

# COST-BENEFIT ANALYSIS METHODOLOGY AND MODEL FOR PUBLICLY-OWNED AUCKLAND GOLF COURSES

## Final Report

For use in the development of Auckland  
Council's Golf Facilities Investment Plan

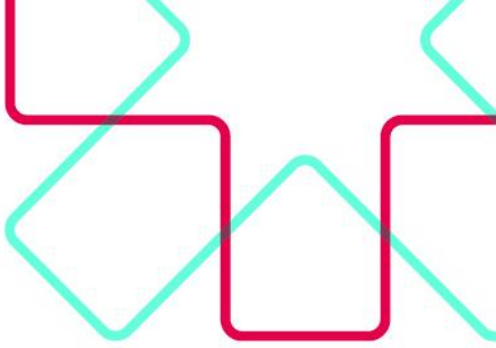
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# PREFACE

This report has been prepared for Auckland Council by Jason Leung-Wai and Tim Borren from MartinJenkins (Martin, Jenkins & Associates Limited).

MartinJenkins advises clients in the public, private and not-for-profit sectors, providing services in these areas:

- Financial and economic analysis
- Economic development
- Public policy
- Evaluation and research
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# EXECUTIVE SUMMARY

## Scope of this work

MartinJenkins has been engaged to develop an economic cost-benefit analysis (CBA) methodology and model, which can be applied to individual golf courses to assess the net benefit (or the net cost) of current land-use (status quo) as well as possible future scenarios where the land is used for other purposes, which may also include golf (enhanced-use). Undertaking a comprehensive social CBA of a residential development option, or similar, is outside the scope of this work.

This report presents the context, the methodology and the model, which has also been provided in an excel workbook. It also presents the application of the CBA model to one of the Council's golf courses – Clarks Beach. We have also applied the model to 11 of the other publicly-owned golf courses in Auckland. These are presented in a separate report.

The intention of the work presented in this report, the accompanying Excel model and the application of the model to Clarks Beach golf course, is to support the development of the Council's Golf Facilities Investment Plan.

## Context

Auckland Council has a significant interest in golf courses. It owns the land on which 10 golf courses operate. Of these, Auckland Council leases land to nine golf clubs and manages and operates the tenth. It also administers leases, on behalf of the Crown, to a further three golf clubs operating courses on Crown-owned land.

Auckland Council is cognisant there are potential alternative uses of the land, such as open-space or housing, that need to be considered.

To date, Auckland Council's development of its Golf Facilities Investment Plan has been framed around maximising the positive outcomes from Council's investment in golf through land it leases. However, preliminary work highlighted the value of taking a broader approach to its investment, which could include improving leases to provide for mixed-use of open space or consideration of alternative forms of support for golf other than leases.

The broader investment framework will enable decision-makers to balance priority outcomes and choose the investment tools most suited to achieving those outcomes. The framework will also enable Auckland Council to respond more flexibly to changes in the wider golf market and effectively access key information at a golf course-level when investment options might be considered.

## Auckland Golf CBA methodology and model

Initially, all benefits and costs associated with Auckland Council-owned golf courses were identified. We then determined whether we could reliably estimate the value of those benefits and costs. The



model consists of the benefits and costs that can be quantified. Where possible, we have provided an order of magnitude for those costs and benefits that cannot be reliably quantified.

Table 1 presents the costs and benefits quantified in the model, and those that remain unquantified.

**Table 1: Summary of benefits and costs included in the Golf CBA model**

	Benefits	Costs
Quantified in CBA model	<p><b>Public benefits</b></p> <ul style="list-style-type: none"> <li>• Physical health</li> <li>• Visitor expenditure (GDP generated)</li> <li>• Environmental:               <ul style="list-style-type: none"> <li>- Storm-water</li> <li>- Carbon sequestration</li> </ul> </li> </ul> <p><b>Private benefits</b></p> <ul style="list-style-type: none"> <li>• Recreation:               <ul style="list-style-type: none"> <li>- Benefit to golfers</li> <li>- Consumer surplus gain to recreational users</li> </ul> </li> </ul>	<p><b>Public costs</b></p> <ul style="list-style-type: none"> <li>• Net opportunity cost to Auckland Council:               <ul style="list-style-type: none"> <li>Opportunity cost to Auckland Council of retaining land (less rent revenue received)</li> </ul> </li> <li>• Lease administration</li> <li>• Rates remissions</li> <li>• Rates postponements</li> <li>• Funding and community grants from locally driven initiatives (LDIs)</li> <li>• Investment required to achieve outcomes</li> </ul> <p><b>Private costs</b></p> <ul style="list-style-type: none"> <li>• Course operating costs</li> <li>• Investment required to achieve outcomes</li> </ul>
Unquantified	<ul style="list-style-type: none"> <li>• Mental health</li> <li>• Social/community benefits</li> <li>• Ecological benefits</li> </ul>	<ul style="list-style-type: none"> <li>• Pesticide/fertiliser run-off and leachate</li> </ul>

The model provides for assessment of the **status quo** scenario in which the land continues to be leased exclusively for golf under present lease terms, and **enhanced-use** scenarios where the land is used for multi-functional recreational purposes (which can include golf) under new lease terms.

The CBA includes the opportunity cost to Auckland Council of retaining the land in public ownership, which allows decision-makers to weigh the benefits, both quantified and non-quantified, of public use against the total economic costs of the land in its current use.

The CBA model is structured so the assumptions around the enhanced-use option can be adjusted to compare expected benefits and costs across different mixed-use alternatives, facilitating Auckland Council’s decisions on what the optimal public use of the land is.

While the CBA provides the net quantified benefits (or net costs) of the two scenarios, we do not recommend a preferred option. This is because, in addition to the quantified and unquantified costs and benefits, there are a number of other factors that should be considered when making a decision on optimal land use.



The CBA model on its own does not provide all the information required to determine the preferred option. It is a tool that can be used to quantify a number of the costs and benefits associated with the status quo, and possible enhanced-use, in order to further inform Auckland Council's discussion of optimal land use.

It is clear that the opportunity cost of retaining land in public ownership is large, and is the most significant cost in the CBA of golf courses. However, this is the case for all Council-owned assets used by the public, including museums, libraries, sports fields and parks. We note that if the CBA was relied upon solely for decision-making, selling the land may be the preferred option in all instances, simply because the opportunity cost is so large. It should also be noted that the opportunity cost is derived from the valuation of the land if sold on the market, which is difficult to ascertain with accuracy.

The intention of the work is to support the development of the Council's Golf Facilities Investment Plan. The results of the CBA should be considered alongside other factors when making decisions as to optimal land-use of specific golf courses.

The model has been applied to Clarks Beach golf course as a case study. The results of the case study are summarised in the next section.



## Clarks Beach golf course case study

The characteristics and current use for Clarks Beach were identified and are presented in Table 2.

**Table 2: Clarks Beach Golf Club characteristics and current use**

Clarks Beach Golf Club	
<b>Course</b>	
Holes	18
Course type (based on "hierarchy" of courses)	Development
Land area, hectares	34.11
Market value of land (if sold for development)	\$140.1 million
Membership, 2018	420 playing members, 160 social members
<b>Community</b>	
Local board	Franklin
Population, 2013	6,222
Population forecast, 2028	9,129
Additional open space required in area	No
Other golf courses in the area:	Waiuku, 27 km drive away; Āwhitu, 59 km drive away
<b>Rounds played, 2015<sup>1</sup></b>	
Member rounds played, official	12,889
Estimated unofficial rounds played by members (10 percent of official member rounds)	1,289
Visitor (affiliated) rounds played	4,419
Visitor (non-affiliated) rounds played	4,160
Estimated total rounds played	22,757
<b>Financial, 2016</b>	
Revenue	\$687,401
Operating expenses (excluding depreciation)	\$649,222
Green fee per round, affiliated visitor	\$30
Green fee per round, non-affiliated visitor	\$45
<b>Lease</b>	
Rent paid to Auckland Council (p.a.)	\$1,415
Auckland Council lease admin cost	\$3,710
Rates remissions (annual)	\$0
Rates postponements	\$0
Local Development Initiative (LDI) funding	\$0
Lease expiry	2017

Source: Auckland Council, Clarks Beach Golf Club Annual Report 2016



1. Most recent data available, provided by Auckland Council. As there has been little growth in the number of rounds played in Auckland over the last three years, there is unlikely to be a material difference in the volume of golf course use between 2015 and present.

## Status quo scenario (exclusive use by golf club)

The status quo scenario assesses the benefits accruing both to the public and to individual golfers playing at Clarks Beach golf course against the costs of continuing to use the land exclusively as a golf course. Under the status quo scenario the:

- land continues to be used exclusively for golf by Clarks Beach Golf Club with the same terms of lease as exist currently
- number of club members and the number of golf rounds played remains constant at present levels over the 30-year time period.

As rounds played and costs are assumed to remain constant at present levels, the status quo CBA results are presented as a one-year snapshot in Table 3.



**Table 3: Clarks Beach golf course status quo CBA results, 1-year snapshot**

Annual	Status quo scenario
<b>Costs</b>	
<b>Public costs</b>	
Cost to AC of retaining golf course land:	
Opportunity cost to AC of retaining land	7,424,531
less rent revenue received	<u>1,415</u>
Net opportunity cost to AC of retaining land	7,423,116
Lease administration	3,710
Rates remissions	-
Rates postponements	-
LDI funding and community grants	-
<b>Private costs</b>	
Course operating costs	649,222
<b>Unquantified costs</b>	
Pesticide run-off	Unquantified
<b>Total annual quantified costs</b>	<b>8,076,048</b>
<b>Benefits</b>	
<b>Quantified benefits</b>	
Physical health	251,464
Visitor expenditure (GDP generated)	-
Environmental:	
Stormwater	83,000
Carbon sequestration	769
Recreation:	
Benefit to golfers (offsetting what they paid to play)	520,171
Consumer surplus gain to golfers	69,699
<b>Unquantified benefits</b>	
Mental health	Unquantified
Social / community benefits	Unquantified
Ecological benefits	Unquantified
<b>Total annual quantified benefits</b>	<b>925,103</b>
<b>Value unquantified benefits would need to be worth to break-even*</b>	<b>(7,150,945)</b>

\* Annual quantified costs less annual quantified benefits



## What the status quo results mean

Table 3 shows that when the Clarks Beach land is used exclusively by the golf club, quantified costs outweigh the quantified benefits by \$7.15 million each year, mainly due to the \$7.4 million<sup>1</sup> annual opportunity cost of retaining the land in public ownership.

For the investment in Clarks Beach to have a positive net benefit the value of the unquantified or intangible net benefits (social/community, ecological benefits and mental health benefits less the environmental cost of pesticide/fertiliser run-off) must exceed \$7.15 million per year. To give a sense of scale to this figure, based on the club's current 580 members, unquantified benefits would need to exceed \$12,300 per member per year. Put another way, based on the 22,757 rounds played per year, unquantified benefits would need to exceed \$314 per round played for the benefits to match the costs under the status quo scenario.

## Enhanced-use scenario (golf + other sports)

The hypothetical multifunctional enhanced-use scenario explores whether efforts to achieve better use would be beneficial from a cost-benefit perspective. The scenario is based on the Clarks Beach Community Hub Feasibility Report<sup>2</sup> produced by Visitor Solutions (2015). The intent of the scenario is to illustrate how the model can be used to aid the assessment of quantifiable benefits against investment.

**Table 4: Enhanced-use scenario assumptions**

Aspect	Assumption
Cycling/walking path	Used by 200 cyclists per week, with 2% growth per year.
Tennis courts with lighting	Used by 100 players per week.
Lawn bowling green	No additional users over and above current use.
Golf	Volume of golf rounds played remains constant at present level (ie no additional golf played as result of the development).
Lease	Annual rent paid by Clarks Beach Golf Club is raised to 2.5 percent of turnover <sup>3</sup> (\$17,185 based on current turnover, up from \$1,415 paid currently).

In this scenario, the 18-hole golf course continues to operate. The Clarks Beach Bowling Club relocates to the golf course site. Tennis courts, a 2.9 kilometre cycling/walking track around the coastal perimeter of the course, and a "community hub" building are built. The total cost is expected to be \$3.4 million.

Possible benefits of the enhanced-use scenario are:

<sup>1</sup> Auckland Council's weighted average cost of capital (5.3%) multiplied by the land valuation of \$140.1 million. The basis for this valuation is presented in Appendix 3, and discussed in the Costs section of this report.

<sup>2</sup> (Visitor Solutions, 2015)

<sup>3</sup> Āwhitu and Muriwai golf clubs currently pay rent of 2.5 percent and 2.75 percent of turnover respectively. This could be an aspect of lease agreements that Auckland Council looks to standardise across all courses in the region when leases are renegotiated.



- increased participation in sports and recreation
- improved financial sustainability of the Golf and Bowling clubs from shared costs
- land currently used by the Bowling Club is freed up for alternative uses (the land is currently leased to the club by Auckland Council and could be sold)
- increased social and community benefits.

The intention of this scenario is to demonstrate how the CBA methodology and model can be used to inform the assessment of multi-functional use of golf course land against the status quo. The results and discussion are not intended to be a judgement on whether or not the community hub proposal should go ahead, rather, it illustrates how the CBA model can be used to quantify health and consumer surplus benefits arising from additional use. Additional social and community benefits arising from the proposed community hub project are not captured explicitly within the model, but will likely be a significant consideration in assessing the merits of the proposal.





