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Cost benefit analysis of Surf Life Saving Western Australia

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Access Economics

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109,430 hours patrolling

In 2016-17, **5,016 volunteer surf lifesavers** each committed an average of **21.8 hours** to patrolling WA beaches. In total, these volunteers spent 109,430 hours patrolling WA beaches in 2016-17.

1,304 rescues during beach patrols

These volunteer surf lifesavers, along with SLSWA paid lifeguards, are expected to perform an average of 1,304 rescues each year. In addition, each year lifesavers and lifeguards will issue **53,166 preventative actions**.

$433 million in lives saved

As a result of the efforts of SLSWA's lifeguards and volunteers, it is expected that **92 lives will be saved + 55 critical injuries will be prevented** during beach patrols. These lives are valued at $433 million in undiscounted terms.

20,707 hours of life saved

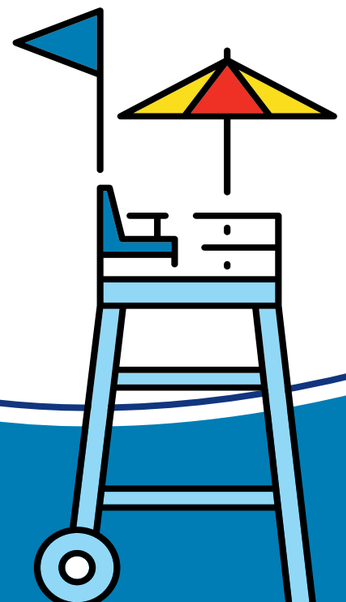
Each year, **7,669 first aid awards** are expected to be completed through SLSWA by individuals, who have not previously completed this training in CPR. This training equips members to assist in emergencies, saving an additional 20,707 hours of life each year outside of patrol.

131 jobs for SLSWA members

Each year, **1,566 members** are expected to complete a SLSWA award for the first time. Of these members, 131 are expected to gain employment, at least in part, due to the recent completion of an SLSWA award.

1.5 million hours volunteering

In 2016-17, SLSWA had **19,263 members** including 6,522 Nippers (children). In addition to time spent on patrol and training others, SLSWA members spend over 1.5 million hours each year volunteering.



Every **$1** spent by **SLSWA** is expected to generate **$14.71** in benefits to SLSWA members + the WA community

*All figures are annual averages between 2012-13 and 2036-37 unless otherwise stated.

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Executive summary

Purpose of this study

Western Australia is home to some of the most beautiful beaches in the world. During the summer months, the state's beaches are heavily utilised by locals and tourists alike. However, the WA surf can be dangerous and unpredictable. Rip currents and undertows pose major risks and are unidentifiable to the untrained eye, while ocean predators are also prevalent along the Western Australian coast.

Surf Life Saving Western Australia (SLSWA) is a not-for-profit, member-based organisation that provides crucial services in lifesaving and education to help mitigate risks to WA beachgoers and ensure WA's beaches are enjoyed by the public. As WA's coastal safety and rescue organisation, SLSWA's services are vital to keeping the WA community safe at the beach.

Deloitte Access Economics was engaged by SLSWA to estimate the economic value of SLSWA's activities to the Western Australian community. This engagement involved the development of a cost benefit analysis (CBA) to measure the associated costs and benefits of SLSWA's operations to its members, the community, SLSWA itself and other stakeholders.

Cost benefit analysis

A CBA is a tool that supports evidence-based decision making. The basis of a CBA is simple: it compares the total costs to the community of SLSWA's services with the total benefits generated to and by members. This will determine whether the benefits outweigh the costs, and by how much. This CBA focuses on those services offered to members by SLSWA and community benefits generated by SLSWA members.

SLSWA generates benefits from three key sources:

- Coastal safety and lifesaving
- Education and training
- Member utility.

These benefits are compared in this study against the estimated costs associated with SLSWA's services and operations to calculate a benefit cost ratio (BCR).

This CBA compares the incremental costs and benefits associated with SLSWA's operations between a 'base case' and an 'investment case' scenario over a 25-year assessment period, from 2012-13 to 2036-37.

Figure 1: Summary of quantified economic and community benefits

Coastal safety and lifesaving

The value of lives saved and critical injuries avoided as a result of SLSWA providing lifesaving services on WA beaches

Education and training

The WA community benefits from having more people equipped in first aid. Members themselves receive employment benefits from completing training

Member utility

The satisfaction or utility that members receive from being a SLSWA member, represented by the hours they are willing to spend volunteering

The total net value of Surf Life Saving Western Australia to WA is $7,040 million over the 25-year assessment period.

Source: Deloitte Access Economics.

A 'do nothing' base case is considered whereby SLSWA (or an organisation similar to it) does not exist. This ensures that the value of the services and activities undertaken by SLSWA are captured in full in the CBA. All costs and benefits considered are incremental to this base case.

In addition to the above benefits, the CBA considers the costs incurred as a result of SLSWA's operations. The costs included are:

1. Operational costs to SLSWA and clubs
2. Opportunity costs to volunteers.

Over the assessment-period, SLSWA is expected to contribute a total net value to WA of $7,040m (anticipated benefits net of costs). Further, SLSWA services and operations yield a BCR of 14.71 (anticipated benefits divided by costs). This means that, for every $1.00 invested in SLSWA, a return of $14.71 can be expected.

This is a significant return reflective of the critical lifesaving duties performed by SLSWA volunteers and lifeguards relative to modest operating and opportunity costs. Table 1 summarises the benefits and costs included in the CBA in PV terms.

The high BCR is largely driven by the size of Benefit 1, which captures the value of coastal safety and lifesaving. Benefit 1 makes up 86.7% of total project benefits, or $6,547m (in present value terms over 25 years). The size of this benefit reflects the value of lives saved by SLSWA patrolling volunteers and lifeguards (a human life is valued at $4.5 million in the study, in line with guidance from the Commonwealth Government.)[1]

A BCR of 14.71 is similar to previous research undertaken for Surf Life Saving Australia. A 2005 study[2] found a comparative BCR of 10.4, while a 2011 study[3] generated a BCR of 21.7.

For every $1.00 invested into SLSWA, a return of $14.71 is expected. This significant return on investment reflects the value of the critical lifesaving duties performed by SLSWA.

Table 1: Summary of the cost benefit analysis results, present value terms*

Benefits	
BENEFIT 1: Coastal safety and life saving	$6,547m
BENEFIT 2: Education and training	$16m
BENEFIT 3: Member Utility	$991m
Total benefits	**$7,553m**
Costs	
Operational costs	$293m
Opportunity costs to volunteers	$221m
Total costs	**$513m**
BCR	**14.71**

Source: Deloitte Access Economics. **Note:** The numbers in this table may not add exactly to totals, due to rounding.

* Discounted at 7.00% p.a. over 25 years


woodside
woodside

1

Background

1.1 Purpose of this study

Deloitte Access Economics was engaged by Surf Life Saving Western Australia (SLSWA) to estimate the economic value of its activities to the Western Australian community. This engagement involved the development of a cost benefit analysis to measure the associated costs and benefits of SLSWA's operations to members, the community, SLSWA itself and other stakeholders.

