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WAIKATO
Te Whare Wānanga o Waikato

2017
**Investment in Convenanted
Land Conservation**



**Institute for
Business Research**

Te Pūtahi Rangahau Umanga

THE UNIVERSITY OF WAIKATO

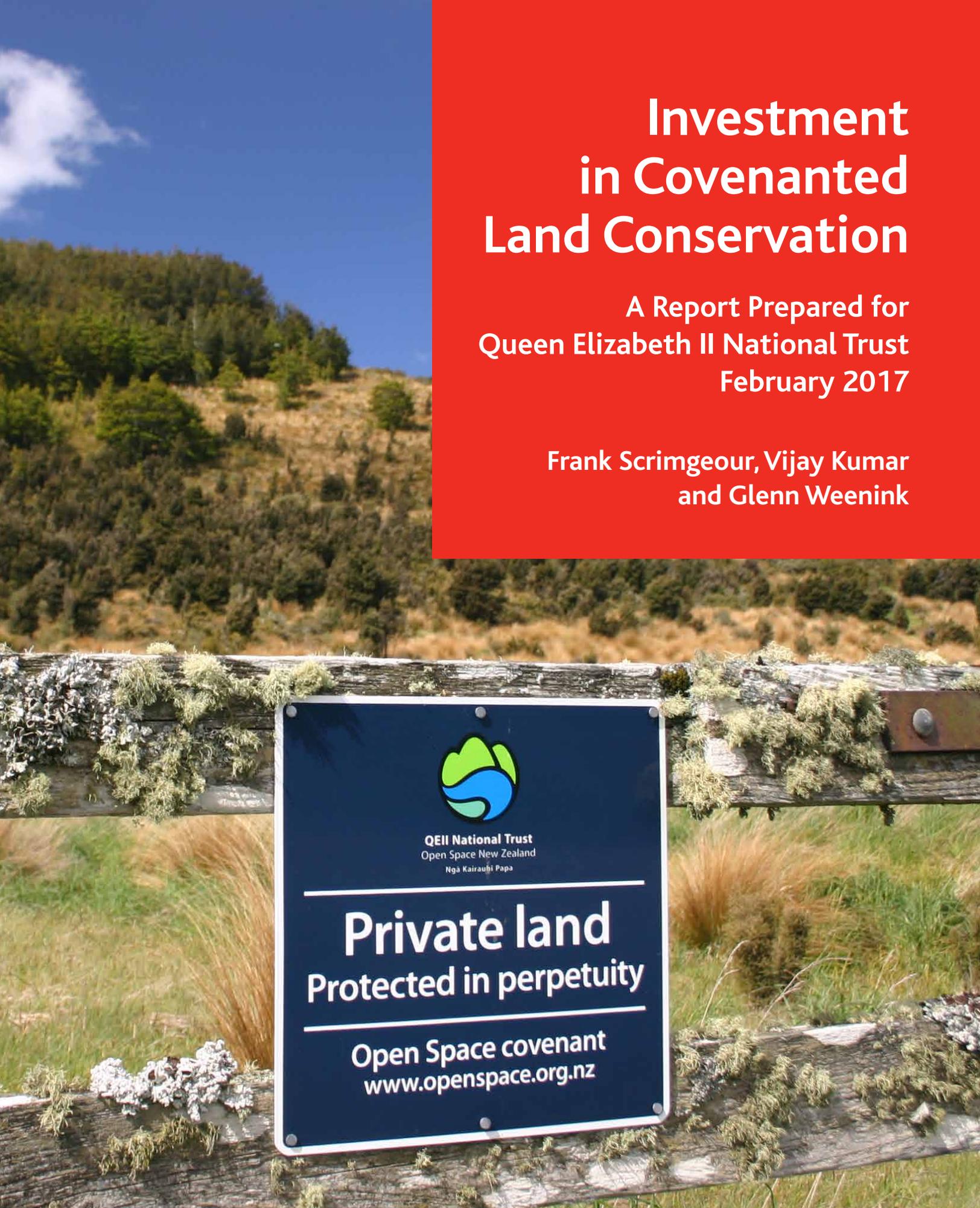


QEII National Trust
Open Space New Zealand
Ngā Kairauhī Papa

Investment in Covenanted Land Conservation

A Report Prepared for
Queen Elizabeth II National Trust
February 2017

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Investment in Covenanted Land Conservation

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Investment in Covenanted Land Conservation