**Table 5: Additional costs and benefits arising from the enhanced-use scenario compared with the status quo, modelled over 30 years.**

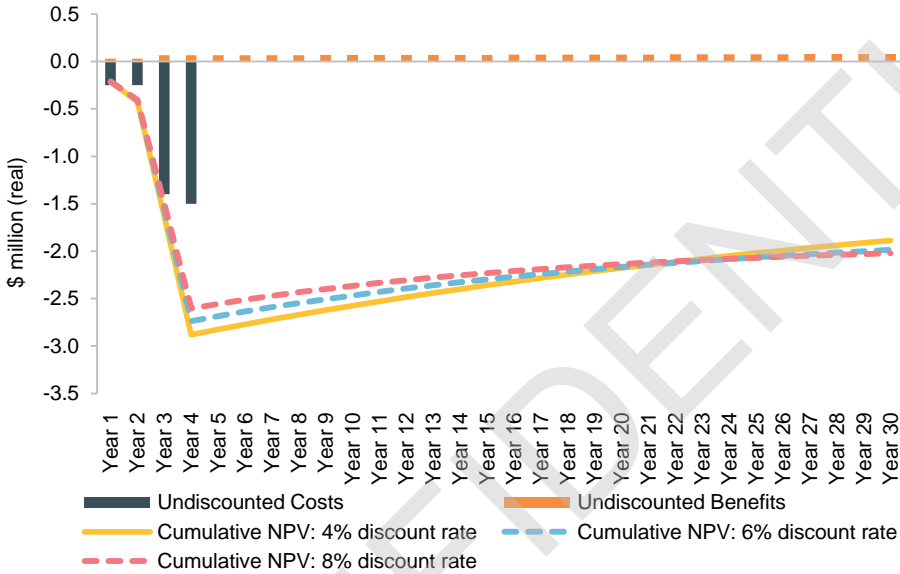
30-year time period	Marginal change (Enhanced use - Status quo)
<b>Costs, NPV</b>	
<b>Public costs</b>	
Cost to AC of retaining golf course land:	
Opportunity cost to AC of retaining land less rent revenue received	-
	278,096
Net opportunity cost to AC of retaining land	(278,096)
Lease administration	-
Rates remissions	-
Rates postponements	-
LDI funding and community grants	-
Investment required to achieve desired outcomes	1,528,852
<b>Private costs</b>	
Course operating costs	278,096
Investment required to achieve desired outcomes	1,528,852
<b>Unquantified costs</b>	
Pesticide run-off	Unquantified
<b>Total quantified costs (NPV)</b>	<b>3,057,703</b>
<b>Benefits, NPV</b>	
<b>Quantified benefits</b>	
Physical health	972,385
Visitor expenditure (GDP generated)	-
Environmental:	
Stormwater	-
Carbon sequestration	-
Recreation:	
Benefit to golfers (offsetting what they paid to play)	-
Consumer surplus gain by all recreational users	197,601
<b>Unquantified benefits</b>	
Mental health	Unquantified
Social / community benefits	Unquantified
Ecological benefits	Unquantified
<b>Total quantified benefits (NPV)</b>	<b>1,169,986</b>
<b>Net benefits (NPV)</b>	<b>(1,887,717)</b>
<b>Benefit:Cost ratio (BCR)</b>	<b>0.4</b>
<b>Internal rate of return (IRR)</b>	<b>(3%)</b>
<b>Payback period, years</b>	<b>N/a</b>



### What the enhanced-use scenario results mean

Table 5 shows the transition to enhanced-use of the Clarks Beach site will cost \$3.06 million in present value terms, while the additional quantified benefits generated from additional recreational use over 30 years are \$1.17 million, giving a net benefit (NPV) of -\$1.89 million. The Benefit-Cost Ratio (BCR) is 0.4 and the Internal Rate of Return (IRR) is -3 percent. Net costs exceed the net benefits over the time period as shown in Figure 1.

Figure 1: Enhanced-use scenario compared to the status quo



Based on the scenario modelled, the enhanced-use option will only break-even (compared to the status quo) if the additional unquantified social and community benefits generated exceed \$1.89 million in present discounted terms.

While the quantified net benefits are negative, this does not necessarily suggest that the enhanced-use option should not proceed. There will likely be additional social and community benefits resulting from the community hub development. Decision-makers would also need to consider other factors outside the CBA before deciding on how to proceed.

These results also do not include the potential savings to Auckland Council if it sold the land it currently leases to Clarks Beach Bowling Club, as Council has not stated its position on this. If the land was sold, these savings could be worth around \$700,000 in discounted present value terms, based on the current rateable value of the land<sup>4</sup>. This would bring the NPV of the enhanced-use scenario to -\$1.19 million.

The full case study for Clarks Beach is presented in a separate report.

<sup>4</sup> \$820,000 (Source: QV.co.nz).



# INTRODUCTION

Auckland Council is the largest investor in golf facilities in Auckland by way of its ownership of land on which 10 golf courses operate. Auckland Council leases land to nine golf clubs and manages and operates the tenth. Auckland Council administers leases, on behalf of the Crown, to a further three golf clubs operating courses on Crown-owned land.

Auckland Council is cognisant that there are potential alternative uses of the land being used for golf courses, including as open space or housing, that need to be considered.

MartinJenkins has been engaged to develop an economic cost-benefit analysis (CBA) methodology and model, which can be applied to individual golf courses to assess the net benefit (or the net cost) of current land-use as well as possible future scenarios where the land is used for other functions.

## Context

The intention of the work presented in this report, the accompanying Excel model and the application of the model to Clarks Beach golf course, is to support the development of the Council's Golf Facilities Investment Plan.

To date, Auckland Council's development of the Golf Facilities Investment Plan has been framed around maximising the positive outcomes from council's investment in golf through land it leases. However, preliminary work highlighted the value of taking a broader approach to its investment, which could include improving leases to provide for mixed use of open space or consideration of alternative forms of support for golf other than leases.

A broader investment framework would enable decision-makers to balance priority outcomes and choose the investment tools most suited to achieving those outcomes. The framework could also enable Auckland Council to respond more flexibly to changes in the wider golf market and effectively access key information at a golf course-level when investment options might be considered.

## Scope of this work

The scope of this work, as outlined in Auckland Council's *Request for Proposals*, is to:

- develop the methodology to calculate or attribute benefits from participating in golf (and potentially other sports/recreation) which it has not currently quantified
- assess and quantify as far as possible, the wider benefits of its investment in golf
- complete a comprehensive, economically defensible CBA of its investment in golf, which will be applied to Clarks Beach Golf Course as an example.

### Out of scope

Undertaking a comprehensive social CBA of a residential development option (or scenario) for Auckland Council-owned golf course land is outside the scope of this work.



## Deliverables from this work

The project consists of three deliverables:

- 1 **This report**, which outlines the various factors impacting Auckland Council's options for alternative uses of golf course land, presents a methodology for calculating and attributing quantifiable costs and benefits to the use of golf course land and discusses qualitative benefits including metrics that can be used to assess these.
- 2 The **CBA model in Microsoft Excel** for an individual golf course, which can be used to assess the costs and benefits of the status quo scenario and enhanced-use (multi-functional recreational use) scenarios.
- 3 A **case study of Clarks Beach Golf Course** applying the CBA model. The case study is presented as a separate report and the Excel model underlying the case study has been provided to Auckland Council.

## Purpose of the CBA methodology and model

A CBA is an analytical tool that estimates all costs and possible benefits that can be derived from a business opportunity or project. It takes into account both quantitative and qualitative factors for analysis of value for money and provides a basis for making comparisons with other similar proposals or options. All costs and benefits associated with the project are identified, quantified in monetary terms where possible, and then adjusted for when they occur to obtain a net present value (NPV) of the project.

Certain benefits, such as social or community benefits and some environmental benefits, are inherently difficult to measure and monetise. Similarly, certain costs, such as pesticide run-off, or congestion from development, are also difficult to measure and monetise. These benefits and costs are discussed qualitatively rather than being included directly in the CBA model, but should be kept in mind by decision-makers when interpreting the results of the CBA.

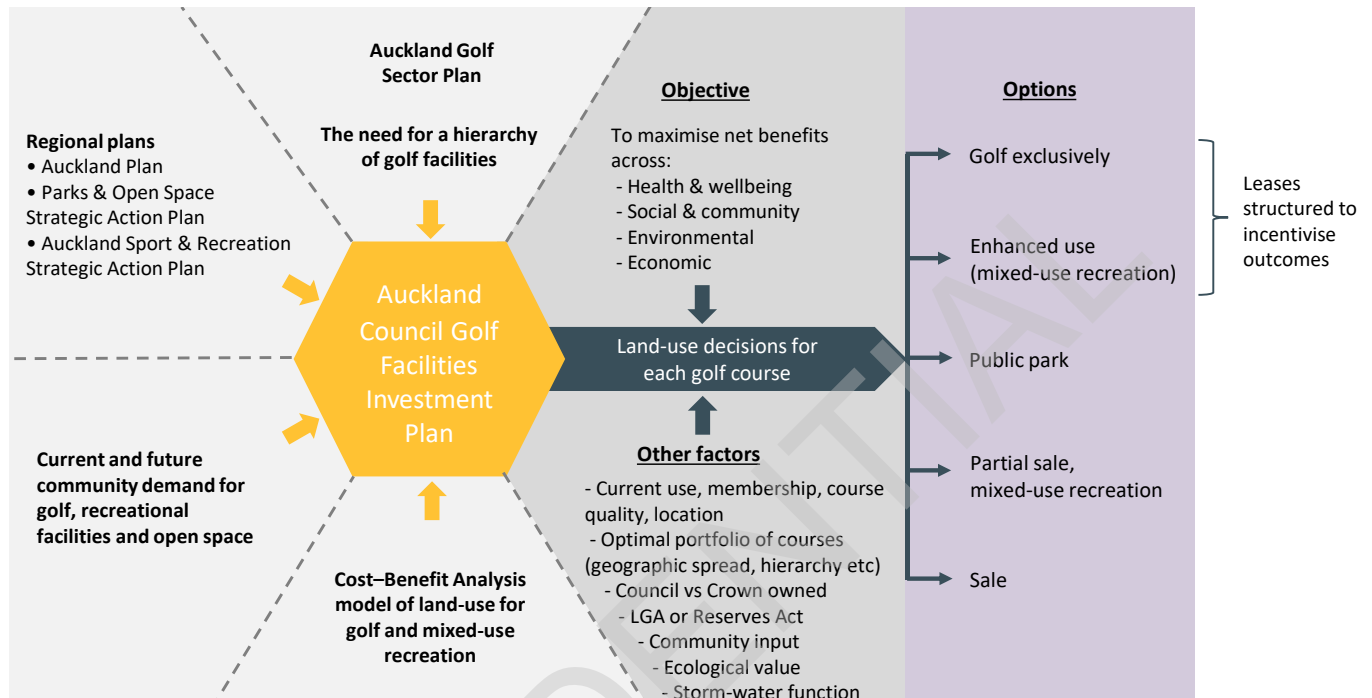
As noted by the Treasury, a CBA is first and foremost an organising principle, where all information is organised in a consistent and systematic way to support evidence-based policy decisions.

The CBA methodology and model presented in this report quantifies, in dollar terms, health, recreational (via consumer surplus) and economic benefits, as well as benefits associated with storm-water collection and carbon sequestration. Metrics that can be used to measure improvements in social and community benefits, and environmental sustainability of golf course operations are also discussed. The CBA methodology and model is intended to be an evolving process and the estimates provided in this paper are based on evidence that is readily available at present.

The CBA will be one of a number of inputs that feed into the Golf Facilities Investment Plan, as shown in Figure 2. The CBA is intended to assist Auckland Council to make future land use decisions, but will only be one of a number of factors considered.



**Figure 2: Auckland Council Golf Facilities Investment Plan**



Source: MartinJenkins

## Method

The CBA methodology and model was developed with reference to NZ Treasury's *Guide to Social Cost Benefit Analysis*<sup>5</sup> and Auckland Council's *Cost Benefit Analysis Primer*<sup>6</sup>.

As noted by the Treasury in their Guide to Social Cost Benefit Analysis

*A CBA is about organising in a logical and methodical way whatever information is available...the purpose of CBA is not to calculate "the" benefits and "the" costs, but to reduce the degree of uncertainty that would otherwise exist around benefit estimates.*

## Intervention logic

The intervention logic outlines the rationale for Council's investment and land-use/lease decisions. It also describes the short-, medium- and long-term outcomes arising from those investment decisions, and the broad benefit categories those outcomes fall into.

<sup>5</sup> (The Treasury, 2015)

<sup>6</sup> (Auckland Council, 2017)



## Consideration of alternative land-use options

We discuss the factors influencing whether or not Council selling the land is a viable alternative for the golf course in question. For a number of courses, there is a strong argument that it is in the best interests of the community for the land to be retained as a public space, for example, where the additional open space is required in the area. The factors influencing what the optimal use of the land might be if it is retained in public ownership are also discussed.

## Identification and valuation of benefits and costs

All costs and benefits associated with either continuing to use the land for golf, changing to a mix of recreational uses, or selling the land, were identified based on work already undertaken by Auckland Council and further discussions with them.

Where benefits were able to be quantified and monetised, a calculation methodology was developed to value the benefit. Where benefits were unable to be quantified, metrics were identified that can be used to assess changes in qualitative benefits over various scenarios.

The opportunity cost of retaining the land as a public asset was estimated based on current rateable land values of properties in close proximity to the golf course. The annual opportunity cost was treated as the effective financing cost to Auckland Council based on its average cost of debt<sup>7</sup>.

Course operating costs were included in the cost section of the analysis, as they represent resources used in generating the benefits. Course operating costs were taken from the Golf Club's most recent available financial statement.

The cost to Auckland Council of administering the leases and any rates remissions provided to a golf course were provided by the Council and are included in the analysis.

All cost estimates were verified with Auckland Council.