1.2 About Surf Life Saving Western Australia

SLSWA is a not-for-profit, member-based organisation that provides crucial services in lifesaving and education to address water risks. The services are designed to raise awareness of WA's unique coastal conditions, and to ensure the local community can enjoy the water safely.

As WA's coastal safety and rescue organisation, SLSWA's services are vital to keeping beachgoers safe on the beach. Surf Life Saving's red and yellow flags serve as an effective system to closely monitor beach activity and are recognised as a nationally significant icon.

As an example of the effectiveness of this system; of the 25 drowning deaths that occurred in WA in 2016-17, it is notable that none occurred between the flags. This achievement illustrates the impact generated by the efforts of volunteers and paid lifeguards who patrol WA's beaches.

1.2.1 Services provided by Surf Life Saving Clubs

SLSWA's core objective is to save lives on WA beaches. This is achieved through four primary service areas:

- Coastal safety and lifesaving
- Member and organisational development
- Community education and training
- Fitness and surf sports.

SLSWA carry out these services via a network of 31 Surf Life Saving clubs (SLSC). These clubs extend from the Broome SLSC in the north, to the Esperance-Goldfields SLSC in the south. Each of these service areas are discussed below.

1.2.1.1 Coastal safety and lifesaving services

Lifesaving services are the heart of the organisation. SLSWA coordinates volunteer surf lifesaving patrols at many of WA's popular beaches through its SLSCs. These lifesavers are stationed at beaches to protect beachgoers and render assistance when required.

This includes performing rescues, first aid, and preventative actions. SLSWA is also contracted to local and State government agencies to provide paid lifeguard services. This includes year-round patrol services at a number of popular WA beaches.

SLSWA's services are vital to keeping beachgoers safe on the beach.

SLSWA beach patrol services are supported by the Westpac Lifesaver Helicopter Rescue Service and the Wesfarmers Lifesaver Jet Ski Teams. These support services are manned by paid and volunteer crew to provide additional surveillance to the beach from the air and the ocean. The services are designed to minimise the response time once an emergency or potentially dangerous situation has been identified.

Such services are vital to lessening beachgoer's exposure to coastal hazards in WA.

1.2.1.2 Member and organisational development

Members are able to participate in a range of social events and community leadership opportunities as part of their SLSWA membership. For example, SLSWA hold a number of events across the year to recognise their members, including award evenings and events to recognise long serving members.

SLSWA members are given the opportunity to complete 'awards' which equip them to provide lifesaving services on patrol. These awards include first aid training, the bronze medallion, coaching certification, and training to operate equipment such as inflatable rescue boats (IRBs).

SLSWA also assists members to develop skills and qualities such as leadership, accountability and initiative, which are integral to building responsible, engaged members of surf lifesaving clubs, schools and the broader community.

In addition, SLSWA provides a range of opportunities for children and youth to participate in surf lifesaving. In the 2016-17 season, more than 6,500 children participated in SLSWA's Nipper program. This program is targeted at five to 12-year-olds to assist them to develop coastal awareness skills and an understanding of safe play at the beach.

A number of programs are also available for youth members (13-14 years). For example, the Youth Involvement Program (YIP) enables participants to develop skills across a range of surf lifesaving activities, including first aid, lifesaving and surf sports.

1.2.1.3 Community Education and training

SLSWA deliver a range of education programs for the broader community. These include programs for children, parents, school groups, multicultural and at-risk groups, along with private and public first aid and surf rescue certificates.

Examples of program offerings for children and youth include an Introduction to BeachSAFE, Life Skills for Life, Beach Activities, SurfBabies, SurfKids and Surf Survival. A common theme within these programs is building the knowledge, skills and confidence of young participants in the water, although sun safety and emergency response are also addressed.

1.2.1.4 Fitness and Surf sports

SLSWA promotes a healthy lifestyle with a focus on physical exercise and spending time outdoors. As part of this, members are given the opportunity to participate in surf sport competitions throughout the year.

Surf sport competition serves a dual purpose in aiding the development of the skills necessary to carry out patrolling duties, as well as promoting physical exercise among members. Each year, thousands of members use their lifesaving skills to compete in carnivals at the club, state and national levels across a range of disciplines.

Competitions include ironman/ironwoman, lifesaving, surfboats, pool rescue and inflatable rescue boat (IRB) racing. The competitive sporting environment encourages surf lifesavers to expand and maximise their capabilities, which support their volunteer patrolling duties to the WA community.

1.3 Economic and social value

A cost benefit analysis (CBA) is applied to quantify the net benefit generated by SLSWA to the WA community. SLSWA generates benefits to the community from three key sources, which reflect its core objectives as described in Section 1.2.1 above:

1. Coastal safety and lifesaving
2. Education and training
3. Member utility.

The above benefits are quantified in Chapter 3. These benefits are compared against the estimated costs of SLSWA's services and operations to calculate a benefit cost ratio (BCR).

In 2016-17, over 6,500 children participated in SLSWA's Nipper program, developing essential beach safety skills.


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Cost benefit analysis: methodology

2.1 About cost benefit analysis

The basis of a CBA is simple: it compares the total costs related to SLSWA's services and operations with the total benefits generated to the community from those operations. As such, a CBA determines whether the benefits outweigh the costs, and by how much.

2.1.1 When to undertake a cost benefit analysis?

CBAs are often undertaken to support government and commercial decisions regarding investment. For example, CBAs are the preferred quantitative assessment tool under the Western Australian Department of Treasury's *Strategic Asset Management Framework* (SAMF).

CBAs assist decision-making by giving consideration to mechanisms which minimise the costs to a project, entity or society more broadly from a given investment, while maximising benefits.

The rationale for using a CBA as a decision-making tool is strong given that public and private funds come at a significant cost to the economy (through taxes collected by local, State, and Commonwealth governments). Therefore, understanding the benefits generated from those outlays is of significant value.

2.1.2 The logic of cost benefit analysis

A CBA compares the total costs of a policy, program and/or investment with the total benefits in a discounted cash flow (DCF) framework.

This determines whether the net return from investment is positive in present value (PV) terms. This net return (discounted benefits over discounted costs) is expressed in the form of a benefit-cost ratio (BCR).

A BCR of greater than one indicates that the discounted benefits related to a policy, program and/or investment are greater than the discounted costs required to generate those benefits. This suggests value in further supporting and investing in those efforts.

While the reverse is often true if the BCR is below one, not all benefits are quantifiable under a CBA framework. In many cases, significant, non-quantifiable benefits are relevant and must be taken into account in decision-making. That is, a CBA should not be the sole tool used to support decision-making.

Nonetheless, a CBA provides a robust framework for analysing information in a logical and consistent manner. It can assist governments and stakeholder to determine if a policy, program and/or investment efficiently achieves a stated objective. This can assist decision-makers to optimise the level of funding allocated to an initiative, or to adjust the scope of the initiative to help deliver the greatest benefit.

