5	O 5	O 5
45 – 54 years	O 6	O 6	O 6	O 6	O 6	O 6	O 6	O 6
55 - 64 years	O 7	O 7	O 7	O 7	O 7	O 7	O 7	O 7
65 – 70 years	O 8	O 8	O 8	O 8	O 8	O 8	O 8	O 8
70+ years	O 9	O 9	O 9	O 9	O 9	O 9	O 9	O 9
Activity Undertaken								
Fishing	O 10	O 10	O 10	O 10	O 10	O 10	O 10	O 10
Accompanying only (i.e. did not fish)	O 11	O 11	O 12	O 12	O 12	O 12	O 12	O 12
Relation to you								
Immediate family	O 13	O 13	O 13	O 13	O 13	O 13	O 13	O 13
Extended family	O 14	O 14	O 14	O 14	O 14	O 14	O 14	O 14

Other (e.g. friend)	○ 15	○ 15	○ 15	○ 15	○ 15	○ 15	○ 15	○ 15

Q16. What percentage of your time (based on number of fishing days) do you spend fishing in each of the following waters? ***PROGRAMMING NOTE: SET THE TALLY TO CHECK THAT THE TOTAL IS 100%***	[Please add a header on top of the response fields (i.e. "%")] Inland **IF '0%' SKIP TO Q17** ☐ % Estuarine / Marine **IF '0%' SKIP TO Q18** ☐ % ☐

ASK Q17 IF Q16 CODE 1 = >0%

Q17. What type/s of fish does your fishing group normally target when fishing in **inland** waters?

			Quantity caught per trip (average)	Quantity released per trip (average)
1.	Brown Trout	○ 1	☐	☐
7.	Rainbow Trout	○ 7	☐	☐
2.	Redfin	○ 2	☐	☐
3.	Murray Cod	○ 3	☐	☐
4.	Golden Perch (Yellow Belly)	○ 4	☐	☐
5.	Other **Please specify**	○ 5	☐	☐
6.	Don't target any specific fish	○ 6		

ASK Q18 IF Q16 CODE 2 = >0%

Q18. What type/s of fish does your fishing group normally target when fishing in estuarine or **marine** waters?

			Quantity caught per trip (average)	Quantity released per trip (average)
1.	Snapper	○ 01	☐	☐
2.	King George Whiting	○ 02	☐	☐
3.	Flathead (other than Dusky)	○ 03	☐	☐
4.	Calamari (squid)	○ 04	☐	☐
5.	Dusky flathead	○ 05	☐	☐
6.	Bream	○ 06	☐	☐
7.	Australian Salmon	○ 07	☐	☐
8.	Abalone	○ 08	☐	☐
9.	Rock Lobster	○ 09	☐	☐

10.	Southern Bluefin Tuna	○ 10		
10.	Other **Please specify**	○ 10		
11.	Don't target any specific fish	○ 11		

Q20. Where do you usually fish in Victoria?

(PLEASE SELECT ONE RESPONSE PER STATEMENT IN COLUMN)

PROGRAMMER NOTE: SHOW MAP AT THIS QUESTION. LOCATIONS ON Y AXIS – WITH A DROP DOWN FOR EACH LOCATION

		Primary Location	Secondary Location	Other Location
1.	Melbourne/Port Phillip Bay	○ 1	○ 2	○ 3
2.	North west	○ 1	○ 2	○ 3
3.	North east	○ 1	○ 2	○ 3
4.	South west	○ 1	○ 2	○ 3
5.	Gippsland	○ 1	○ 2	○ 3
6.	None/Not applicable	○ 1	○ 2	○ 3

[can you ask q 21 and 21b on the same page?]

Q22. What percentage of your total fishing time do you spend on each of the following types of fishing? ***PROGRAMMING NOTE: CHECK TO ENSURE THAT %'S ADD TO 100%***	Bait fishing	%
	Soft plastics/hard bodied lures	%
	Spear fishing	%
	Fly fishing	%
	Other	%

ASK IF Q22 = OTHER

Q22a. What other types of fishing do you engage in?	_____

Q26. Do you belong to a fishing club / association? **(PLEASE SELECT ONE RESPONSE ONLY)**	Yes	○ 1
	No	○ 2

SECTION 5. EXPENDITURE OF RECREATIONAL FISHING IN VICTORIA

Please note the following questions relate to expenditure IN VICTORIA ONLY.

Q29. Approximately how much do you spend on recreation per week? This includes all expenditure on items such as movies, theatre, restaurants, hobbies, holidays and any other expenditure that is directly related to recreation.	$_____per week

Q30. Approximately, what would be your **per trip** spend on the following items for recreational fishing? (Please enter zero if you have no spend on each item)

[SPLIT INTO TWO SCREENS]

Item	**Per Trip Expenditure ($)**
Tackle and Equipment	$
Bait	$
Food and accommodation	$
Transport to and from fishing venue (either fuel costs or public transport costs)	$
Other	$

IF PER TRIP SPEND FOR ANY OF THE ITEMS AT Q30 = 0, THEN DO NOT SHOW AT Q30A

Q30a. What is the primary location where you purchase each of these items?

PLEASE SELECT ONE RESPONSE PER ROW ONLY

Primary Location of Purchase(s) – Please select only 1 response per row

Traditional Retail Outlet				**Online Store**				
Within my region	**Rest of the state**	**Interstate**	**Overseas**	**Unknown ware-house location**	**Within my region**	**Rest of the state**	**Interstate**	**Overseas**
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9
O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9

Q31. Approximately, what would be your **per year** spend on the following items for recreational fishing? What is the primary location where you purchase each of these items?