## CBA model of status quo and enhanced-use scenarios

The CBA is undertaken from an Auckland region-wide perspective. Costs and benefits are modelled over a 30-year period and discounted to present value using a discount rate of 4 percent, following guidance in the Council's CBA Primer. By comparison, NZ Treasury's default discount rate is 6 percent. The CBA period and discount rate can be easily adjusted within the model to allow testing of different time periods and rates.

The model provides for assessment of the **status quo** scenario in which the land continues to be leased exclusively for golf under present lease terms, and **enhanced-use** scenarios where the land is used for multi-functional recreational purposes (which can include golf) under new lease terms.

<sup>7</sup> The weighted average cost of capital (WACC) for Auckland Council has historically been around 5.3 percent and is expected to be the same for the 2017/18 financial year. It is expected to drop to around 5.2 percent in 2018/19. Note that the council also faces debt constraints (where they cannot borrow as much as they would like to fund all projects). Therefore, even if a business case generates a positive net benefit, it may not be the best use of scarce debt capital.



The CBA includes the opportunity cost to Auckland Council of retaining the land in public ownership, which allows its decision-makers to weigh the benefits, both quantified and non-quantified, of public use against the total economic costs of the land in its current use.

The CBA model is structured so the assumptions around the enhanced-use option can be adjusted to compare expected benefits and costs across different mixed-use alternatives, facilitating Auckland Council's decisions on what the optimal public use of the land is.

## Application of model to Clarks Beach golf course

The CBA was applied to Clarks Beach golf course as an example because the Club's lease has recently come up for renewal.

The model was applied to:

- 1 the status quo scenario
- 2 a hypothetical enhanced-use scenario, based on a report by Visitor Solutions (2015).

The parameters, inputs and assumptions around the model were developed with reference to:

- the characteristics of the course and club including current volume of use, membership, course type and quality, proximity to other golf courses, local population and growth projections
- the current rent paid by the golf club to Auckland Council
- the community need for additional open space, and
- a feasibility assessment including costings of creating a "community hub" at the golf course site including the relocation of local lawn bowls and tennis clubs.

The assumptions and results of the CBA for each scenario are presented. The case study was used to test the model and its usefulness as a tool for supporting investment decisions. The case study is presented in a separate report.

## Sensitivity analysis

The sensitivity of the CBA results to changes in the following variables were tested and are presented in Appendix 4 for the Clarks Beach Golf Course case study.

- Discount rate.
- Consumer surplus proportion.
- Health benefit attribution proportion.
- Cost of building the "enhanced use" facility.
- Sale price of golf course land.



## Consideration of other methods to maximise outcomes

The current golf portfolio is a result of legacy and the amalgamation of the Auckland councils. There are obviously some processes that can be standardised ie – lease terms, group responsibility for leases to improve efficiency and outcomes. However, what can be done is dependent upon the ownership, the current operational structure (council managed versus member managed), the current state of activity, and the desired changes.

Other options Auckland Council could consider include:

- Structuring golf club leases to incentivise improvements across the four benefit categories. For example, “ratchet leases” designed to incentivise clubs to improve outcomes such as environmental sustainability, increased membership and rounds played and more diverse member demographics. Lease cost could be reduced as the environmental sustainability improves (or alternatively increased if sustainability score worsens).
- Funding/support to improve environmental outcomes (this may need to be opened to non-Auckland Council-owned courses to encourage and maximise outcomes).

## Caveats

We have not attempted to undertake a CBA of a residential development scenario, nor have we sought to assess options involving partial sale of public land for housing, as this was outside the scope of this work.

## Auckland Council’s Golf Facilities Investment Plan

When complete, Auckland Council’s Golf Facilities Investment Plan will provide a framework that assists the Auckland Council to maximise the benefits from its golf facility assets.

As part of developing its Golf Facilities Investment Plan, Auckland Council has put out a discussion document. The document sets out the current situation regarding:

- ownership
- the benefits of golf
- what Council is trying to achieve with its golf portfolio, and
- how this fits or aligns with other Council strategies and regional issues.

The discussion document explores key questions on the role that golf courses play in delivering benefit to Auckland communities and how the Council can realise and improve desired benefits from their investment in golf.<sup>8</sup>

<sup>8</sup> Our report provides a methodology for quantifying the outcomes (or benefits) that golf courses achieve currently, and for quantifying the changes in these outcomes that may result from changes in the use of the Council-owned land golf courses currently occupy. The intention of this work is to further inform the Council’s views regarding whether golf courses are the best way of achieving these outcomes.





The discussion document identifies four areas where golf courses and associated activity deliver benefits to Auckland. These four areas are:

- health
- community and society
- ecology and environment
- regional economy.

While there is agreement as to what the benefits are in each of these areas, there is limited information on the value of these benefits, especially in areas beyond GDP and employment. Understanding the costs and benefits across all of these four areas is one of the decision support tools that will assist the Auckland Council.

Auckland Council has identified a range of outcomes for golf courses which will increase the benefits across the four areas noted above. These are:

- increased participation, particularly among women, young people and a wider range of ethnicities
- increased public access
- multi-functional golf courses that provide for other sport and recreation purposes
- a hierarchy of golf facilities
- more shorter golf courses including six-, nine- and 12-hole options.
- financial sustainability
- energy reduction and carbon neutrality.

Other related stakeholder plans such as the Auckland Plan, Auckland Council Parks and Open Space Strategic Action Plan, Auckland Sport and Recreation Strategic Action Plan, and the Golf Sector Plan for Auckland are summarised in Appendix 1.



# ALTERNATIVE LAND USE OPTIONS

## Rationale for Auckland Council's investment and land use decisions

Market failure occurs when there is an inefficient allocation of resources in a free market. Market failures can be viewed as scenarios where individuals' pursuit of pure self-interest leads to results that are not optimal from society's point of view.

Where market failures exist, central or local government intervention can be justified to encourage outcomes that are closer to what society would deem as optimal.

In this case, the question is whether, in the absence of Auckland Council's provision of golf facilities, an optimal or "efficient" quantity of golf would be played across all sectors of Auckland's society.

## Types of market failure that may apply to Council provision of golf courses in Auckland

It can be argued that the following market failures could apply to the golf market in Auckland:

- **Golf is seen as a merit good<sup>9</sup>.** Because some of the benefits of physical activity are realised at some time in the relatively distant future, people underestimate the benefit (and therefore their willingness to pay is reduced). People spending less-than-optimal time exercising is also related to their having "time-inconsistent" preferences<sup>10</sup>.

People may also underestimate (and therefore undervalue) the mental health benefits of playing an outdoor social sport.

Some of the public health costs avoided in the future by individuals being physically active are not costs that would have borne by the individual, therefore there is a degree of "moral hazard"<sup>11</sup> in peoples' decision-making regarding exercise.

For these reasons, it can be argued that increased physical activity should be encouraged via intervention.

- **Potential equity impacts.** If the Council did not provide land to golf courses at below-market rates, some of those golf courses would most likely not exist. Reduced supply of golf courses in Auckland would push the price of golf up, out of the reach of lower socioeconomic groups in society, who otherwise would have had the opportunity to participate.

<sup>9</sup> This could apply to all sports.

<sup>10</sup> For example, one's future self may want one to have exercised more than what one would see as optimal in the present.

<sup>11</sup> Moral hazard occurs when individuals have incentives to alter their behaviour when their risk, or the consequences of their decision, is borne by another party.



## Types of market failure that may apply to Council provision of green space/parks more generally

- **Parks have public good characteristics.** Big parks, such as Auckland Domain would be difficult to exclude people from if privately owned and operated commercially.
- **Peoples' use of parks can be viewed as a merit good.** There are physical and mental health benefits of people having easy access to parkland (contact with nature, open space, clean air, attractive landscapes etc). Green spaces also provide a habitat for plants and birdlife, which people value.
- **Urban parks and green spaces have positive externalities.** Parks provide temperature regulation in urban environments, the capacity to handle storm-water runoff in large rainfall events, and absorb CO<sub>2</sub> and create oxygen.

## Intervention Logic Framework

The Intervention Logic Framework, below, outlines in more detail the potential public-good outcomes arising from Auckland Council's provision of land for golf courses. This framework helps to inform and focus the thinking around the inputs, stakeholders, desired benefits, outputs and outcomes.



# Intervention Logic for Auckland Council investment in golf courses



## Potential alternative uses of the golf course land

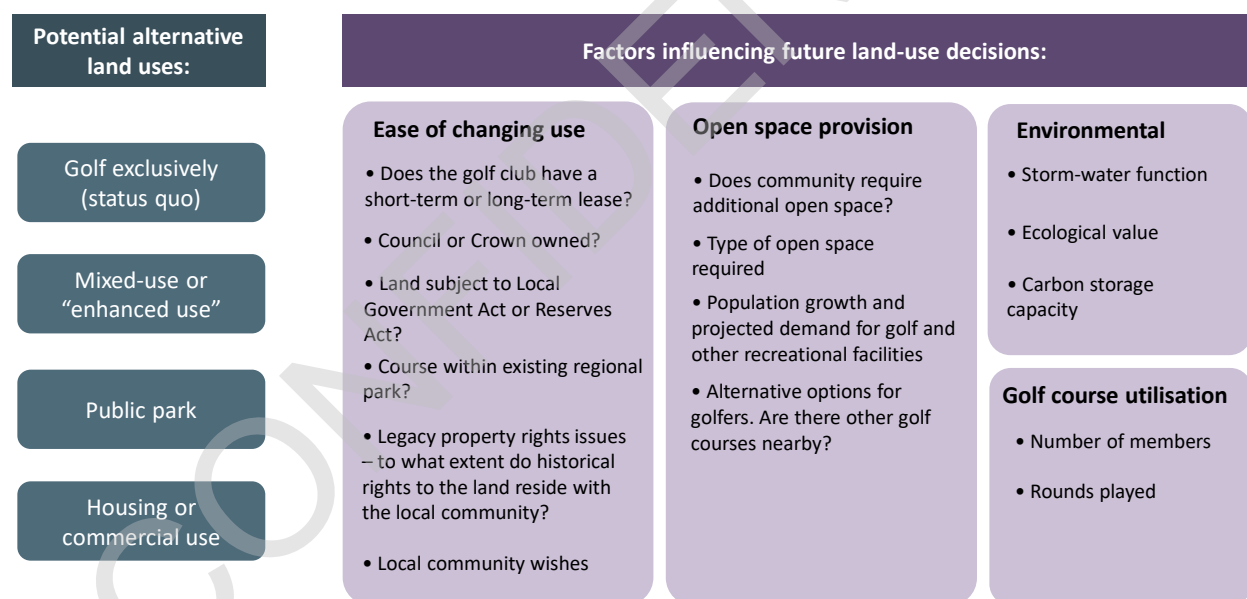
Figure 3 shows the factors that need to be considered for each golf course to determine potential alternative future land use options.

If a golf club's lease does not expire within the next ten years, for example, it could be assumed the land will continue to be used by the golf club in the foreseeable future. However, if Auckland Council was so inclined, it could potentially buy a golf club out of the lease agreement prior to the lease expiry date.

Another important factor is the community's current and future need for additional open space. If additional open space is required, then selling the land may not to be a sensible option.

An assessment based on the various factors can be used as a filtering mechanism to determine potential alternative uses.

**Figure 3: Factors to consider in determining potential future land-use**



Note: Remuera, Muriwai, Waitakere and Pupuke golf clubs have long-term leases (leases that expire in more than ten years). However, if Council was so inclined, it could potentially buy a golf club out of the lease agreement prior to the lease expiry date.

## The own versus sell decision

For a number of courses there is a strong argument that even if the land were no longer used exclusively for golf, it is in the best interests of the community for the land to be retained as a public asset - for example, in areas that are currently in need of additional open space, or will be in the future.



There are a number of factors that influence the decision to retain public ownership of the land or not. These include:

- location of the course and the proximity to other open spaces in the area, as well as the amount of existing open space
- the community's need or demand for open space or sports facilities now and in the future
- legislation underpinning Council's land ownership, the allowable land uses, and obligations the Council has should it decide to sell or repurpose the land (eight courses are owned under the Reserves Act 1977, while the other five courses are owned under the Local Government Act 2002). Furthermore, Āwhitu, Waitakere and Muriwai courses are within regional parks.
- town planning and zoning considerations such as the need to balance open space and built environment
- the option value of Council retaining full control over future land-use.

### Land subject to the Reserves Act

Section 15AA of the Reserves Act 1977 states that the administering body (in this case the Council) may authorise exchange of recreation reserve land for other land to be held for the same purpose if the administering body of the reserve is also the relevant local authority under the Resource Management Act (RMA). Any exchange would have to be publicly notified and the administering body would need to consider any submissions that were made. Section 15AA (5b) states the administering body can only grant an application for exchange of reserve land if it considers that the exchange would result in a net benefit for recreation opportunities for the community that uses, benefits from, or enjoys the reserve.

Therefore, if Council decides to repurpose the reserve land for residential development, it may be required to replace the land with a parcel (or parcels) of open space land in relatively close proximity so that there is no net cost in terms of recreational opportunities for the community that uses the reserve land presently. The cost to Council of replacing the reserve land would depend on the zoning of the proposed replacement land<sup>12</sup>.

### Identifying potential alternative land uses

For each golf course, Auckland Council has identified potential alternative use options it would like to consider. These are presented in Table 6, along with some key factors influencing the feasibility of changing to an alternative use.

An initial assessment (Auckland Council, 2017<sup>13</sup>) suggests that only five of the courses (Chamberlain Park, Pupuke, Remuera, Takapuna, and Waitemata) are in areas where there is a need for more open space or extra sports facilities.