2.2 Approach to undertaking this cost benefit analysis

This CBA compares the incremental costs and benefits associated with the operations and services of SLSWA between a 'base case' and an 'investment case' scenario over a 25-year assessment period, from 2012-13 to 2036-37. Five key steps have been taken to prepare this CBA:

1. Definition of the base case and investment scenarios
2. Definition of the assessment period
3. Benefit specification and estimation
4. Cost specification and estimation
5. Discounted cash flow (DCF) modelling.

These steps are described in more detail in the below sections.

2.2.1 Definition of the base case and investment scenarios

Defining a counterfactual scenario, or base case, is a critical component of a CBA. The net benefits of the investment are measured as an incremental change from the specified base case. This ensures that only the benefits which can be reasonably attributed to an investment are included in the analysis.

2.2.1.1 Base case

The base case is characterised by a scenario whereby the services and operations of SLSWA are wholly non-existent. This 'do nothing' base case ensure that the full value of the services and operations of SLSWA are captured in the CBA.

For example, if the 'service gap' left by SLSWA is assumed to be fulfilled by another provider in the base case, then this would reduce the incremental benefits attributable to SLSWA in the CBA. Therefore, all costs and benefits considered are incremental to a base case whereby SLSWA does not operate within Western Australia to properly capture the full benefits of its operations.

2.2.1.2 Investment case

An investment case is considered in comparison to the base case in the CBA. The investment case refers to the status quo. That is, a scenario whereby SLSWA operates in its current capacity within Western Australia providing coastal safety and lifesaving, and education and training to members and the community.

2.2.2 Definition of the assessment period

The net benefits are measured over a 25–year assessment period, from 2012-13 to 2036-37. This period has been selected as it contains five years of historic data and twenty years of projected activities and outcomes.

2.2.3 Benefit specification and estimation

As noted in Section 1.3, three benefits are expected to be generated as a result of SLSWA's operations. These include:

- BENEFIT 1: Coastal safety and life saving
- BENEFIT 2: Education and training
- BENEFIT 3: Member utility

Each of the expected benefits are made up of a number of components, which are described in detail below.

2.2.3.1 BENEFIT 1: Coastal safety and life saving

SLSWA's most fundamental role is to protect WA beachgoers. Therefore, it follows that the most significant contribution made by SLSWA to the WA community is reflected in the number of lives saved. SLSWA patrol WA beaches by deploying paid lifeguards and volunteer surf lifesavers.

SLSWA is the largest provider of paid lifeguard services in WA, contracting with local councils and State Government agencies.

These lifeguards patrol popular beaches across Western Australia, from Middleton Beach in Albany up to Cable Beach in Broome as well as key metropolitan beaches and the Basin on Rottnest Island. In 2016/17, WA beaches were patrolled by 66 lifeguards who collectively spent 30,422 hours on patrol.

In addition to lifeguards, SLSWA has one of the largest volunteer bases in Western Australia. In 2016/17, 5,016 volunteer patrolling members spent 109,430 hours patrolling WA beaches. These volunteers hold either a bronze medallion or a surf rescue certificate (if under the age of 15) and engage in frequent requalification processes to ensure critical skills are maintained.

Collectively in 2016/17 SLSWA lifeguards and lifesavers (volunteers) rescued over 1,215 people and issued 50,684 preventative actions.[4] Many beachgoers would be injured (or worse) in the absence of these actions by SLSWA lifeguards and lifesavers. Therefore, this benefit is based on the value of the fatalities and critical injuries avoided as a result of the intervening actions of SLSWA lifeguards and lifesavers.

In 2016/17, more than 5,000 volunteers spent over 109,000 hours patrolling WA beaches.

Key inputs and assumptions

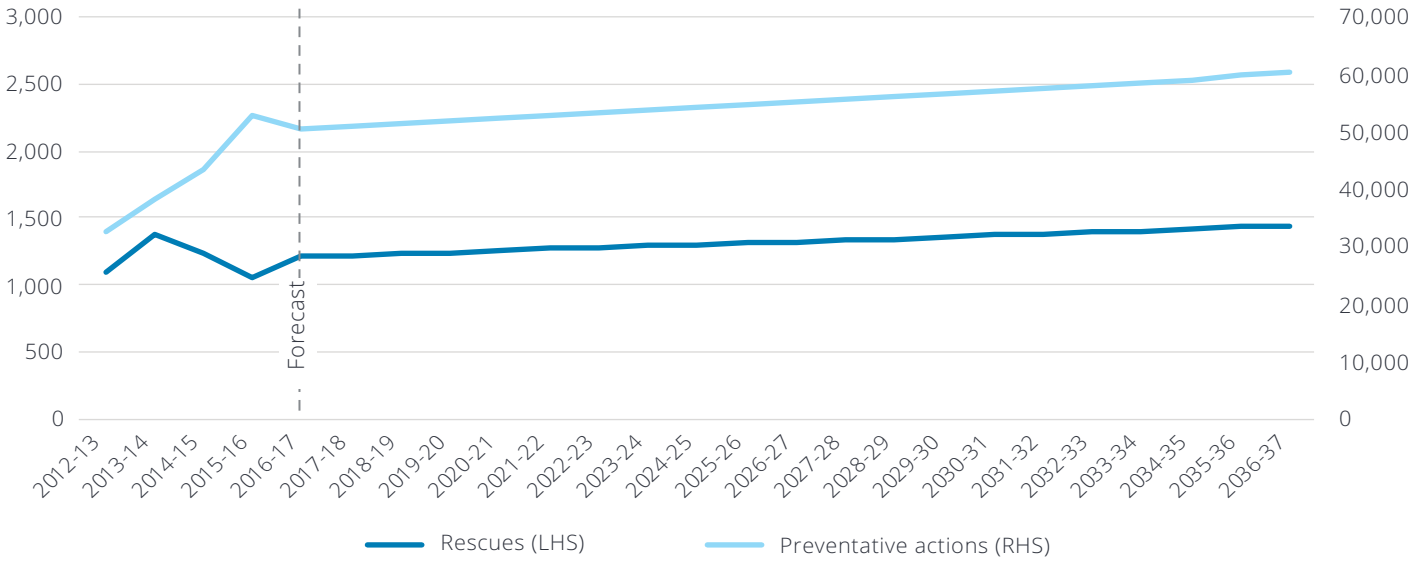
A number of key assumptions and inputs underpin Benefit 1. These are described below.

Rescues and preventative actions

SLSWA provided time-series data on the number of rescues and preventative actions undertaken between 2012-13 and 2016-17. Projections of the number of rescues and preventative actions were not available.

As shown in Figure 2.1, the number of rescues and preventative actions each year has not risen consistently over the five years to 2016-17. Rather, interventions appear to ebb and flow reflecting a range of factors (such as climate, perception of risk related marine life activity etc.). The number of patrolling surf lifesavers and lifeguards may also impact the number of interventions.

Figure 2.1: Rescues and preventative actions by surf lifesavers, 2012-13 to 2036-37



Source: SLSWA, Deloitte Access Economics

As a result, it is difficult to predict the number of future rescues and preventative actions. However, it has been assumed that the number of rescues and preventative actions will increase in line with population growth.