(PLEASE SELECT ONE RESPONSE PER STATEMENT IN COLUMN)

[SPLIT INTO TWO SCREENS]										
Item	**Per Year Expenditure ($)**	**Primary Location of Purchase(s) – Please select only 1 response per row**								
		Traditional Retail Outlet				**Online Store**				
		Within my region	**Rest of the state**	**Interstate**	**Overseas**	**Unknown warehouse location**	**Within my region**	**Rest of the state**	**Interstate**	**Overseas**
Clothing for fishing	$	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7	○ 8	○ 9
Fishing club fees	$	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7	○ 8	○ 9
Licensing costs	$	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7	○ 8	○ 9
Camping gear	$	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7	○ 8	○ 9
Other	$	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7	○ 8	○ 9

SECTION 6. UNMET DEMAND FOR FISHING

Q42. What prevents you from going recreational fishing in Victoria more often? **(PLEASE SELECT AS MANY AS APPLY)**	Nothing, I fish as much as I want to ☐ 1 Lack of time ☐ 2 Lack of port facilities e.g. wharves, jetties and slipways ☐ 3 Too expensive ☐ 4 Too far form a suitable fishing location ☐ 5 Don't like fishing ☐ 6 Other **(PLEASE TYPE IN YOUR ANSWER)** _____ ○ 7
Q43. What would motivate you to spend more on recreational fishing? **(PLEASE SELECT AS MANY AS APPLY)**	Enhanced stocking ☐ 1 Improved access ☐ 2 Improved port facilities e.g. wharves, jetties and slipways ☐ 3 Improved research and development ☐ 4 Improved habitat ☐ 5 Nothing, I fish as much as I want to ☐ 6 Other **(PLEASE TYPE IN YOUR ANSWER)** _____ ○ 7
Q44. If there were no constraints, such as time, cost or distance from fishing spots, how often would you go fishing? **(PLEASE SELECT ONE RESPONSE ONLY)**	Daily ○ 1 Several times a week ○ 2 Weekly ○ 3 About every 2 weeks ○ 4 Monthly ○ 5 Every 2 months ○ 6 Every 4 months ○ 7 Every 6 months ○ 8 About once a year ○ 9
Q45. Of the following, please rank from 1 to 8 what drives you to participate in recreational fishing? (Please drag and drop each of the items to the right in the order you wish to rank them). **PLEASE RANK 1 – 8**	To be outdoors ☐ To participate in a sport ☐ To relax ☐ To be with friends/family ☐ For solitude ☐ For competition ☐ For food ☐

	Other ☐

Q45a. What other aspects (if any) drive you to participate in recreational fishing?	_____

Q46. What issues do you see facing the recreational fishing industry **(PLEASE TYPE IN YOUR ANSWER AND PROVIDE AS MUCH DETAIL AS POSSIBLE)**

Q47. Any other comments? **(PLEASE TYPE IN YOUR ANSWER)**

SECTION 7. DEMOGRAPHICS

Q5. What is your residential postcode?	Record postcode

Q5a. In which country were you born? Please select one response only.	Australia **Go to Q5c** ○ 01 Canada ○ 02 China ○ 03 Croatia ○ 04 England ○ 05 Greece ○ 06 India ○ 07 Italy ○ 08 Macedonia ○ 09 Malaysia ○ 10 New Zealand ○ 11 Pakistan ○ 12 Serbia ○ 13 Somalia ○ 14 Spain ○ 15 Sri Lanka ○ 16 Turkey ○ 17 United States of America ○ 18 Vietnam ○ 19 Other (please specify) ○ 97 Prefer not to say ○ 99

ASK IF OUTSIDE AUSTRALIA (Q5a NOT CODE 1)

Q5b. For how many years have you been living in Australia? **Please select one response only.**	Less than 2 years ○ 1 2 to 4 years ○ 2 5 to 9 years ○ 3 10 to 14 years ○ 4 15 or longer ○ 5 Prefer not to say ○ 99

Q5c. What is the main language you speak at home? **Please select one response only.** ***[PROGRAMMER NOTE: SHOW IN ALPHABETICAL ORDER. ANCHOR 'OTHER' TO BOTTOM]***	English □ 01 Arabic □ 02 Cantonese □ 03 Greek □ 04 Hindi □ 14 Italian □ 05

	Khmer ☐ 06 Malay ☐ 16 Mandarin ☐ 07 Maori ☐ 12 Pasifika language ☐ 13 Serbian ☐ 08 Spanish ☐ 09 Tamil ☐ 15 Vietnamese ☐ 10 Other (please specify) ☐ 11

Q3. Which of these household income groups do you fall into? Household income is the total income earned by all household occupants (before tax).	Under $20,000 O01 $20,000 - $39,999 O02 $40,000 - $59,999 O03 $60,000 - $79,999 O04 $80,000 - $99,999 O05 $100,000 - $149,999 O06 $150,000 - $199,999 O07 $200,000 - $299,999 O08 $300,000+ O09 Rather not say O10

Q4. What is your household disposable income as a percentage of your total household income? Household disposable income is what is left after all required household expenditure including food, rent/mortgage, transport costs and other necessary purchases. (Your best guess is all we are after)	0 - 10% O01 11 – 20% O02 21 – 30% O03 31 – 40% O04 41 – 50% O05 51 – 60% O06 61 – 70% O07 71 – 80% O08 81 – 90% O09 91 – 100% O10 Rather not say O11 Don't know O12

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