<sup>12</sup> This potential cost has not been analysed further in this report or in the associated CBA model as a scenario in which Council sells the land for development purposes has not been specifically modelled.

<sup>13</sup> Excel workbook "2.1 Assessment of open space provision"



**Table 6: Potential alternative uses for golf courses**

Course	Owner ship	Lease expiry <10yrs	Legislation	Open space / mixed use required	Course type	Environmental value	Potential alternative uses identified by Auckland Council
Āwhitu	Council	Yes	LGA 2002	No	Development	Low	Agricultural, Park
Chamberlain Park	Council	Yes	LGA 2002	Yes	Development	Low	Mixed use recreation <sup>[1]</sup> , Housing
Clarks Beach	Council	Yes	Reserves Act 1977	No	Development	Low	Mixed use recreation, Housing
Great Barrier	Council	Yes	Reserves Act 1977	No	Introductory	Low	Mixed use recreation
Muriwai	Crown	No	Reserves Act 1977	No	Advanced	High (diverse ecology)	Mixed use recreation
Omaha	Council	Yes	LGA 2002	No	Development	Low	Housing, Mixed use recreation
Pupuke	Crown	No	Reserves Act 1977	Yes	Development	High (wildlife corridor)	Mixed use recreation
Remuera	Council	No	LGA 2002	Yes	Advanced	Low	Mixed use recreation, Housing
Takapuna	Council	Yes	Reserves Act 1977	Yes	Development	Low	Mixed use recreation, Housing
Waitakere	Council	No	Reserves Act 1977	No	Development	Medium-High	Mixed use recreation
Waitematā	Council	Yes	LGA 2002	Yes	Development	High (wildlife corridor)	Mixed use recreation, Housing
Waiheke	Council	Yes	Reserves Act 1977	No	Development	Low	Mixed use recreation <sup>[2]</sup>
Waiuku	Crown	Yes	Reserves Act 1977	No	Development	Low	Mixed use recreation

Sources: Auckland Council, (Sports Surface Design & Management, 2017)

1. Mixed use includes Park in this case.

2. Housing is not an option as there is no sufficient growth in the area at this point

Note: Āwhitu, Muriwai and Waitakere golf courses are within regional parks which makes changes to land use more difficult.



## Optimal use or mix of uses

The objective for the Golf Facilities Investment Plan is for better community outcomes to be achieved with the land golf courses occupy.

A recent study<sup>14</sup> suggests there is not an oversupply of golf courses in Auckland but rather a mismatch in the type of courses (an oversupply of development courses and an undersupply of introductory courses).

Therefore mixed-use could be an optimal alternative for some development courses which could be converted to introductory 9 or 12-hole courses, and the remainder of the land could then support mixed use. There is also the possibility for an 18-hole golf course to be retained but the existing facilities adapted so as to allow other forms of recreation as well.

The Council also has an option of not renewing or re-negotiating a golf club's lease and converting the land to public open space (parks).

As noted earlier, the alternative use options depend on the location of the course, the community's need for additional open space or sports facilities, the proximity to other golf courses and to existing public open spaces. The potential alternative uses for each of the courses is also dependent upon ownership and membership, utilisation, and the current qualities of each course.

## Ownership and membership

Of the 13 courses currently in the Auckland Council portfolio, three (Muriwai, Pupuke, Waiuku) are owned by the Crown, which would require a separate decision-making process. A further five are subject to the Reserves Act 1977, which limits the use of the land to activities relevant to the park's status and classification. However, it is possible for Auckland Council to swap reserve land for non-reserve land under provisions in the Act, so it does not necessarily preclude housing development as an alternative option.

The five remaining Council-owned courses (Āwhitu, Chamberlain, Omaha, Remuera, and Waitemata) are subject to the Local Government Act 2002.

Courses not managed by Auckland Council have a range of leasing arrangements with different terms, expiry dates and obligations. The length of existing lease terms varies from 5 to 99 years. The ability to change use is therefore made more complicated by the expiry date of leases (for example, Muriwai – 2094, Remuera - 2091, Waitakere – 2045, Pupuke - 2038).

Financial sustainability determines the ability of the membership to fund and implement activities that will have an impact on the benefits across all outcome areas including health, social, environmental and economic. The financial sustainability of golf clubs relate to the club's:

- volume and type of membership
- ability to attract casual users, and
- ability to derive other income from its assets.

<sup>14</sup> (O'Connor Sinclair, 2013)





## **Qualities of the course**

For some courses moving to a mix of recreational uses will achieve improved outcomes resulting from increased use and accessibility. However, decisions regarding which courses may be shortened (which would convert a “development” course to an “introductory” course) must take into account what the optimal “course hierarchy” in the Auckland region should be.

The O’Connor Sinclair (2013) report suggests there is an oversupply of development golf courses and an undersupply of introductory golf courses in Auckland. Ten of the Council-owned courses are development courses, of which only two are nine-hole courses. Great Barrier Golf Club is the only introductory level course, while Remuera and Muriwai are advanced courses.

The course hierarchy level, people’s demand for the type of golf course as well as demand for other open/recreational space, will inform what the optimal use is.

## **Ecology**

The inherent ecological value of a golf course, for example its value as a wildlife corridor or buffer to a reserve, will play a part in determining possible alternative uses.



# IDENTIFICATION AND VALUATION OF BENEFITS AND COSTS

## Benefits

In relation to golf courses, Auckland Council wants to deliver **outcomes** in the areas of:

- health, wellbeing and recreation
- social and community
- environment
- economic activity.

### Health, wellbeing and recreation

Health and fitness, enjoyment and social engagement are the main reasons people take part in sport and recreation.<sup>15</sup> The key benefits from golf are health cost savings from improved health outcomes and consumer surplus from recreational enjoyment.

Benefits	Measure	Possible solutions
<ul style="list-style-type: none"> <li>• Health</li> <li>• Recreational enjoyment (consumer surplus)</li> </ul>	<ul style="list-style-type: none"> <li>• Retain and attract more users</li> </ul>	<ul style="list-style-type: none"> <li>• Charging regime</li> <li>• Modified forms of golf</li> <li>• Multi-function / mixed-use courses</li> <li>• Hierarchy of facilities</li> <li>• Public access - walking, cycling, green space</li> </ul>

Health and recreational benefits are derived from the volume of use and improved experiences. The aim is therefore to increase the number of rounds played on the course. There are a number of solutions for this as shown in the table above.

Health benefits can also be achieved by more people using the facilities for recreational activity. It has also been suggested that nature is good for both physical and mental health. The idea of there being a premium for ‘green exercise’ – taking part in physical activities whilst at the same time being directly exposed to nature suggests a greater health return from golfing activity.

Recreation benefits (or consumer surplus) are the benefits to the individual from enjoying a round of golf.

<sup>15</sup> Active New Zealand Survey.



In attributing benefits, it is important to account for the proportion of users who would still have played golf (at another course) if the course in question did not exist.

## Health benefit

Improved health is a public benefit insofar as it reduces health costs to the public health system. It is known that physical activity is strongly associated with better physical and mental health outcomes, and that it plays a role in both preventing and managing chronic disease.

The attribution of physical activity to the avoidance of health costs is fairly well established. There is good international evidence that shows increased physical activity results in a reduction in morbidity and mortality risk. The literature also shows that the health benefits from physical activity are higher for older people, where the costs of addressing health issues are higher; and that the health benefits are greater when the physical activity occurs in larger areas (geographically or space-wise) or in defined sports activity, as users are more likely to undertake beneficial aerobic activity.

There are also mental health benefits associated with golf courses, and with open spaces more generally. These effects are twofold. First, physical activity has been shown to improve mental wellbeing and second, there is also well documented evidence of the mental health benefits arising from contact with nature and the natural environment<sup>16</sup>. A recent study of the value of green space in London found that the avoided mental health costs attributable to urban green spaces are 60 percent of the physical health costs avoided<sup>17</sup>. The authors noted it was unclear whether individuals benefit primarily from benefits derived from the aesthetic qualities of parks or due to increased recreation activities.

For mixed-use activity, in order to estimate the health benefits, the types of mixed use activity must be defined along with the anticipated volume of use by individuals. As noted below, the benefit for use of sports facilities will be different than the benefits for casual park use. The mix of activities will need to be determined for each course where a mixed use option is desirable.

## Calculation methodology

Avoided health costs as a result of increased physical activity is quantified for walking in the NZTA Economic Evaluation Manual<sup>18</sup>. For golf, we have applied the benefit for walking, which is valued at \$2.60 per km in avoided health costs.

The attribution proportion is an estimate reflecting that, in the absence of the golf course, we would expect individuals to still undertake some form of physical exercise as well as acknowledging that some golfers will play using a golf cart, reducing the distance walked. The base estimate for the attribution proportion used in modelling is 50 percent. However, the CBA results are sensitivity tested using an attribution proportion of 25 percent and 75 percent.

<sup>16</sup> (World Health Organisation, 2016)

<sup>17</sup> (Vivid Economics, 2017) and (White, Alcock, Wheeler, & Depledge, 2013)

<sup>18</sup> (New Zealand Transport Agency, 2016)



*Physical health benefit for golfers =*

*Annual number of rounds played (including estimated informal use)*

*Average distance walked per round (8.5 km for 18 holes<sup>19</sup>)*

*Attribution proportion (50%)*

*Health benefit (\$2.60 per km)*

*Physical health benefit for mixed-use facilities =*

*Annual number of users*

*Average distance covered during physical activity, ie jogging or cycling (km)*

*x Attribution proportion (50%)*

*x Value of physical activity per km in avoided health costs (\$1.30 per km for cycling, \$2.60 per km for jogging)*

The value of physical health benefits to informal park users (people that use the public space for a casual stroll or the like) is calculated as follows:

*Physical health benefit for casual park users =*

*Annual number of informal park users*

*x Average distance walked (km)*

*x Attribution proportion (50%)*

*x \$2.60 per km*

## **Recreation benefit**

The recreation benefit is the value of the enjoyment people derive over and above the “cost” of undertaking the activity. This benefit is captured by the individual and can be referred to as the “consumer surplus”.

We have estimated the consumer surplus as a proportion of the “price” paid to undertake the activity. The literature around consumer surplus arising from sports and recreation is largely focussed on attendance of sports events as opposed to participation. Two studies<sup>20</sup> have estimated the consumer surplus generated by attendance at sports events. Dividing the consumer surplus calculated in each study by the value of ticket sales shows the consumer surplus gained by attendees is approximately

<sup>19</sup> <http://www.insidegolf.com.au/news/how-far-do-you-really-walk-during-18-holes/>

<sup>20</sup> (ACT Auditor-General's Office, 2002) and (Access Economics, 2010).



20 percent of the price of entry. Based on this, for the purpose of the golf course CBA model we have estimated the consumer surplus derived from recreational activity is 10 percent of the price paid by participants, which in our view is a conservative assumption<sup>21</sup>.

**Calculation methodology for golfers**

Within the model, we have included the operating costs of the golf course on the cost-side, which are paid for mainly through member subscriptions and green fees, Because of this, for golfers, we have included the total benefit they derive from playing, which is made up of two components: a) the benefit that offsets the cost to them of playing and b) the “consumer surplus” they gain over and above the cost of playing. These two components are calculated separately for members, affiliated visitor and non-affiliated visitor players.

a) *Recreation benefit to golfers offsetting the cost to those golfers of playing<sup>22</sup>:*

*For members = annual value of subscriptions paid*

*For affiliated visitors = Affiliated visitor green fee x annual rounds played by affiliated visitors*

*For non-affiliated visitors = Non-affiliated visitor green fee x annual rounds played by non-affiliates*

b) *Consumer surplus benefit for golfers:*

*For members =*

*(Average cost per round<sup>23</sup> + Value of time taken to travel to and from golf course<sup>24</sup>)  
x Annual number of member rounds played  
x Consumer surplus proportion (10%).*

*For affiliated visitors =*

*(Affiliated visitor green fee + Value of time taken to travel to and from golf course)  
x Annual number of affiliated visitor rounds played  
x Consumer surplus proportion (10%).*

*For non-affiliated visitors =*

*(Non-affiliated visitor green fee + Value of time taken to travel to and from golf course)*

<sup>21</sup> This sensitivity of the CBA results to variations in this assumption is tested in the Clarks Beach Case Study.  
<sup>22</sup> Because these costs are effectively included in golf course operating costs on the cost-side of the analysis  
<sup>23</sup> Annual total value of member subscriptions paid divided by number of rounds played by members.  
<sup>24</sup> In the absence of data on this, we have assumed 30 minutes for the Clarks Beach case study.



*x Annual number of non-affiliated visitor rounds played*

*x Consumer surplus proportion (10%).*

### Calculation methodology for other recreational users

For other mixed-use (non-golf) activity, the recreation benefit (or consumer surplus) is calculated as the annual volume of activity, multiplied by a proxy for the price paid to undertake the activity, multiplied by a proportion of the price paid, which represents the consumer surplus gained by the participant.

For sports field and casual park users we have used the average time of use multiplied by the value of time to estimate the recreational benefit. The value of time, in this context, is used as a proxy for the “price” of undertaking the activity. Again, we have applied a consumer surplus equal to 10 percent of the value of an individual’s time. Informal park users are people that use the public space for a casual stroll, picnic or the like.

*Recreation benefit (consumer surplus) for sports fields and informal park users =*

*Number of users*

*x Average time of use (hrs)*

*x Value of time (15.54\$/hr<sup>25</sup>)*

*x Consumer surplus proportion (10%)*

## Social and community

Communities that participate in sport and recreation develop stronger social bonds, are safer places and the people who live in them are generally healthier and happier than places where physical activity is not a priority.