This forecast is made on the basis that interventions are likely to rise as more people frequent the beach. A compound annual growth rate (CAGR) in WA population of 0.9% has been applied between June 2013 and June 2017 to forecast the number of future rescues and preventative actions. These forecasts are summarised in Figure 2.1 (a sensitivity test of this assumption is presented in Section 3.3.2).

Fatalities and critical injuries

Not all rescues and preventative actions can reasonably be expected to have resulted in a fatality or critical injury. According to a 2005 study[5], in the absence of action by Surf Life Saving Australia (SLSA) volunteers:

- 5% of all rescues would have resulted in a fatality
- 3% of all rescues would have resulted in a critical injury.

The remainder of rescues are expected to have required minor first aid, or have resulted in no injury at all. These same assumptions are applied in this CBA[6] to estimate the incidence of fatality or critical injury in the base case.

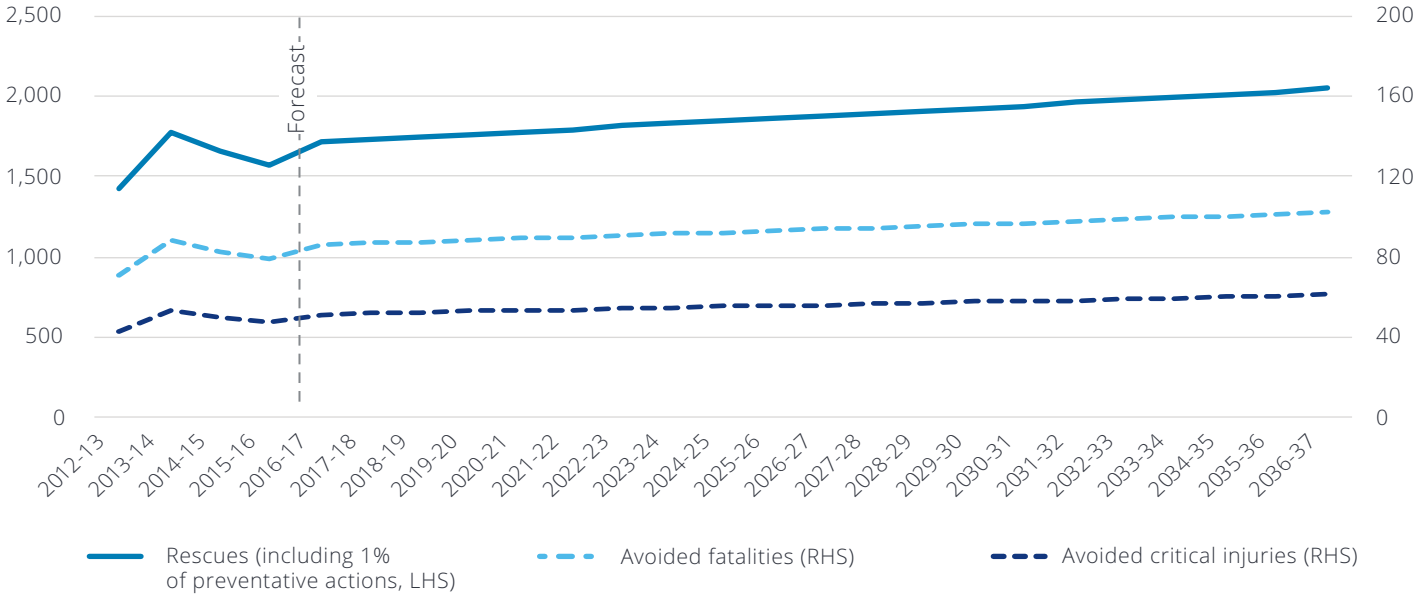
In addition to rescues, it is reasonable to assume that preventative actions also prevent fatalities and injuries from occurring. The same 2005 study applied a conservative estimate that 1% of all preventative actions would have otherwise resulted in a beachgoer requiring rescue.

A small percentage of these avoided rescues, as above, are then expected to have resulted in fatality or injury. This assumption is also applied for this CBA.

Figure 2.2 shows the relationship between the number of rescues (including 1% of all preventative actions), avoided fatalities and critical injuries based on the application of the above assumptions.

Without SLSWA, an additional 92 fatalities are expected each year.

Figure 2.2: Historic rescues and estimated avoided fatalities and critical injuries, 2012-13 to 2036-37



Source: SLSWA, Deloitte Access Economics. Note: Numbers may not add due to rounding.

Value of a statistical life

The value of an individual life needs to be defined in order to quantify the value of the lives saved by SLSWA. Research and analysis conducted by the Commonwealth Government estimates the value of a statistical life (VSL) at $4.5 million in 2018 dollars.[7] Therefore, each death that is avoided due to SLSWA intervention is valued at $4.5 million.

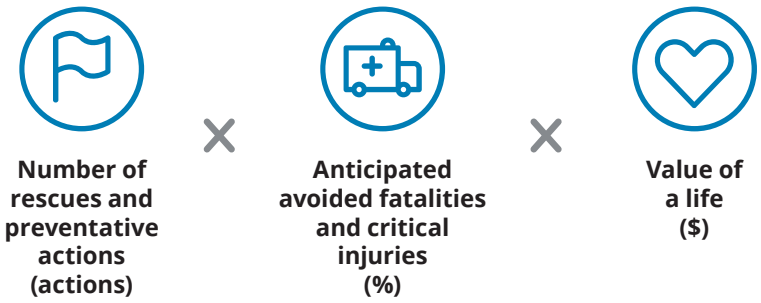
With regard to critical injuries, research by Royal Life Saving Society Australia (RLSSA) found that the average cost of a non-fatal drowning equates to approximately $414,700 in 2018 Australia dollars.[8]

This research considers non-fatal drowning incidents that resulted in a hospitalisation. The cost of a non-fatal drowning takes into account the costs of medical care, burden of disability and ongoing healthcare needs, as well as short-term and long-term impacts on productivity.

Over the 25-year assessment period, a total of 2,295 lives are anticipated to be saved and 1,377 injuries avoided. A summary of the assumptions and calculation used to quantify this benefit is presented in Figure 2.3 below.

Each and every life saved by SLSWA is valued at $4.5 million (2018 AUD).

Figure 2.3 Benefit 1: Coastal safety and lifesaving



Source: Deloitte Access Economics

Case Study 1

Harry Collins – Secret Harbour Surf Life Saving Club

Having recently completed his Surf Rescue Certificate at Secret Harbour Surf Life Saving Club, Harry was performing a volunteer patrol on Christmas Day 2017 at Secret Harbour, with more than 1,500 beach goers enjoying the warm weather.

With a reasonable swell, a deep inshore trough and shallow sand bar, conditions were optimal for the development of strong currents and rips, with various areas on the beach signposted no swimming. With many beachgoers demonstrating minimal experience in the surf, lifesavers were kept busy going to the aid of people in distress.

On more than eight occasions, Harry was called on to go to the aid of swimmers struggling to stay afloat in the strong currents, repeatedly having to jump off his own Rescue Board to grab a small child or adult in difficulty.