EXECUTIVE SUMMARY

<p>QEII National Trust land covenants are an important conservation activity in New Zealand.</p>	<p>Conservation covenants are important in many countries. They are an important tool to protect special natural and cultural features on privately owned land. There are four separate pieces of legislation affecting Statutory covenants in New Zealand.</p> <ul style="list-style-type: none"> • The Reserves Act 1977; • The Queen Elizabeth II National Trust Act 1977; • The Conservation Act 1987; and • Te Ture Whenua Māori Act 1993. <p>These Acts provide a vehicle for landowners that are willing to voluntarily protect their land without selling or donating it to a local authority, or the Crown.</p>
<p>This study investigates landowner expenditure on covenanted land.</p>	<p>This project estimated expenditure in establishing and protecting covenanted areas. It provides a framework for estimating cost effectiveness of conservation activity facilitated by Queen Elizabeth II National Trust and to quantify the financial commitment made by National Trust covenantors.</p>
<p>Landowners experience an opportunity cost when they establish a covenant.</p>	<p>The opportunity cost borne by private landowners results from the restrictions imposed by the covenant. This study shows that 53% of the respondents could use land for alternative purposes, if it were not covenanted. The total opportunity costs associated with covenanted land in New Zealand is estimated to be in the range of \$443m to \$638m with a mid point of \$540.5m.</p>
<p>Landowners expend both cash and time to establish covenanted areas.</p>	<p>Cost of establishing covenants varies from landowner to landowner. The establishment costs include fencing, weed control, restoration planting, wetlands restoration, pest control and waterways protection.</p> <p>This study shows that fencing cost is the major establishment cost (30%). Nationwide, the total estimated establishment cost of all the registered covenants is \$205m (nominal) or \$271m (in 2016 dollars).</p>
<p>Landowners expend both cash and time in maintaining and enhancing covenanted areas.</p>	<p>There are ongoing maintenance and monitoring costs associated with covenanted land which include fencing, weed control, restoration planting, wetlands restoration, pest control and waterways protection.</p> <p>This study shows that the significant maintenance costs are: waterways protection (20%), restoration plantings (19%), wetlands restoration (18%) and weed control (15%). Nationwide, the estimated total ongoing maintenance cost for all the registered covenanted areas is \$25m per annum.</p>
<p>This study surveyed landowners throughout New Zealand that have open space covenants on their properties.</p>	<p>This study utilised a stratified sample across 16 regions of New Zealand including Northland, Auckland, Bay of Plenty, Waikato, Gisborne, Hawkes Bay, Taranaki, Manawatu-Wanganui, Wellington, Marlborough, Nelson, Tasman, Canterbury, West Coast, Otago, and Southland. 124 respondents completed the survey.</p>

<p>Covenanted areas vary significantly in terms of size and characteristics.</p>	<p>Covenanted areas in this sample vary in size ranging from 0.1 to 255 ha. The use of land adjacent to covenants also varies. Some landowners use their property outside the covenant for grazing while others use it for residences, forestry and other uses. For all QEII covenants the size range is 0.1 to 21,909 ha.</p>
<p>The age of covenants also varies significantly. Some are still owned by the establishment covenantor and some with subsequent landowners.</p>	<p>This study includes covenants established between 1981 and 2016.</p> <p>The results show that 61% of respondents are establishment covenantors while 39% are subsequent landowners.</p>
<p>The owners surveyed used their properties in diverse ways.</p>	<p>The findings indicate that the properties outside the covenant are used in diverse ways:</p> <ul style="list-style-type: none"> • 69% of the respondents use their property for grazing purposes; • 23% of the respondents use their property for residence; and • 5% of the respondents use their property for forestry.
<p>The largest cost for landowners establishing covenanted areas was fencing.</p>	<p>There are various costs associated with establishment of covenants. The largest components of establishment costs identified by respondents were:</p> <ul style="list-style-type: none"> • Fencing - 30%; • Weed control -18%; • Restoration planting -10%; and • Wetlands restoration -10%.
<p>The majority of covenanted areas are fenced with post and batten fences.</p>	<p>In the sample, 92% of the covenants are fenced while 8% are unfenced.</p> <ul style="list-style-type: none"> • 55% of covenanted areas are fenced with post and batten fences. • 23% of covenanted areas are fenced with electric fences.
<p>Landowners spend time and money on a range of maintenance activities.</p>	<p>There are various costs associated with maintenance of covenants. The largest components identified included:</p> <ul style="list-style-type: none"> • Waterways protection - 20%; • Restoration planting cost - 19%; • Wetlands restoration cost - 18%; • Weed control cost - 15%; • Fencing cost - 7%; and • Pest control - 7%