Benefits	Measure	Possible solutions
<ul style="list-style-type: none"><li>• Sense of community/ belonging</li><li>• Safety</li><li>• Reduced crime</li></ul>	<ul style="list-style-type: none"><li>• Number of members</li><li>• Diversity of membership - gender, age, ethnicity</li><li>• Number of other users</li></ul>	<ul style="list-style-type: none"><li>• Reduce barriers to join</li><li>• Create something more than a golf club - community hub</li><li>• Public access - walking, cycling, green space</li></ul>

Golf courses provide a place for people to meet, mix and socialise, giving members of the club a sense of community. A literature review by (Atherley, 2006) concluded that sport can help provide social benefits such as community integration, cohesion, cooperation, and community identity and

<sup>25</sup> Public holiday value of time, NZTA Economic Evaluation Manual (2016)



pride. It is also evidenced that sport participation can contribute to crime reduction, community safety, education and lifelong learning, and environmental benefits.

In the case of some golf clubs, social benefits extend beyond golf players, as social memberships are offered which give members who do not play golf (or are no longer playing golf) access to the clubhouse, bar, restaurant and social events at the club. A good example of this is Clarks Beach Golf Club whose social members make up almost 30 percent of total membership.

If a club has a large number of retired members, who otherwise may experience a degree of isolation, the social benefit of the club could be assessed as high.

While there is undoubtedly a benefit both to the individual and the community from people being part of a club, our literature review did not identify a suitable method to quantify the value of community and social cohesion, so it will be assessed qualitatively in the analysis.

We see the benefits as being a function of the number of members and the type of members. The premise is that a growing, more diverse membership gives rise to greater social and community benefit.

In addition, there are benefits that arise from other types of social/community activities that occur using golf club facilities that are not necessarily related to membership of the golf club. Examples of this are charity events held at the course, functions such as weddings, school balls or local school prize-giving events, and meetings held by community organisations at the clubrooms.

**Social and community benefit metrics**

**Growth in membership**

$$\frac{\textit{Current membership} - \textit{Previous membership}}{\textit{Previous membership}}$$

**Diversity measures**

Ethnicity

$$\frac{\textit{European membership}}{\textit{Total membership}}$$

The target for ethnicity would be that the members of the club represent the ethnic makeup in the community. For example, if European accounts for 80 percent of the community population, then the target for the course would be 80 percent European membership.

Gender

$$\frac{\textit{Male membership}}{\textit{Total membership}}$$

The long-term target should be that a club’s membership is half male and half female.



## Age

$$\bar{x} = \frac{1}{n} \sum x_i$$

where  $x$  = age,  $n$  = total membership.

The target should be to reduce the average age of members, as the current golf membership base is aging and clubs will need to attract younger members to remain sustainable. Clubs and Council may also wish to incentivise certain age groups, possibly targeting youth memberships and members with young families. Note that this measure may conflict with the desirability of supporting members who are no longer able to play golf because of their age, so subsets of age may be appropriate.

Another area that will likely deliver community and social results is family memberships.

## Environmental

Golf courses represent significant areas of green space that can serve as ecological and biodiversity corridors, act as buffers to natural environments and provide a valuable storm-water function. A well-managed golf course can provide substantial ecological and community benefits.

Benefits	Measure	Possible solutions
<ul style="list-style-type: none"><li>• Biodiversity</li><li>• Ecological connections</li><li>• Green buffers</li><li>• Urban storm-water runoff</li></ul>	<ul style="list-style-type: none"><li>• Environmental and operational sustainability score</li></ul>	<ul style="list-style-type: none"><li>• Ecosystem management plan</li><li>• Water sensitive design</li><li>• Carbon positive and energy net zero</li></ul>

Several of the golf courses make significant contributions to the environment, whether as buffers to nature reserves (more than half of the council-owned or managed courses) or as corridor links for wildlife; and/or have ecological significance due to the plant and wildlife species. There may also be courses that have cultural or historical significance.

Several of the courses are in urban or built up areas and provide a storm-water function. Similarly, in urban areas there is often demand or a need for open recreation spaces, which influences the options for alternative use.

The environmental benefits are different for each golf course depending upon their location, current ecology and level of environmental activity. Investment to improve environmental outcomes would have different impacts on different courses.

Under the mixed-use or park option these benefits would still be realised, so it would only be a consideration if the golf course was to be converted to housing or non-open-space development.

## Ecological benefits

Golf courses provide a habitat for a variety of plant and bird species. Golf courses can also provide other benefits such as buffers to natural reserves, or corridors to allow the movement of species. It is extremely difficult to measure ecological benefits.





## Storm-water runoff

Golf courses act as collection and dispersal areas for surface water and-runoff, mitigating flood risk in a major weather event, particularly in urban areas.

The costs for dealing with storm-water in Auckland are large. Following the 100-year floods in March 2017, Infrastructure New Zealand's chief executive Stephen Selwood estimated the cost of bringing Auckland's storm-water infrastructure up to an appropriate standard would cost \$15 - \$20 billion over 30 years, and that Watercare have in excess of \$5 billion in capital works planned.<sup>26</sup> In the first four years since Auckland Council was formed, storm-water spending rose from \$40 million (part year) to \$83 million, before rising to \$119 million in 2015. In 2017, the budget is \$150 million.<sup>27</sup>

A 2011 Council report noted it would cost \$5.4 billion to improve the storm-water system over the next 50 years and \$4.5 billion to cope with growth.<sup>28</sup>

Therefore, storm-water collection and dispersal is a valuable function. However, it is expected that if land was used for alternative use, eg housing, the cost of ensuring hydraulic neutrality would be borne by the developer.

For the purposes of the CBA model, we have estimated the value of the storm-water function provided by the golf course as the cost of the equivalent infrastructure required if the land was developed for housing, including both capital and maintenance costs.

The storm-water infrastructure required for the recent Scott Point subdivision in Hobsonville will cost \$9.34/m<sup>2</sup> on average<sup>29</sup>, which we have used as the basis for estimating the value of the storm-water function a golf course provides.

<sup>26</sup> <https://www.radionz.co.nz/news/national/326509/water-infrastructure-needs-billions-in-investment>

<sup>27</sup> [http://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=11818146](http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11818146)

<sup>28</sup> Ibid.

<sup>29</sup> Phil Jaggard, Director, MPS Ltd.



## Calculation methodology

*Annual storm-water function value =*

*Annualised capital cost:*

*Estimated catchment area serviced by the golf course (m<sup>2</sup>)*

*x Indicative cost of equivalent storm-water infrastructure (\$10 per m<sup>2</sup>)<sup>30</sup>*

*x Auckland Council weighted average cost of capital (5.3%)*

*+ Annual maintenance costs (3% of total capital cost)*

## Carbon sequestration

Grass, trees and other plants in golf courses or parks store carbon dioxide and produce oxygen in the process of photosynthesis. The storage of carbon is valuable as the world works towards reducing carbon emissions to combat climate change. We have used the value of carbon dioxide, via New Zealand's emissions trading scheme<sup>31</sup>, as a proxy for the value of the carbon storage capability provided by a golf course compared to a scenario where the land is built up.

Turfgrasses sequester up to 800 lbs of CO<sub>2</sub> per acre per year (0.896 tonne per hectare per year)<sup>32</sup> whereas a 25 year-old forest sequesters 1,760 lbs of CO<sub>2</sub> per acre per year. (1.975 tonne per hectare per year)<sup>33</sup>.

## Calculation methodology

*Carbon sequestration benefit =*

*Area turfgrass (Ha) x CO<sub>2</sub> absorption rate of turfgrass (tonnes per Ha per year)*

*x CO<sub>2</sub> price (\$ per tonne of CO<sub>2</sub> equivalent)*

*+*

*Area trees (Ha) x CO<sub>2</sub> absorption rate of trees (tonnes per Ha per year)*

*x CO<sub>2</sub> price (\$ per tonne of CO<sub>2</sub> equivalent)*

In the CBA model, the calculation above uses the forward price path of carbon dioxide in New Zealand used by MBIE in its energy modelling, which is based on projections by the International Energy Agency<sup>34</sup>.

<sup>30</sup> Phil Jaggard, Director MPS Ltd., Average cost of storm-water infrastructure (including wetlands and vegetated swale) in recent Scott Point (Hobsonville) subdivision was \$9.34 per square metre.

<sup>31</sup> In December 2017 was \$20.80 per metric tonne, Retrieved from <https://www.comtrade.co.nz/> on 18 December 2017. Price of carbon dioxide equivalent.

<sup>32</sup> (Qian & Follett, 2002)

<sup>33</sup> (Tufts University Office of Sustainability, 2017)

<sup>34</sup> (Ministry of Business, Innovation and Employment, 2016)



## Environmental measures

Would a rural coastal golf course contribute less benefit to the environment than an urban golf course in a built-up area? Would a course with native plantings contribute more than one with exotic trees? To include all environmental benefits into the CBA we would need to be able to value ecology and biodiversity. However, due to the variability of courses and a dearth of applicable quantitative measures<sup>35</sup>, we were unable to incorporate some environmental benefits into the CBA. To assess the current and potential benefits for golf courses we have explored an alternative approach.

There has been an environmental assessment/sustainability audit of each of the Auckland Council golf courses. This assessment was completed in 2017 and captured measurable data across a range of environmental factors including ecology, landscape and cultural heritage, energy consumption and waste reduction, water resource, climate change and pollution prevention.

The analysis identified the existing environmental value and the potential of each site to contribute towards the wider ecological value of the region.

The analysis can be used to identify the potential for increasing environmental benefits and targets can be set for each course as part of the desirable portfolio. Looking at the results across the 11 courses that were audited, the average target score was 84 percent and the average current score was 65 percent. This suggested that courses were delivering, on average, 77 percent of potential environmental benefits. Individual performance ranged from 68 percent to 89 percent of potential target scores suggesting that environmental benefits could be increased.

Under the “enhanced use” scenario, goals would be set for each course to deliver environmental outcomes closer to their potential target, for example 90 or 95 percent of the target score.

### Measures

Percentage of target score achieved (environmental and operational sustainability score). Table 7 shows current and target scores.

**Table 7: Environmental and operational sustainability scores**

Course	Current score	Target score	Current proportion of target
	%	%	
Āwhitu	64	82	0.78
Chamberlain Park	67	84	0.80
Clarks Beach	62	85	0.73
Great Barrier	72	82	0.88
Muriwai	62	91	0.68
Omaha	76	92	0.83
Pupuke	66	92	0.72
Waitakere	57	84	0.68

<sup>35</sup> There have been no studies in New Zealand that have valued or monetised the environmental impacts of golf courses or open spaces in general.



Course	Current score %	Target score %	Current proportion of target
Waitematā	65	83	0.78
Waiheke	59	74	0.80
Waiuku	64	72	0.89

Source: Sports Surface Design & Management (2017)

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## Economic activity

The investment and operational expenditure on golf courses generate jobs. Further, they support economic activity through attracting visitors to the region.

Benefits	Measure	Possible solutions
<ul style="list-style-type: none"><li>• Increased employment and GDP</li></ul>	<ul style="list-style-type: none"><li>• Expenditure by visitors</li></ul>	<ul style="list-style-type: none"><li>• Hierarchy of golf facilities</li><li>• Events strategy</li></ul>

### Visitor expenditure

Expenditure generated by visitors attracted to the Auckland region to play golf represents a direct economic benefit attributable to golf courses in the CBA.

From a tourism expenditure perspective, the ability to increase visitors depends upon the type of course (generally advanced courses) and the local and regional events strategies in place to attract visitors to the course. The economic benefit would therefore be limited to those courses that have the characteristics that will attract visitors (ie advanced courses) and possibly host golf events.

Other economic benefits that have often been considered in relation to golf courses include operational expenditure and investment in golf courses and the associated GDP and employment that results, and the impact on property values. However, these are not directly applicable to the CBA as discussed below.

### Operational expenditure and investment

Golf courses contribute to the regional economy. Operating the golf clubs and investment in new golf courses generate activity that results in jobs and GDP. However, from a CBA perspective, the expenditure on golf course construction and operations is considered a use of resources (a cost) as opposed to an economic impact. Jobs derived from golf activity should not be captured as a benefit per se in a CBA. Therefore, these economic impacts need to be considered alongside the CBA as opposed to being incorporated within the CBA.

To provide perspective, the operations of the 36 golf courses in Auckland contributed about \$43 million in direct expenditure, generating about \$20 million in GDP and employing about 370 people. Golf courses in the Auckland Council portfolio accounted for close to 35 percent of that activity<sup>36</sup>.

As noted in the various reports, there is a need for courses to have a more market-focused approach to operations as opposed to member-focused. Financial sustainability should be a priority to allow all of this to happen. This requires a management plan that ensures appropriate investment and operations to increase revenue and to broaden that base beyond attracting and retaining existing members. This will also likely occur within a broader framework of a golf facility hierarchy and a preference for mixed use and increased public access.

<sup>36</sup> (MartinJenkins, 2016)



## Property values

Some studies<sup>37</sup> have found a positive correlation between house prices and proximity to golf courses. In many cases, proponents for golf courses have included the additional value of these properties in their economic impact analyses. However, internal Auckland Council research<sup>38</sup> suggests this effect is not very significant and, in some cases, not apparent at all across Auckland golf courses.

Further, alternative uses such as mixed-use recreation or park, would probably have a similar positive impact on house prices.

Finally, conversion of golf courses to housing may reduce the value of previously adjacent houses as there is no longer the aesthetic benefit. However, this could be offset to the extent that new housing developments are designed sympathetically and include open space in the area.