At just 13 years of age, Harry demonstrated extraordinary character and courage and received a bravery award for his efforts.

2.2.3.2 BENEFIT 2: Education and training

All patrolling members are required to hold qualifications considered by SLSWA to be necessary to perform their role. At a minimum, surf lifesavers need to hold a current Bronze Medallion (or Surf Rescue Certificate if they are aged under 15).

However, other awards include advanced first aid training and training to operate necessary equipment such as Inflatable Rescue Boats (IRBs). With each qualification that a SLSWA member completes, they are able to take on greater responsibilities during patrol.

However, these awards also have relevance outside of patrolling duties. For example, completing a first aid certificate does not only enable the holder to assist with an emergency on the beach, but also to render assistance in a non-patrolling medical emergency.

This benefit represents the first component of Benefit 2, whereby society benefits from having more members of the population equipped in Cardiopulmonary Resuscitation (CPR) skills.

In addition, it can be reasonably expected that completing SLSWA awards will assist some members to find employment. For example, completing a bronze medallion is often a prerequisite to becoming a lifeguard or swimming instructor. This represents the second part of Benefit 2, whereby members themselves benefit from completing awards which improve their employability.

More than 39,000 members are expected to complete a SLSWA award for the first time by 2036-37.

Key inputs and assumptions

Number of awards

The first part of this benefit is driven by the number of people (SLSWA members and community members) that complete a first aid award. In order to distinguish between the broad range of awards (many of which contain some first aid) it is assumed that awards which contain a CPR component will equip members to save a life in an emergency situation. In addition, only the first instance of an individual completing a CPR award is considered. That is, if an individual completes a number of awards which contain a CPR component, only completion of the first certificate is considered.

The second part of Benefit 2 is driven by the number of members to complete any type of award. All awards, whether they contain a first aid component or not, have the potential to contribute to a member gaining employment. Again, to avoid double counting, only the first award that an individual earns is considered.

Between 2012-13 and 2016-17, over 10,000 SLSWA members completed an award for the first time.[9] In addition, over 37,000 SLSWA and community members learned CPR for the first time.[10]

However, over this period the number of SLSWA members to complete an award for the first time has fallen by 10.4% (CAGR). Specifically, the number of SLSWA members to complete a CPR course for the first time has fallen by 4.7% (CAGR).

SLSWA does not expect the number of new award completions by members to continue to fall through time, particularly as the number of SLSWA members has increased over the same period (by a CAGR of 1.2%). In contrast, the number of community members to complete a first aid course for the first time rose over this period. However, this growth was inconsistent, varying between an annual growth rate of -6.8% and 83.2%.

An additional 191,000 people are expected to complete a CPR award for the first time through SLSWA.

It is difficult to forecast the increase in award completion for the future component of the assessment period without time-series data on award completion. Therefore, it has been assumed that the number of awards to be completed for the first time will remain constant over the assessment period.

That is, the number of members to complete an award for the first time is expected to remain constant at approximately 1,500 a year and the number of individuals to complete a CPR award for the first time is expected to remain at approximately 7,700 a year. Both of these values are consistent with the last year of available data, 2016-17.

Applying these assumptions, more than 39,000 SLSWA members are forecast to complete an award for the first time between 2012-13 and 2036-37. Additionally, over 191,000 SLSWA members and community members are predicted to complete a CPR qualification for the first time.

CPR and rate of survival

Research by Groeneveld et al (2005) found that each CPR course may be associated with 2.7 quality adjusted hours of life.[11] That is, for each additional person who completes CPR training, an average of 2.7 hours of life is expected to be saved at some point in the future. This reflects the fact that many people who complete first aid training are rarely required to perform CPR. However, some people will find themselves in an emergency situation where their first aid training enables them to save someone's life.

Value of a life
As with Benefit 1 (see Section 2.2.3.1), each individual life is valued at $4.5 million in 2018 Australian dollars.

Contribution of awards to employment
Approximately 8.3% of awards undertaken by members contribute to members securing paid employment. This estimate was derived from the SLSWA Member Research Survey conducted by Deloitte Access Economics.[12] In the survey, members were specifically asked about the extent to which this training assisted in securing paid employment.

Average tenure
The average tenure for Australian employees across all industries is 3.3 years (or 3 years and 4 months).[13] It is therefore assumed that members who gain employment as a result of a SLSWA award will remain in that position for 3.3 years. Further, it is assumed that the individual begins their employment in the financial year following the year they complete their award (in the absence of data to inform this component of the analysis).

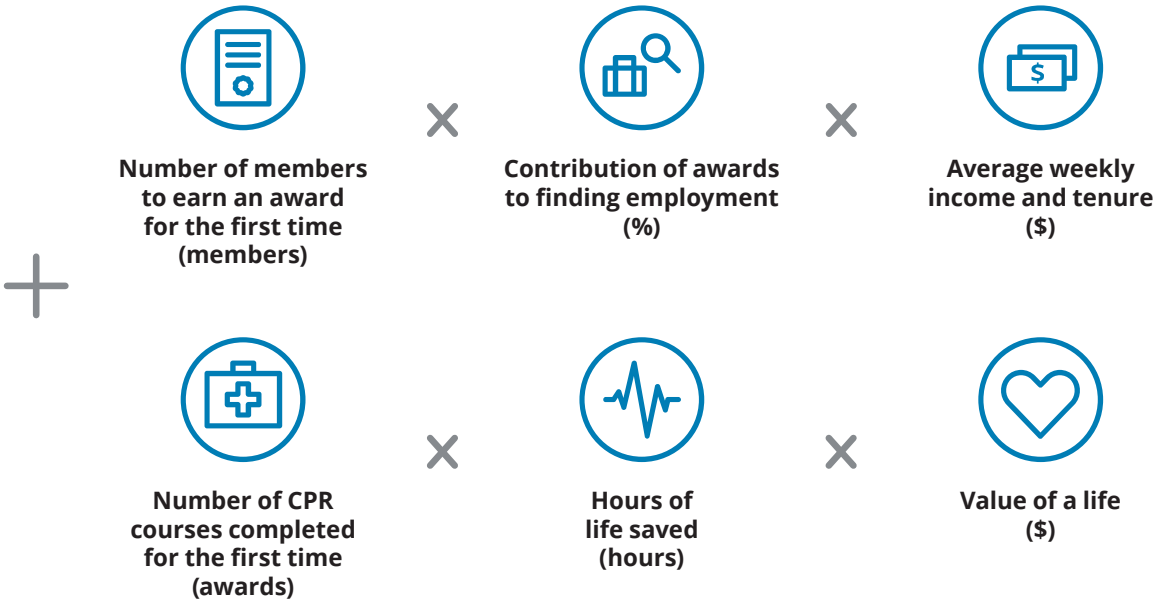
Average income
SLSWA awards equip members with a broad range of skills. Amongst others, these skills include CPR, first aid, water safety, leadership, as well as training and assessing others. As a result, members who hold relevant SLSWA awards are able to find employment across a broad range of industries. For example, first aid alone is a valuable qualification to have in the education, hospitality, sport and recreation and medical industries.

Holding an SLSWA award is likely to assist members to obtain jobs across a variety of industries. Therefore, average employment data from across all industries is used to quantify the value of this benefit. The average full time wage for employees in this industry was $1,567.90 a week in November 2017.[14] In addition, employees across all industries worked an average of 34.6 hours per week.[15] Therefore, the average income of an individual is $1,446.06 a week (based on a 37.5 hour week).

An additional 20,700 hours of life saved each year, through first aid training.

Over the 25-year assessment period, a total of 517,663 hours of life are expected to be saved via non-patrolling means, and 3,137 members are expected to find employment as a result of SLSWA awards. A summary of the assumptions and calculation used to quantify this benefit is presented in Figure 2.4 below.

Figure 2.4: Benefit 2: Education and training



Source: Deloitte Access Economics

Case Study 2

Lydia Watts – Sorrento Surf Life Saving Club

While visiting a beach in Esperance, the car that Lydia was travelling in was flagged down by a family on the beach whose daughter had just been attacked by a great white shark.

Lydia showed no hesitation in running down into the water to assist the girl's father in bringing her up onto the beach. Once on the beach, Lydia commenced administering first aid and CPR on the girl until the arrival of another individual who was a nurse.

Lydia then moved to provide comfort and distraction to family members of the girl, who were watching the rescue effort from nearby.

Completing her surf rescue certificate through Sorrento Surf Life Saving club equipped Lydia with the skills she needed to assist in this critical situation. Lydia was just 13 years old at the time of the incident and received a bravery award for her efforts.

2.2.3.3 BENEFIT 3: Member utility

SLSWA members volunteer through several means in addition to patrolling and training delivery. For example, members are involved with officiating competitions, coaching surf sports, club administration and assist with running the Nippers program. Some members also hold club committee roles to assist with governance.

Each of these commitments represent an opportunity cost on member time. Volunteer time spent by an individual to support a club comes at the cost of the next highest use of that individual's time. Therefore, rational members are assumed to receive a degree of utility (or benefit) from volunteering. Importantly the marginal utility received from volunteering is assumed to exceed the marginal opportunity cost of doing so.

Social impact analysis commonly uses employment as the next highest use of an individual's time. That is, if an individual chooses to spend their time volunteering, then they must receive at least as much, if not more, utility from volunteering as they would from a wage that could be earned. Therefore, the utility that SLSWA members receive from their membership can be measured by valuing the hours that they spend volunteering at a relevant hourly wage rate.

Key inputs and assumptions

Volunteer hours

This benefit is largely driven by the number of hours that members (patrolling and non-patrolling) spend volunteering. Importantly, this benefit does not consider the number of hours that members spend patrolling beaches and training or assessing awards.

This adjustment avoids double counting benefits, given that Benefit 1 and Benefit 2 already capture the 'output' of volunteer time spent patrolling and training/ assessing. Conceptually, the benefits derived by volunteers who patrol or deliver training has already been captured.

Therefore, this component of utility is intended to capture the residual benefits of volunteer time– such as competition officials and club administration.

The number of patrolling and non-patrolling members across WA was obtained from the SLSWA annual reports between 2012/13 and 2016/17.[16] The CAGR of the number of members over this period was 1.2%; however, this growth was inconsistent over the years.

Therefore, the population CAGR of 0.9% is again used to forecast the number of members to the end of the assessment period (see Section 2.2.3.1). A sensitivity test of this assumption is provided in Section 3.3.2.

Excluding the hours spent on patrol or facilitating/assessing awards, patrolling members spend an average of 3.42 hours of volunteering each week.[17] It is assumed that non-patrolling members volunteer as an awards trainer or assistant for an average of 1.35 hours per week.[18]

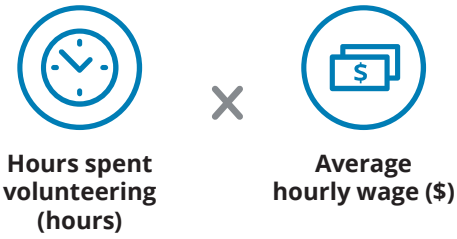
1.5 million hours of volunteering by SLSWA members (excluding patrol and training)

Wages

As at November 2017, the average weekly income across all Australian employees was $1,567.90.[19] This results in an average hourly wage of $41.81 based on a 37.5-hour week.

Over the 25-year assessment period, members are expected to spend 38.7 million hours volunteering (excluding patrol hours and hours spent in a trainer or assessor capacity).[20] A summary of the assumptions and calculation used to quantify this benefit is presented in Figure 2.5 below.

Figure 2.5: Benefit 3: Member utility



Source: Deloitte Access Economics

Case Study 3

Jason Johansson – Busselton Surf Life Saving Club

In early 2018, Jason was travelling down Bussell Highway through Capel, when he was forced off the road by a vehicle driving erratically on the wrong side of the road. Concerned with what other road users may encounter, Jason turned around to follow the vehicle, coming across a horrific accident scene, which included vehicles in flames.

Despite the danger, Jason approaching one of the burning vehicles, checking the driver's vital signs before going to the rear of the car to attach a towrope so as he could pull it clear of the flames and out danger.

Jason stayed with the driver, who had suffered catastrophic injuries, until an off duty nurse took over at which point he continued to assist ambulance officers who had arrived on scene with administering first aid to the driver of the car who had caused the accident. It was later revealed that up to 20 vehicles were forced off the road during the horrifying incident.

In this emergency situation, Jason was able to put into practice the lifesaving skills he has developed as a volunteer lifesaver at Busselton Surf Life Saving Club. Jason received a bravery award for his actions, knowingly placing his own life in peril in his attempts to aid others.

2.2.4 Cost specification and estimation

Two core costs are captured in the CBA:

1. COST 1: Capital and operating costs to SLSWA and clubs
2. COST 2: Opportunity costs to volunteers.

These costs are discussed further below.

2.2.4.1 COST 1: Operational costs to SLSWA

SLSWA and each of the SLSCs require an allocation of funds each year in order to deliver services and carry out operations. This represents the largest portion of SLSWA's operating costs.

Between 2012-13 and 2015-16[21], total operating costs averaged $19.5 million a year in 2018 dollars. This comprised an average of $10.9 million a year in SLSWA operating expenditure and an annual average of $8.7 million in club expenditure.

SLSWA's largest operating cost is outlaid on services related to lifesaving. In 2016-17, this made up $4.7 million (in 2018 dollars). A large portion of this relates to capital items, such as jet skis and boats, which are necessary for SLSWA clubs to perform patrolling duties effectively.

In addition to lifesaving, other major operating costs for SLSWA include salaries and wages, fundraising costs, education and member development expenses, marketing expenses, competition expenses and commercial activity expenses.

Lifesaving services represent the largest operating cost to SLSWA, totalling $4.7 m in 2016-17.

Across the 31 clubs, administration expenses represent the largest portion of operating expenditure. In 2015/16, these costs accounted for $2.5 million (in 2018 dollars). These costs include outlays associated with the management of the organisation (e.g. telephone, postage, audit fees, bank charges and advertising).