## Economic benefit calculation methodology

Of the golf courses operating on Auckland Council-owned or managed land, it is likely that only Muriwai and Remuera are of sufficiently high standard to attract a significant number of visitors to the Auckland region.<sup>39</sup> For these courses, the benefit to the region from spending by visitors playing the course should be included in the CBA. For the other courses, visitor expenditure generated may not be zero, but is thought to be small enough to be negligible in the context of the overall benefits associated with the golf course.

Total revenue from visitor spending is made up of the cost of intermediate goods/services, the cost of imported goods, taxes, wages and profits. For the purpose of the CBA, only the wages and profit components of visitor spending should be included as benefit to the region. According to the Tourism Satellite Accounts<sup>40</sup> (Table 14), wages and profit make up 37 percent of total visitor revenue.

*Visitor spending benefit =*

$$\begin{aligned} & \text{Number of rounds played by visitors from outside the region} \\ & \times \text{Attribution proportion (100\%)} \\ & \times \text{Average daily spend for domestic visitors (\$238<sup>41</sup>)} \\ & \times \text{GDP component (37 percent)}. \end{aligned}$$

<sup>37</sup> (Do & Grudnitski, 1995), (Nicholls & Crompton, 2007)

<sup>38</sup> Paul Marriot-Lloyd (Parks and Recreation Policy Team Manager, Auckland Council)

<sup>39</sup> According to the MartinJenkins (2016) economic impact report, Remuera and Muriwai were classed as category 1, where 60 percent of visitors could have golf as the trip motivator. In that report, the price of visitors' green fees was used to infer course quality and ability to attract visitors.

<sup>40</sup> (Statistics New Zealand, 2016)

<sup>41</sup> Average daily spend of domestic golfers was calculated in (MartinJenkins, 2016) report *Economic Impact of Golf Courses in Auckland*. The calculation was based on data reported in (New Zealand Tourism, 2013) *New Zealand International Golf Tourism Strategy*.



## Costs

The costs included in the CBA model for each scenario are both the cash costs and opportunity cost of the potential alternative use. If, for a given golf course, housing is a potential alternative use, the value of selling the land is used as the opportunity cost.

### Opportunity cost

As Auckland Council does not charge golf clubs market rent for the lease of Council-owned land, there is an opportunity cost to the region of using the land for golf (and for any public use). This opportunity cost represents the largest component of the Council's investment in golf.

The opportunity cost to the Council can be viewed in two ways. It can be viewed as the foregone market rate of return the Council, as the land-owner, could expect to receive on the asset. Equivalently, it can be viewed as a finance cost the Council bears by owning the asset, rather than selling the asset and using the proceeds of the sale to pay down debt. We have used the latter as the basis for calculating the annual opportunity cost in the CBA.

Under the status quo and enhanced use scenarios, the annual opportunity cost is calculated by multiplying the Council's weighted average cost of capital (5.3 percent) by the value of the land if it were sold on the open market. Table 8 presents the land valuation of each course and the corresponding annual opportunity cost.

In 2015, a report<sup>42</sup> to Auckland Council calculated land valuations for the 13 golf courses by applying the average rateable land value (per square metre) of nearby residential properties to 70 percent of the golf course land area. The rationale behind this methodology is that, if developed, 30 percent of the land would be used for roads and other infrastructure so applying the average rateable land value to 100 percent of the land area would overstate the price a developer would be willing to pay.

For consistency, we have used these valuations adjusted to reflect land-price increases in the area of each golf club between 2014 and 2017<sup>43</sup>. See Appendix 3 for details of this calculation.

**Table 8: Opportunity cost of Council-owned land leased to golf clubs**

Golf course	Land valuation, 2015 (\$ millions)	Average RV % change in the area 2014-2017 <sup>(1)</sup>	Land valuation, 2018 (\$ millions)	Annual opportunity cost, 2018 <sup>(2)</sup> (\$ millions)	Annual rent paid to Council by club (\$)
Remuera	517.1	42%	734.2	38.9	130,000
Chamberlain Park	315.6	49%	470.2	24.9	N/a (course operated by Council)
Pupuke	307.2	48%	454.7	24.1	2,658
Takapuna	229.7	49%	342.3	18.1	31,500

<sup>42</sup> (Cameron Partners, 2015)

<sup>43</sup> Based on the change in Council rateable values between 2014 and 2017. Auckland Council, retrieved from: [http://ourauckland.aucklandcouncil.govt.nz/media/15804/graphs-for-report\\_spreads\\_with-table-title\\_2017.pdf](http://ourauckland.aucklandcouncil.govt.nz/media/15804/graphs-for-report_spreads_with-table-title_2017.pdf)



Golf course	Land valuation, 2015 (\$ millions)	Average RV % change in the area 2014-2017 <sup>[1]</sup>	Land valuation, 2018 (\$ millions)	Annual opportunity cost, 2018 <sup>[2]</sup> (\$ millions)	Annual rent paid to Council by club (\$)
Waitematā	212.2	36%	288.6	15.3	1
Muriwai	173.1	45%	250.9	13.3	38,713
Omaha Beach	146.6	37%	200.9	10.6	5
Clarks Beach	98.7	42%	140.1	7.4	1,415
Waiuku	36.1	47%	53.1	2.8	1,050
Waiheke	34.6	66%	57.4	3.0	1
Āwhitu	34.0	28%	43.5	2.3	1,500
Waitakere	14.5	35%	19.6	1.0	435
Great Barrier Island	13.5	11%	15.0	0.8	500

Source: Auckland Council, MartinJenkins calculations.

Note. The 2015 land valuation was an Auckland Council calculation based on 2014 average rateable values (RV) of nearby properties. The 2018 valuation is a MartinJenkins calculation adjusting the Council's 2015 valuation for land-price increases over the period. See Appendix 3 for details.

1. Auckland Council, retrieved from: [http://our.auckland.aucklandcouncil.govt.nz/media/15804/graphs-for-report\\_spreads\\_with-table-title\\_2017.pdf](http://our.auckland.aucklandcouncil.govt.nz/media/15804/graphs-for-report_spreads_with-table-title_2017.pdf)

2. Auckland Council's weighted average cost of capital (5.3%) multiplied by the Land valuation, 2018.

As Council receives some rent revenue from golf clubs, the net annual opportunity cost in the CBA is the opportunity cost less rent revenue received by Council.

## Other costs to Auckland Council or other public costs

### Lease administration

On average, the cost to Auckland Council in terms of the amount of time taken in the administration of golf club leases is \$3,710 per year for each club<sup>44</sup>. Across the 13 golf clubs, lease administration costs Council \$48,230 in total.

### Rate remissions

Annual rates remissions given to golf clubs in Auckland total \$97,262, though this figure relates entirely to privately owned golf clubs (ie clubs that are not on Council-owned land). It should be noted that 80 percent of the total rates remissions are given to one golf club.

### Rates postponements

Two privately owned golf clubs have a rates postponement scheme agreement with Auckland Council. The cumulative value of these rates postponements stood at \$726,193<sup>45</sup> in 2016/17. The two golf clubs receiving rates postponements have both sold or intend to sell land over time. One of the clubs sold

<sup>44</sup> Auckland Council

<sup>45</sup> Ibid. This figure excludes interest charges.





land in the 2014/2015 financial year with a purchase price of \$5,268,825. Upon the sale, rates postponements of \$21,484 were returned to council (5.7 percent of total amount owing).

### **Locally driven initiatives (LDI) funding and community grants**

Auckland Council currently provides \$25,000 annually for community golf-related initiatives.

### **Operating and maintenance costs of Chamberlain Park**

The operating and maintenance costs of the Council-managed Chamberlain Park golf course were \$800,492 in 2015/16, however, these costs were more than offset by \$1,016,355 in revenue generated by the golf course.

### **Costs associated with loans Council has made to golf clubs**

Council incurs minor administrative costs associated with two outstanding loans to golf clubs. The balance of the loans total \$12,000 and mature within the next two years.

### **Golf course operating costs**

The operating costs of the golf course are included in the CBA. The operating costs are generally funded by member subscriptions, green fees and pro shop, bar and restaurant trading surpluses. While these are private costs, they are included in the analysis as the costs represent resources used in generating the benefits resulting from golf course use. We have assumed operating costs increase at the same rate as general inflation. For simplicity, where a course remains 18 holes, we assume the operating costs will be the same under the enhanced use scenario as the status quo.

### **Investment required to achieve desired outcomes or change in land use**

Under the enhanced use scenario, the investment required in order to achieve the desired outcomes are included in the cost section of the analysis. For example, the costs (capital and operating) of building a new multi-functional sports field or walking and cycling paths in order to increase utilisation of the land for recreational purposes. These are likely to be public costs. If the Council took over management of some of the land, there would also likely be additional maintenance costs incurred, such as for mowing and general upkeep of the grounds. These costs can easily be identified through the Council's existing maintenance contracts for parks it administers.

### **Environmental cost of pesticide/fertiliser run-off and leachate**

The potential for golf courses to have an adverse environmental impact due to the use of pesticides, fertiliser and water in maintaining turfgrass is well documented, though the literature does not provide a method for monetising these costs. The level of environmental impact and associated sustainability of each Auckland Council-owned golf course has been assessed<sup>46</sup>.

<sup>46</sup> (Sports Surface Design & Management, 2017)



The costs associated with pesticide/fertiliser run-off and leachate depend on the type of turfgrass, the level and type of pesticide or fertiliser use, the extent of run-off and the local ecology and water systems. We have not been able to monetise this cost in the CBA model, but improvements by golf courses in this area can be monitored and measured using the “environmental sustainability score” mentioned earlier in the environmental benefits section of this report.

## Costs of congestion

In densely populated urban areas, the conversion of golf course land to housing could put pressure on existing transport infrastructure with increased congestion as a result. While decision-makers should be aware of this potential public cost of a residential development scenario, analysing such a scenario is outside the scope of this work.



# SUMMARY

All costs and benefits relating to the use of Auckland Council-owned land for golf courses, are summarised in Table 9. These are categorised by those that we have provided a methodology for quantifying and monetising, and those that are unquantified but should be treated qualitatively in the discussion of options. Decision-makers considering the alternative options for the use of golf course land will need to weigh the benefits, both quantified and unquantified, against the costs.

The CBA model has been applied to Clarks Beach Golf Course as a case study, which is presented in a separate report. The model will also be applied to each of the remaining 12 golf courses for the status quo scenario based on current usage.

**Table 9: Summary of benefits and costs included in the CBA model, which will be applied to each of the 13 publicly-owned golf courses in Auckland**

	Benefits	Costs
Quantified in CBA model	<p><b>Public benefits</b></p> <ul style="list-style-type: none"> <li>• Physical health</li> <li>• Visitor expenditure (GDP generated)</li> <li>• Environmental:               <ul style="list-style-type: none"> <li>- Storm-water</li> <li>- Carbon sequestration</li> </ul> </li> <p><b>Private benefits</b></p> <ul style="list-style-type: none"> <li>• Recreation:               <ul style="list-style-type: none"> <li>- Benefit to golfers</li> <li>- Consumer surplus gain to recreational users</li> </ul> </li> </ul> </ul>	<p><b>Public costs</b></p> <ul style="list-style-type: none"> <li>• Net opportunity cost to AC:               <ul style="list-style-type: none"> <li>Opportunity cost to AC of retaining land (less rent revenue received)</li> </ul> </li> <li>• Lease administration</li> <li>• Rates remissions</li> <li>• Rates postponements</li> <li>• LDI funding and community grants</li> <li>• Investment required to achieve outcomes</li> <p><b>Private costs</b></p> <ul style="list-style-type: none"> <li>• Course operating costs</li> <li>• Investment required to achieve outcomes</li> </ul> </ul>
Unquantified	<ul style="list-style-type: none"> <li>• Mental health</li> <li>• Social/community benefits</li> <li>• Ecological benefits</li> </ul>	<ul style="list-style-type: none"> <li>• Pesticide/fertiliser run-off and leachate</li> </ul>



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# APPENDIX 1: RELATED STAKEHOLDER PLANS AND STRATEGIES

## Related stakeholder plans

Auckland Council's Golf Facilities Investment Plan also needs to align with other plans and strategies within Auckland Council and within the golfing sector. Several plans underpin the Golf Facilities Investment Plan and the solutions identified above; and will influence what can and should be done going forward. The four key plans related to the Golf Facilities Investment Plan are the Auckland Plan, Parks and Open Space Strategic Action Plan, Auckland Sport and Recreation Strategic Action Plan, and the Golf Sector Plan for Auckland. The vision and goals/objectives for each of these plans are outlined below.

### Auckland Plan

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A world-class city where talent wants to live

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- Prioritise and optimise the region's recreation and sport facilities, public open space use and the capability of recreation and sport organisations.
- Ensure recreation and sport facilities keep up with the needs of a growing population with rapidly changing demographics.
- Actively collaborate and partner to maximise joint resources.
- Maximise the contribution of recreation and sport to Auckland's economic prosperity.
- Maintain and extend an integrated network of quality open space access across the region that meet community needs and provide a diverse range of recreational opportunities.

### Parks and Open Space Strategic Action Plan

- Protecting and conserving our parks and open space and improving peoples' ability to understand and appreciate their value and significance.
- Ensuring our parks and open space can meet the needs of our growing population.
- Creating a green network across Auckland by linking our parks, open spaces and streets.
- Using our parks and open spaces to create a green resilient and prosperous city with thriving communities.



As expected, the goals/objectives of the Parks and Open Space Strategic Action Plan has a high degree of consistency with the Auckland Plan.

## Auckland Sport and Recreation Strategic Action Plan

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### Aucklanders: more active, more often

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- Develop sports code facility plans and assess opportunities to integrate facilities across codes.
- Review investment into asset management of council recreation facilities and club facilities located on council land.
- Monitor trends in participation to identify the needs of new, growing and emerging recreation and sport activities and review facility and network plans to meet these new demands.

## Golf Sector Plan for Auckland

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### Enriching Auckland through golf

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- Deliver a recognised, unique contribution to the cohesion of Auckland's communities.
- Provide physical and mental health benefits to Aucklanders and contribute significantly to more Aucklanders being active more often.
- Provide a unique, positive impact on Auckland's environment.
- Have a significant, positive impact on Auckland's economy.

Although 13 courses in the region operate on Auckland Council and Crown-owned land (which means Auckland Council potentially has some influence over the outcomes these courses achieve), these courses only represent a third of the golf courses in Auckland, and likely less of the total rounds of golf played in the region. Further, the majority of the advanced courses<sup>47</sup> are non-Council owned. For the full benefits from golf to be realised within the region, the Council's Golf Facilities Investment Plan needs to involve and leverage the private golf courses.

<sup>47</sup> Titirangi, The Grange, Royal Auckland, Gulf Harbour, Remuera and Muriwai.



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# APPENDIX 2: CBA PARAMETERS

The CBA parameters presented are for the Clarks Beach Golf Club Case Study.

<b>Golf Course</b>		Clarks Beach	
CBA time period, years		30	
<b>Discount rate</b>			<b>Source</b>
Standard discount rate		4%	Auckland Council CBA Primer
Alternative discount rate 1		6%	Auckland Council CBA Primer
Alternative discount rate 2		8%	Auckland Council CBA Primer
Auckland Council Weighted Average Cost of Capital (WACC)		5.30%	Auckland Council
<b>Course</b>			
Holes		18	
Course type (based on "hierarchy" of courses)		Development	As defined by O'Connor Sinclair 2013 report
Land area, hectares		34.11	Auckland Council
GIS valuation (for rating)		\$2,830,000	Auckland Council
Valuation as open space		\$2,830,000	Auckland Council
<b>Community</b>			
Local board		Franklin	
CAU population, 2013		6,222	Auckland Council
CAU population forecast, 2028		9,129	Auckland Council
Additional open space required in area		No	Auckland Council Excel workbook "2.1 Assessment of open space provision"
Other golf courses in the area:			
Waiuku GC, km drive from Clarks Beach		27	Google Maps
Āw hitu GC, km drive from Clarks Beach		59	Google Maps
			Google Maps



	Scenario	
	Status quo	Enhanced use
<b>Membership</b>		
Playing members, 2016	413	
Social members, 2016	181	
<b>Play</b>		
Member rounds played, 2015	12,889	
Visitor (affiliated) rounds played, 2015	4,419	
Visitor (non-affiliated) rounds played, 2015	4,160	
Estimated total rounds, 2015	21,468	
Estimated additional non-official golf played (% of official member r	10%	10%
<b>Financial, golf club</b>		
Revenue	\$687,401	
Operating expenses (excl depreciation)	\$649,222	\$649,222
Membership income (ie total subscriptions paid by members)	\$200,401	
Green fee per round, affiliated player	\$30	
Green fee per round, non-affiliated player	\$45	
<b>Lease</b>		
Rent paid to Auckland Council (p.a.)	\$1,415	\$17,185
Auckland Council lease admin cost	\$3,710	\$3,710
Rates remission (annual)	\$0	\$0
<b>Opportunity cost of land</b>		
Value if land sold on open market		\$140,085,483

#### Source

Clarks Beach Golf Club Annual Report 2016  
Clarks Beach Golf Club Annual Report 2016

Auckland Council Excel workbook "5.1 Auckland Council Golf Course Participation rates"  
Auckland Council Excel workbook "5.1 Auckland Council Golf Course Participation rates"  
Auckland Council Excel workbook "5.1 Auckland Council Golf Course Participation rates"  
Auckland Council Excel workbook "5.1 Auckland Council Golf Course Participation rates"

Clarks Beach Golf Club Financial Statement, 2016. Note: excludes depreciation and loss on dispersal of assets.

Clarks Beach Golf Club website  
Clarks Beach Golf Club website

Auckland Council, for Enhanced use scenario, rent paid by club is assumed to equal 2.5% of turnover

Auckland Council

Document provided by Auckland Council showed all rates remissions are to privately owned golf courses.

Cameron Partners (2015), *Auckland Council: Review of alternative sources of financing*, pp 52. Adjusted to 2018 values based on Auckland Council rates increases: [http://ourauckland.aucklandcouncil.govt.nz/media/15804/graphs-for-report\\_spreads\\_with-table-title\\_2017.pdf](http://ourauckland.aucklandcouncil.govt.nz/media/15804/graphs-for-report_spreads_with-table-title_2017.pdf)

See MartinJenkins (2018) *Auckland Council Golf Facilities Investment Plan: Cost-Benefit Analysis Methodology and Model* for details on this valuation.



**Health and wellbeing**

(including consumer surplus gain from recreation)

	Scenario		Source
	Status quo	Enhanced use	
<b>Consumer surplus</b>			
Consumer surplus proportion	10%		10% was applied in the NZ Cycle Trails CBA, adjusted from 20% applied by MBIE in their Major Events CBA model, which was based on 2 studies: 1) ACT Auditor-General's Office, (2002) V8 Car Races in Canberra – Cost and Benefit performance audit report, Canberra ACT, 2) Access Economics (2010) Cost Benefit Analysis of the 2022 FIFA World Cup, Report for Department of Resources, Energy, and Tourism, Canberra ACT
Average golfers' travel time from home to course and back, hrs	0.50		Estimate
Average value of time, \$ per hour	\$15.54		Public holiday value of time, NZTA Economic Evaluation Manual 2016
<b>Golf use</b>			
Average distance walked per round, km	8.50		<a href="http://www.insidegolf.com.au/news/how-far-do-you-really-walk-during-18-holes/">http://www.insidegolf.com.au/news/how-far-do-you-really-walk-during-18-holes/</a>
Value of walking, in saved health costs, per km	\$2.60		NZTA Economic Evaluation Manual 2016
Health benefit of walking attributable to the golf course	50%		Estimate. This assumes people currently playing golf would only walk half as far in the absence of the golf course
Rounds played growth rate (p.a.)	0%	0%	
<b>Multifunctional use</b>			
<b>Cycling:</b>			
Value of cycling, in saved health costs, per km	\$1.30		NZTA Economic Evaluation Manual 2016
Cyclists per day	40		Estimate
Cyclists growth rate, p.a.	2%		Estimate
Average distance cycled per user, km	2.90		Assuming a cycle path is created around the coastal perimeter of Clarks Beach golf course
Health benefit of cycling attributable to the golf course land	50%		Estimate
Cycling average speed, km/hr	15.00		



### Sports fields:

Value of jogging/running, in saved health costs, per km	\$2.60	Based on NZTA Economic Evaluation Manual 2016, conservatively estimated to be the same as walking per kilometre.
Number of new sports fields	0	Not applicable in Clarks Beach case as community is assessed as not requiring additional sports facilities currently
Number of trainings/games per week per field	18	Assumes 2 trainings per day Monday-Friday, and 8 games played over Saturday-Sunday
Average number of participants per training/game	20	Estimate
Average distance run/jogged per person per training/game, km	5	Estimate. This assumes that if a sports field is constructed, an average user of the field would run 5 km per training or game played on the field.
Health benefit of other sports attributable to the golf course land	50%	Estimate
Average time spent playing other sports, per person, per training/game, hours	1.5	Estimate

### Tennis court

Number of users per day	20	Estimate
Average distance run/jogged per person per use, km	5	Estimate
Average time spent playing tennis, per person, per use, hours	1	Estimate
Health benefit attributable to the golf course land	50%	Estimate

### Mental health benefits

Mental health benefits as proportion of physical health benefits	60%	White, Alcock, Wheeler & Depledge (2013). <i>Would you be happier living in a greener urban area? A fixed effects analysis of panel data.</i> Psychological Science Journal. The results in the above study were used in an analysis of the benefits of public greenspace in London by Vivid Economics (2017) <i>Natural capital accounts for public green space in London.</i>
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## Environmental

	Scenario	
	Status quo	Enhanced use
Environmental and operational sustainability score	62%	81%
Target environmental and operational sustainability score	85%	85%
Proportion of target	0.73	0.95

Inherent ecology value	Low
Stormwater collection/dispersal value	Low

### Carbon sequestration

CO2 absorption rate of turfgrass, tonnes per Ha per year	0.896
Carbon absorption rate of shrubs/trees, tonnes per Ha per year	1.975
Current value of Carbon, \$ per tonne	\$20.80
Proportion of site, turfgrass	90%
Proportion of site, shrubs/trees	10%

### Stormwater

Indicative cost of stormwater infrastructure, \$ per m2 catchment area	\$10
Clarks Beach catchment area served by the golf course land, Ha	10
Annual maintenance cost of stormwater infrastructure	3%

### Source

Sports Surface Design & Management (2017). *Auckland Council Golf Courses: Key Environmental Issues*.  
 Sports Surface Design & Management (2017). *Auckland Council Golf Courses: Key Environmental Issues*.  
 Calculation: current/target score. Assumes under "Enhanced use" scenario the golf course reaches 95 percent of target sustainability score over time

eg. Course may form part of a wildlife corridor, or buffer for a nature reserve  
 eg. Courses in heavily developed urban areas will be more valuable in coping with stormwater runoff than a more rural course.

Qian & Follett (2002). *Assessing soil carbon sequestration in turfgrass systems using long-term soil testing data*.  
 Agronomy Journal.

<http://sustainability.tufts.edu/carbon-sequestration/>

Retrieved from <https://www.comtrade.co.nz/> on 18 December 2017. Price of carbon dioxide equivalent, NZD.

Estimate based on Google Earth

Estimate based on Google Earth

Phil Jaggard, Director, MPS Ltd. Based on average cost per square metre for stormwater at Scotts Point development.

Estimate

Estimate



## Economic

### Attracting visitors to region

Ability of course to attract out-of-region visitors to Auckland	Low
Are national events played at the course?	No
Visitor (affiliated) rounds played, 2015	4,419
Proportion of affiliated visitors that are from outside Auckland	0%
Average daily spend, domestic visiting golfers	\$238
GDP component of visitor expenditure	37%

### Source

MartinJenkins assessment

Assumes that a golf course rated as having "High" ability to attract out-of-region golfers, then 40% of affiliated visitor rounds are played by out-of-region visitors. "Medium" = 20%, "Low" = 0%.

Average daily spend of domestic golfers was calculated in MartinJenkins (2016) report *Economic Impact of Golf Courses in Auckland*. The calculation was based on data in New Zealand Tourism (2013) *New Zealand International Golf Tourism Strategy*.

Tourism Satellite Account, Statistics New Zealand (2016)

## Social and community

### Merger with the Clarks Beach bowling club and Tennis club and creation of "Community Hub"

Clarks Beach golf club combining with Clarks Beach bowling club, as outlined in the Community Hub Feasibility Report (2015), would see the bowling club relocate to the golf club site permanently.

While this may result in a small increase in the volume of golf and lawn bowls played, we expect the major value will be the social and community benefit of more connections between people within the Clarks Beach community.

The better utilisation of shared facilities will also likely improve the financial sustainability of both clubs by reducing costs.

A short term development option of a half-size artificial bowling green built at the golf club site is expected to cost \$100,000 - \$150,000.

The long term development option proposed in the feasibility report includes a 800 sqm community hub building, full size bowling green and a hard court with lighting. Expected cost is \$3.3 - \$3.5 million.



# APPENDIX 3: GOLF COURSE LAND VALUATION

Club	Auckland Council calculations, 2015					MartinJenkins adjustment calculations, 2018				
	Land area (m2)	Rates-system land value (\$)	Avg. land value of nearby residential properties, 2014 (\$/m2)	Raw land value, 2015 (\$)	Adjusted land value (70% of area), 2015 (\$)	Area	Average % change in RV, 2014-2017*	Raw land value, 2018 (\$)	Adjusted land value (70% of area), 2018 (\$)	Annual opportunity cost** (\$)
Aw hitu Golf Club	188,000	196,546	258	48,527,775	33,969,443	Āw hitu	28%	62,115,552	43,480,886	2,304,487
Chamberlain Park Golf Club	390,000	Unclear - overlapping notices	1,156	450,841,247	315,588,873	Mount Albert	49%	671,753,459	470,227,421	24,922,053
Clarks Beach Golf Club	384,571	2,830,000	366	140,931,070	98,651,749	Clarks Beach	42%	200,122,119	140,085,483	7,424,531
Great Barrier Island Golf Club	249,000	340,000	78	19,336,284	13,535,399	Great Barrier	11%	21,463,276	15,024,293	796,288
Muriw ai Golf Club	865,475	1,650,000	286	247,241,312	173,068,918	Muriw ai	45%	358,499,902	250,949,931	13,300,346
Omaha Beach Golf Club	450,000	5,500,000	466	209,481,349	146,636,944	Omaha	37%	286,989,448	200,892,614	10,647,309
Pupuke Golf Club	400,453	10,844,267	1,096	438,872,513	307,210,759	Campbells Bay	48%	649,531,320	454,671,924	24,097,612
Remuera Golf Club	635,586	18,500,000	1,162	738,681,908	517,077,335	Remuera	42%	1,048,928,309	734,249,816	38,915,240
Takapuna Golf Club	372,000	17,112,000	882	328,169,938	229,718,957	Takapuna	49%	488,973,208	342,281,246	18,140,906
Waiheke Golf Club	182,000	1,499,625	272	49,420,007	34,594,005	Waiheke	66%	82,037,211	57,426,048	3,043,581
Waitakere Golf Club	320,205	14,659	65	20,722,125	14,505,488	Bethells Beach	35%	27,974,869	19,582,408	1,037,868
Waitemata Golf Club	263,099	Not stated in Geomap systems	1,152	303,142,396	212,199,678	Devonport	36%	412,273,659	288,591,561	15,295,353
Waiuku Golf Club	300,000	2,750,000	172	51,596,256	36,117,379	Waiuku	47%	75,846,496	53,092,548	2,813,905

\* Source: Auckland Council. [http://ourauckland.aucklandcouncil.govt.nz/media/15804/graphs-for-report\\_spreads\\_with-table-title\\_2017.pdf](http://ourauckland.aucklandcouncil.govt.nz/media/15804/graphs-for-report_spreads_with-table-title_2017.pdf)

\*\* Based on Auckland Council Weighted Average Cost of Capital (WACC) of 5.3 percent.