In addition to administrative costs, other major operational costs for SLSWA clubs include salaries and wages, lifesaving, education, competition costs, fundraising, hospitality costs including bar and canteen costs, youth development, registration with SLSWA, insurance and building expenses.

Although SLSWA do not prepare forward estimates of operating expenditure (at the SLSWA level or the club level), costs are not expected to change significantly from year to year except in line with inflation. Therefore, in real terms, operating costs were kept constant in the CBA for the remainder of the assessment period.

Over the assessment period, operating expenditures are projected to total $466.9 million for SLSWA and the SLSCs. This comprises $250.5 million in SLSWA operational expenditure and $216.4 million in club operational expenditure.

2.2.4.2 COST 2: Opportunity costs to volunteers

As discussed in Section 2.2.3.3, time spent volunteering represents an opportunity cost to members. In 2016-17, patrolling members spent 109,430 hours of their own time patrolling WA beaches.[22] This equates to an average of 21.8 hours per member across 5,016 patrolling members.

The time spent by volunteers patrolling beaches is a major contribution to the benefits generated as a result preventing fatalities and critical injuries (see Section 2.2.3.1).

Patrolling hours between 2012-13 and 2016-17 have increased consistently. Therefore, a 3.4% CAGR has been applied to patrolling hours to forecast the number of hours that members may spend on patrolling duty over the remaining assessment period.

In 2016-17, SLSWA members spent almost 193,000 hours equipping other members with essential skills and training.

Both patrolling and non-patrolling members also sacrifice time to assist with awards training and assessment. As demonstrated in the specification and estimation of Benefit 2, these awards produce benefits both for the members who undertake the training as well as for the broader community through the value of first aid. Providing this training and assessment also represents an opportunity cost to members.

In 2016-17, patrolling and non-patrolling members are estimated to have committed 192,788 hours to volunteer positions as trainers and assessors. This estimate is based on the assumption that 23.7% and 4.7% of patrolling and non-patrolling members (respectively) volunteer in a trainer/assessor position for an average of 2.4 hours per week.

These assumptions are informed by the volunteer research survey conducted by Deloitte Access Economics[23]. Population growth was again used to forecast the number of members (as described in Section 2.2.3.3). Over the assessment period, this amounts to approximately 8.9 million hours of volunteering.

As per Benefit 3 (Section 2.2.3.3), volunteer hours are valued at the average hourly wage of $41.81[24] to capture the opportunity cost that members incur as a result of volunteering. This captures the opportunity cost of member time by calculating the comparative income that members could have earned while volunteering.[25]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Cost benefit analysis: outcomes

3.1 Discounted cash flow modelling

Discounted Cash Flow (DCF) modelling is undertaken to calculate the Benefit Cost Ratio (BCR) of SLSWA's services and operations. As noted in Section 2.2, the benefits and costs are expected to occur over the 25-year assessment period, between 2012-13 and 2036-37.

The BCR is based on 'present values', having been discounted at a real rate of 7.00% per annum (Section 3.3 investigates how the CBA results differ when a lower or higher discount rate is applied). The discounting applied reflects the time-value of money and uncertainty of future cash flows.

The BCR is calculated by dividing the total PV of estimated benefits by the total estimated PV of costs over the assessment period.

3.2 Analysis of outcomes

Over the assessment period, SLSWA is expected to contribute a total net value to WA of $7,040m (anticipated benefits net of costs). In addition, the benefits of SLSWA's services and operations relative to its costs yield a BCR of 14.71 over the assessment period. This means that, for every $1.00 invested into the organisation, a return of $14.71 is expected. Table 3.1 summarises the benefits and costs included in the CBA in PV terms. A number of sensitivity tests are also conducted in Section 3.3.

The total net value of SLSWA to WA is $7,040 million over the 25-year assessment period.

Table 3.1: Summary of the cost benefit analysis of SLSWA operations and services, PV terms*

Benefits	
BENEFIT 1: Coastal safety and life saving	$6,547m
BENEFIT 2: Education and training	$16m
BENEFIT 3: Member Utility	$991m
Total benefits	**$7,553m**
Costs	
Operational costs	$293m
Opportunity costs to volunteers	$221m
Total costs	**$513m**
BCR	**14.71**

Source: Deloitte Access Economics.
Note: The numbers in this table may not add exactly to totals, due to rounding.
* Discounted at 7.00%p.a. over 25 years

The high BCR is largely driven by the size of Benefit 1, which captures the value of coastal safety and lifesaving. Benefit 1 makes up 86.7% of total project benefits, or $6,547m (in present value terms over 25 years). The size of this benefit reflects the value of lives saved by SLSWA patrolling volunteers (as noted in Section 2.2.3.1).

Although the number of interventions made by surf lifesavers that would otherwise have resulted in a critical injury or fatality is small, the value attached to those interventions is large. As noted in Section 2.2.3.1, a human life is valued at $4.5 million in the study, in line with guidance from the Commonwealth Government.[26]

Notably, even the utility gained by members alone is sufficient to cover the operating and opportunity costs associated with the deriving those benefits. This clearly illustrates the strong net benefit generated by SLSWA and its volunteers to Western Australia.

A BCR of 14.71 is similar to previous research undertaken for Surf Life Saving Australia. A 2005 study[27] found a comparative BCR of 10.4, while a 2011 study[28] generated a BCR of 21.7.

3.3 Sensitivity testing

A number of tests are considered to gauge the sensitivity of the CBA result to key assumptions in the analysis. This allows the relative impact that these assumptions have on the net benefit to be evaluated. The sensitivity tests that are conducted include:

- TEST 1 – Varying the value of a life
- TEST 2 – Using historic growth for forecasting
- TEST 3 – Averaging historic operating costs

These sensitivities are described further below.

3.3.1 TEST 1 – Varying the value of a life

As noted in Section 1.2.1.1, each life saved by SLSWA volunteers and lifeguards has been valued at $4.5 million. However, analysis by Royal Life Saving Australia provides an alternative value of a life.

This research found the average cost of a fatal drowning to be $4.4 million in 2018 Australian Dollars after taking into account the value of hospital and medical costs as well as the prematurity of death based on the age of the drowning victim. As shown in Table 3.2, using this alternative measure of the value of a fatal drowning does not significantly affect the BCR.

For every $1.00 invested into SLSWA, a return of $14.71 is expected. This significant return on investment reflects the value of the critical lifesaving duties performed by SLSWA.

Table 3.2: Outcome of Test 1 – Varying the value of a life (PV terms)

CBA outcome	Department of the Prime Minister and Cabinet ($4.5m)	Royal Life Saving Society Australia ($4.4m)
Total benefits	$7,553m	$7,471m
Total costs	$513m	$513m
BCR	**14.71**	**14.55**

Source: Deloitte Access Economics.
Note: The numbers in this table may not add exactly to totals, due to rounding.

3.3.2 TEST 2 – Using historic growth for forecasting

As noted in Section 2.2, future growth in the number of rescues, preventative actions and total number of members are forecast for the purposes of the CBA using past population growth rates.

However, Table 3.3 illustrates the impact of using historic, observed growth rates in the number of rescues, preventative actions and membership numbers rather than population growth.

The large increase in the BCR is due to the larger anticipated growth rate in preventative actions having used the observed rate of growth in these actions rather than the (lower) rate of population growth.

The CAGR for preventative actions between 2012-13 and 2016-17 was 11.7%. This growth rate is not used in the analysis due to the volatility in the number of preventative actions (with annual growth varying over the period between -4.3% and 21.5%).

3.3.3 TEST 3 – Averaging historic operating costs

As noted in Section 2.2.4.1, operating costs are not expected to increase apart from inflation and therefore real operating costs have been kept constant over the forecast period. However, real operating expenditure does vary between 2012-13 and 2015-16[29] and therefore, Table 3.4 presents the results of using the average real historic operating costs for the forecast period.

Table 3.3: Outcome of Test 2 – Using historic growth for forecasting (PV terms)

CBA outcome	Using population CAGR	Using historic, observed CAGRs
Total benefits	$7,553m	$10,484m
Total costs	$513m	$516m
BCR	**14.71**	**20.31**

Source: Deloitte Access Economics.
Note: The numbers in this table may not add exactly to totals, due to rounding.

Table 3.4: Outcome of Test 3: Averaging historic operating costs (PV terms)

CBA outcome	Using last available year of data	Using average of historic expenditure
Total benefits	$7,553m	$7,553m
Total costs	$513m	$522m
BCR	**14.71**	**14.47**

Source: Deloitte Access Economics.
Note: The numbers in this table may not add exactly to totals, due to rounding.

References

Allen Consulting Group (2005), *Valuing an Australian Icon: The Economic and Social Contribution of Surf Lifesaving in Australia*

Australian Bureau of Statistics, *Various datasets*

Deloitte Access Economics (2018), *Surf Life Saving Western Australia: Member Research Report*

Department of Finance and Administration (2006), *Handbook of Cost-Benefit Analysis*

Department of the Prime Minister and Cabinet (2014), *Best Practice Regulation Guidance Note: Value of statistical life*

Department of the Prime Minister and Cabinet (2016), *Best Practice Regulation Guidance Note: Cost-Benefit Analysis*

Groenveld, PW et al (2005). *Cost-effectiveness of training unselected laypersons in cardiopulmonary resuscitation and defibrillation*

McCrindle (2014), *Job mobility in Australia*

PwC (2011), *What is the economic contribution of Surf Life Saving in Australia*

Royal Life Saving (2017), *A 13-year national study of non-fatal drowning in Australia*

Limitation of our work

General use restriction

This report is prepared solely for the internal use of Surf Life Saving Western Australia. This report is not intended to and should not be used or relied upon by anyone else and we accept no duty of care to any other person or entity. The report has been prepared for the purpose of estimating the economic value of SLSWA's activities to the Western Australian community.
You should not refer to or use our name or the advice for any other purpose

End notes

1. Department of the Prime Minister and Cabinet (2014), *Best Practice Regulation Guidance Note: Value of statistical life*
2. Allen Consulting Group (2005), *Valuing an Australian Icon: The Economic and Social Contribution of Surf Lifesaving in Australia*
3. PwC (2011), *What is the economic contribution of Surf Life Saving in Australia*
4. A preventative action refers to a situation in which a surf lifesaver intervenes in order to prevent the need for a potential rescue. For example, surf lifesavers may advise swimmers not to enter the water if the conditions are unfavourable, or may advise swimmers to leave the water if a shark is spotted in the area.
5. Allen Consulting Group (2005), *Valuing an Australian Icon: The economic and social contribution of surf lifesaving in Australia.*
6. These assumptions were developed in consultation with experienced Subject Matter Experts (SMEs) from SLSA as part of the 2005 study.
7. Department of the Prime Minister and Cabinet (2014), *Best Practice Regulation Guidance Note Value of statistical life*
8. Royal Life Saving (2017), *A 13-year national study of non-fatal drowning in Australia*
9. SLSWA Awards database
10. Historic data from 2006 onwards was used to estimate how many SLSWA members completed a first aid award for the first time. Historic data on the number of community first aid award completions was not available prior to 2012-13. Therefore, it has been assumed that 47.9% of community first aid awards are first time qualifications as this was the average percentage of SLSWA member first aid awards each year that were a first time qualification between 2012-13 to 2016-17.
11. Groenveld, PW et al (2005). *Cost-effectiveness of training unselected laypersons in cardiopulmonary resuscitation and defibrillation*
12. Deloitte Access Economics (2018), *Surf Life Saving Western Australia: Member Research Report*
13. McCrindle (2014), *Job mobility in Australia*
14. Adjusted to 2018 Australian Dollars. Source: ABS (November 2017), *Cat 6302.0*
15. ABS (2016), Census of Population and Housing
16. Estimates were required on the number of non-patrolling members between 2012/13 and 2014/15 as this data was not available in the annual reports. These estimates were based on the proportion of patrolling, non-patrolling and nipper members in 2015/16 and 2016/17.
17. Deloitte Access Economics (2018), *Surf Life Saving Western Australia: Member Research Report*
18. Responses to the member research survey found that 4% of all non-patrolling members volunteer as a trainer or assessor and that on average, those patrolling members that volunteer in this capacity spend 2.4 hours per week doing so. This data has been used to adjust the non-patrolling average hours of volunteering.
19. This is based on the 'full-time adult average weekly ordinary time earnings'. See Australian Bureau of Statistics (2018), Cat 6302.0

20. The number of patrol hours and hours spent in a trainer or assessor capacity has been excluded as the main benefit of these activities is already captured in Benefit 1 and Benefit 2. Therefore, it may be considered double counting to consider the benefit of the volunteering itself (member utility) as well as the output of the volunteering (lives saved and employment opportunities). However, it is difficult to capture the value of time spent in other volunteering capacities, such as competition officiating, to the community and therefore the member utility of these activities is considered.
21. Historic operational costs were not available at the club level for 2016-17.
22. SLSWA annual reports, 2012-13 to 2016-17
23. Deloitte Access Economics (2018), *Surf Life Saving Western Australia: Member Research Report*
24. This is based on an average weekly, full-time income of $1,567.90 and 37.5 hours of work per week. Source: Australian Bureau of Statistics (Nov 2017), Cat 6302.0
25. While Benefit 3 captures the utility only of non-patrolling activities, this cost takes into account the opportunity cost of all volunteering.
26. Department of the Prime Minister and Cabinet (2014), *Best Practice Regulation Guidance Note Value of statistical life*
27. Allen Consulting Group (2005), *Valuing an Australian Icon: The Economic and Social Contribution of Surf Lifesaving in Australia*
28. PwC (2011), *What is the economic contribution of Surf Life Saving in Australia*
29. Historic operating expenditure was not available at the club level for 2016-17. Therefore, in order to forecast operating expenditure the average real expenditure has been taken for the period for which historic data is available – between 2012-13 and 2016-17 for SLSWA and up to 2015-16 for clubs.

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