# APPENDIX 4: SENSITIVITY ANALYSIS TABLES

The figures presented in this section are from our application of the CBA model to Clarks Beach Golf Course, based on a hypothetical enhanced-use scenario.

## 1. Discount rate sensitivity

**Table 10: Sensitivity to discount rate: CBA results for the marginal change between the hypothetical enhanced use scenario and the status quo scenario. 30-year time period, all costs and benefits in present value terms.**

Marginal change (Enhanced use - Status quo)	Discount rate:		
	4% (standard)	6%	8%
Total benefits, \$ NPV	1,169,986	919,458	742,328
Total costs, \$ NPV	3,057,703	2,905,381	2,764,068
Net present value (NPV), \$	(1,887,717)	(1,985,923)	(2,069,229)
Benefit:Cost ratio	0.4	0.3	0.3
Internal rate of return (IRR)	(3%)	(3%)	(3%)
Payback period, years	N/a	N/a	N/a





## 2. Consumer surplus proportion sensitivity

Table 11: Sensitivity to consumer surplus proportion: CBA results for the status quo scenario (annual)

Status quo scenario (annual)	Consumer surplus proportion:		
	5%	10%	20%
<b>Costs</b>			
<b>Total annual quantified costs</b>	<b>8,076,048</b>	<b>8,076,048</b>	<b>8,076,048</b>
<b>Benefits</b>			
<b>Quantified benefits</b>			
Physical health	251,464	251,464	251,464
Visitor expenditure (GDP generated)	0	0	0
Environmental:			
Stormwater	83,000	83,000	83,000
Carbon sequestration	769	769	769
Recreation:			
Benefit to golfers (offsetting what they paid to play)	<b>520,171</b>	<b>520,171</b>	<b>520,171</b>
Consumer surplus gain to all recreational users	<b>34,850</b>	<b>69,699</b>	<b>139,398</b>
<b>Unquantified benefits</b>			
Mental health	Unquantified	Unquantified	Unquantified
Social / community benefits	Unquantified	Unquantified	Unquantified
Ecological benefits	Unquantified	Unquantified	Unquantified
<b>Total annual quantified benefits</b>	<b>890,253</b>	<b>925,103</b>	<b>994,802</b>
<b>Value unquantified benefits would need to be worth to break-even*</b>	<b>7,185,794</b>	<b>7,150,945</b>	<b>7,081,246</b>

\* Annual quantified costs less annual quantified benefits



**Table 12: Sensitivity to consumer surplus proportion: CBA results for the marginal change between the hypothetical enhanced use scenario and the status quo scenario. 30-year time period, all costs and benefits in present value terms.**

Marginal change (Enhanced use - Status quo)	Consumer surplus proportion:		
	5%	10%	20%
Total costs, \$ NPV	3,057,703	3,057,703	3,057,703
Total benefits, \$ NPV	1,071,186	1,169,986	1,367,587
Net benefits, \$ NPV	(1,986,518)	(1,887,717)	(1,690,116)
Benefit:Cost ratio (BCR)	0.4	0.4	0.4
Internal rate of return (IRR)	(4%)	(3%)	(2%)
Payback period, years	N/a	N/a	N/a
<b>Costs, NPV</b>			
<b>Total quantified costs (NPV)</b>	<b>2,779,607</b>	<b>3,057,703</b>	<b>2,779,607</b>
<b>Benefits, NPV</b>			
<b>Quantified benefits</b>			
Physical health	972,385	972,385	972,385
Visitor expenditure (GDP generated)	0	0	0
Environmental:			
Stormwater	0	0	0
Carbon sequestration	0	0	0
Recreation:			
Benefit to golfers (offsetting what they paid to play)	0	0	0
Consumer surplus gain to all recreational users	98,801	197,601	395,202
<b>Unquantified benefits</b>			
Mental health	Unquantified	Unquantified	Unquantified
Social / community benefits	Unquantified	Unquantified	Unquantified
Ecological benefits	Unquantified	Unquantified	Unquantified
<b>Total quantified benefits (NPV)</b>	<b>1,071,186</b>	<b>1,169,986</b>	<b>1,367,587</b>
<b>Total net benefit (NPV)</b>	<b>(1,708,422)</b>	<b>(1,887,717)</b>	<b>(1,412,020)</b>



### 3. Health benefit attribution proportion sensitivity

Table 13: Sensitivity to health benefit attribution proportion: CBA results for the status quo scenario (annual)

Status quo scenario (annual)	Health benefit attribution proportion:		
	25%	50%	75%
<b>Costs</b>			
<b>Total annual quantified costs</b>	<b>8,076,048</b>	<b>8,076,048</b>	<b>8,076,048</b>
<b>Benefits</b>			
<b>Quantified benefits</b>			
Physical health	125,732	251,464	377,196
Visitor expenditure (GDP generated)	0	0	0
Environmental:			
Stormwater	83,000	83,000	83,000
Carbon sequestration	769	769	769
Recreation:			
Benefit to golfers (offsetting what they paid to play)	520,171	520,171	520,171
Consumer surplus gain to golfers	69,699	69,699	69,699
<b>Unquantified benefits</b>			
Mental health	Unquantified	Unquantified	Unquantified
Social / community benefits	Unquantified	Unquantified	Unquantified
Ecological benefits	Unquantified	Unquantified	Unquantified
<b>Total annual quantified benefits</b>	<b>799,371</b>	<b>925,103</b>	<b>1,050,835</b>
<b>Value unquantified benefits would need to be worth to break-even*</b>	<b>7,276,677</b>	<b>7,150,945</b>	<b>7,025,213</b>

\* Annual quantified costs less annual quantified benefits



**Table 14: Sensitivity to health benefit attribution proportion: CBA results for the marginal change between the hypothetical enhanced use scenario and the status quo scenario. 30-year time period, all costs and benefits in present value terms.**

Marginal change (Enhanced use - Status quo)	Health benefit attribution proportion:		
	25%	50%	75%
Total costs, \$ NPV	3,057,703	3,057,703	3,057,703
Total benefits, \$ NPV	683,794	1,169,986	1,656,179
Net benefits, \$ NPV	(2,373,910)	(1,887,717)	(1,401,525)
Benefit:Cost ratio (BCR)	0.2	0.4	0.5
Internal rate of return (IRR)	(6%)	(3%)	(1%)
Payback period, years	N/a	N/a	N/a

**Costs, NPV**

<b>Total quantified costs (NPV)</b>	<b>2,779,607</b>	<b>3,057,703</b>	<b>2,779,607</b>
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**Benefits, NPV**

**Quantified benefits**

Physical health	486,193	972,385	1,458,578
Visitor expenditure (GDP generated)	0	0	0
Environmental:			
Stormwater	0	0	0
Carbon sequestration	0	0	0
Recreation:			
Benefit to golfers (offsetting what they paid to play)	0	0	0
Consumer surplus gain to all recreational users	197,601	197,601	197,601

**Unquantified benefits**

Mental health	Unquantified	Unquantified	Unquantified
Social / community benefits	Unquantified	Unquantified	Unquantified
Ecological benefits	Unquantified	Unquantified	Unquantified

<b>Total quantified benefits (NPV)</b>	<b>683,794</b>	<b>1,169,986</b>	<b>1,656,179</b>
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<b>Total net benefit (NPV)</b>	<b>(2,095,814)</b>	<b>(1,887,717)</b>	<b>(1,123,429)</b>
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## 4. Cost of building enhanced-use facility sensitivity

**Table 15: Sensitivity to cost of building enhanced-use facility: CBA results for the marginal change between the hypothetical enhanced use scenario and the status quo scenario. 30-year time period, all costs and benefits in present value terms.**

Marginal change (Enhanced use - Status quo)	Cost of building enhanced-use facility:		
	- 20%	\$3.4 m	+ 20%
<b>Total costs, \$ NPV</b>	2,446,163	3,057,703	3,669,244
<b>Total benefits, \$ NPV</b>	1,169,986	1,169,986	1,169,986
<b>Net benefits, \$ NPV</b>	(1,276,177)	(1,887,717)	(2,499,258)
<b>Benefit:Cost ratio (BCR)</b>	0.5	0.4	0.3
<b>Internal rate of return (IRR)</b>	(2%)	(3%)	(4%)
<b>Payback period, years</b>	N/a	N/a	N/a
<b>Costs, NPV</b>			
Cost to AC of retaining golf course land:			
Opportunity cost to AC of retaining land	0	0	0
less rent revenue received	278,096	278,096	278,096
Net opportunity cost to AC of retaining land	(278,096)	(278,096)	(278,096)
Lease administration	0	0	0
Rates remissions	0	0	0
Rates postponements	0	0	0
LDI funding and community grants	0	0	0
<b>Investment required to achieve desired outcomes</b>	<b>1,223,081</b>	<b>1,528,852</b>	<b>1,834,622</b>
<b>Private costs</b>			
Course operating costs	278,096	278,096	278,096
<b>Investment required to achieve desired outcomes</b>	<b>1,223,081</b>	<b>1,528,852</b>	<b>1,834,622</b>
<b>Unquantified costs</b>			
Pesticide run-off	Unquantified	Unquantified	Unquantified
<b>Total quantified costs (NPV)</b>	<b>2,446,163</b>	<b>3,057,703</b>	<b>3,669,244</b>
<b>Benefits, NPV</b>			
<b>Total quantified benefits (NPV)</b>	<b>1,169,986</b>	<b>1,169,986</b>	<b>1,169,986</b>
<b>Total net benefit (NPV)</b>	<b>(1,276,177)</b>	<b>(1,887,717)</b>	<b>(2,499,258)</b>



## 5. Sale price of golf course land sensitivity

**Table 16: Sensitivity to sale price of golf course land: CBA results for the status quo scenario (annual)**

Status quo scenario (annual)	Sale price of golf course land:		
	- 20%	\$140.1m	+ 20%
<b>Costs</b>			
Cost to AC of retaining golf course land:			
Opportunity cost to AC of retaining land	5,939,624	7,424,531	8,909,437
less rent revenue received	1,415	1,415	1,415
Net opportunity cost to AC of retaining land	5,938,209	7,423,116	8,908,022
Lease administration	3,710	3,710	3,710
Rates remissions	0	0	0
Rates postponements	0	0	0
LDI funding and community grants	0	0	0
<b>Private costs</b>			
Course operating costs	649,222	649,222	649,222
<b>Unquantified costs</b>			
Pesticide run-off	Unquantified	Unquantified	Unquantified
<b>Total annual quantified costs</b>	<b>6,591,141</b>	<b>8,076,048</b>	<b>9,560,954</b>
<b>Benefits</b>			
<b>Total annual quantified benefits</b>	<b>925,103</b>	<b>925,103</b>	<b>925,103</b>
<b>Value unquantified benefits would need to be worth to break-even*</b>	<b>5,666,039</b>	<b>7,150,945</b>	<b>8,635,851</b>

\* Annual quantified costs less annual quantified benefits



**Table 17: Sensitivity to sale price of golf course land: CBA results for the status quo scenario (NPV over 30 years)**

Status quo scenario (30 year time period, NPV)	Sale price of golf course land:		
	- 20%	\$140.1m	+ 20%
<b>Costs, NPV</b>			
<b>Public costs</b>			
Cost to AC of retaining golf course land:			
Opportunity cost to AC of retaining land	104,742,207	130,927,759	157,113,311
less rent revenue received	24,953	24,953	24,953
Net opportunity cost to AC of retaining land	104,717,255	130,902,806	157,088,358
Lease administration	65,424	65,424	65,424
Rates remissions	0	0	0
Rates postponements	0	0	0
LDI funding and community grants	0	0	0
<b>Private costs</b>			
Course operating costs	11,448,694	11,448,694	11,448,694
<b>Unquantified costs</b>			
Pesticide run-off	Unquantified	Unquantified	Unquantified
<b>Total quantified costs (NPV)</b>	<b>116,231,373</b>	<b>142,416,925</b>	<b>168,602,476</b>
<b>Benefits, NPV</b>			
<b>Quantified benefits</b>			
Physical health	4,434,433	4,434,433	4,434,433
Visitor expenditure (GDP generated)	0	0	0
Environmental:			
Stormwater	1,463,662	1,463,662	1,463,662
Carbon sequestration	32,771	32,771	32,771
Recreation:			
Benefit to golfers (offsetting what they paid to play)	9,172,947	9,172,947	9,172,947
Consumer surplus gain by all recreational users	1,229,110	1,229,110	1,229,110
<b>Unquantified benefits</b>			
Mental health	Unquantified	Unquantified	Unquantified
Social / community benefits	Unquantified	Unquantified	Unquantified
Ecological benefits	Unquantified	Unquantified	Unquantified
<b>Total quantified benefits (NPV)</b>	<b>16,332,922</b>	<b>16,332,922</b>	<b>16,332,922</b>
<b>Net benefits (NPV)</b>	<b>(99,898,451)</b>	<b>(126,084,003)</b>	<b>(152,269,554)</b>