<p>Normally QEII National Trust meets the legal cost of preparing and registering covenants but landowners pay their own legal costs of reviewing the covenant prior to signature.</p>	<p>All respondents in the survey had their legal and survey costs of establishing the covenants met by QEII National Trust and:</p> <ul style="list-style-type: none"> • 52% respondents received a contribution towards fencing expenses; • 21% respondents received funding for weed control expenses; • 19% respondents received funding for pest control expenses; and • 15% respondents received funding for restoration planting expenses.
<p>In addition to QEII National Trust funding many landowners received funding and voluntary contributions from a range of sources.</p>	<p>In order to establish and maintain the covenants, the landowners may receive funding from various sources that include land care groups and biodiversity funds. In some cases, volunteers help landowners to maintain the covenants.</p>
<p>The majority of covenants provide access for low impact recreation with some providing no access at all.</p>	<p>The results show that the majority of covenants provide access for low impact recreation but some provide no access at all. Further:</p> <ul style="list-style-type: none"> • 49% of covenants provide access for low impact recreation; • 22% of covenants provide no access at all; • 10% of covenants provide full access; and • 19% of covenants provide some form of access under other arrangements.
<p>Each covenant is a formal agreement with clear objectives and which stipulates what is permissible and what is not.</p>	<p>In addition to the covenant requirements, 15% of the respondents have a formalised management plan to guide management and investment. All covenants are regularly monitored for compliance.</p>
<p>Covenant expenditures vary with the attributes of the landowner's property.</p>	<p>The establishment, maintenance and monitoring expenses vary with the nature, size and goals of the covenanted properties. In this sample:</p> <ul style="list-style-type: none"> • The maximum establishment cost per covenant was over \$150,000. • The smallest reported establishment cost was \$110. <p>Outside of this sample we are aware of covenants that have been much more expensive than this with several costing the landowner millions of dollars to establish.</p>
<p>Covenant expenditures vary with the characteristics of landowners.</p>	<p>The expenditures also vary with the landowners' personal interest in the covenanted areas. Some landowners are willing to invest significant sums in their covenanted areas without support from QEII National Trust or other organisations. On the other hand, some landowners rely on external funding to maintain and enhance their covenanted areas.</p>
<p>Covenant expenditures vary with the characteristics of neighbouring properties and how they are managed.</p>	<p>The expenditures vary with the characteristics of neighbouring properties and how they are managed. If the neighbouring properties effectively manage pests, the funding requirement and expenses are lower. Covenant costs increase where neighbouring properties harbour invasive weeds or pest animal populations such as goats and deer.</p>

<p>Since establishment, landowners have invested heavily in establishing covenants throughout New Zealand.</p>	<p>At June 2016, the number of total registered covenants in New Zealand was 4,226. The total estimated establishment expenditure on covenants is \$205m which is approximately \$271m in 2016 dollars.</p>
<p>Since establishment, landowners have also invested time and resources in maintaining and enhancing covenanted land.</p>	<p>The annual estimated maintenance expenditure on all covenants exceeds \$25m per year and has a Net Present Value of \$387m.</p>
<p>The majority of landowners with covenanted areas derive benefits from their covenants.</p>	<p>The landowner benefits from covenanted areas include but are not limited to:</p> <ul style="list-style-type: none"> • Satisfaction that the natural asset is protected in perpetuity; • Appreciation of the natural asset; • Contributions from volunteers; • Funding from QEII National Trust, Regional Councils and Territorial Authorities; and • Assistance from landcare groups and biodiversity funds.
<p>For case studies analysis, site visits were made to four properties where face-to-face interviews were conducted with landowners and managers.</p>	<p>The four properties visited were:</p> <ul style="list-style-type: none"> • McNeil family properties at Whitianga, Coromandel Peninsula; • Highlands Station, Bay of Plenty; • Mahu Whenua, Central Otago; and • Duncraigen Station, Southland.
<p>The establishment costs, maintenance costs and opportunity costs vary across the four case studies.</p>	<ul style="list-style-type: none"> • In the case of Whitianga, the establishment cost, maintenance cost and opportunity cost were < \$15,000, \$17,000 per annum and \$20m, respectively. • In the case of Highlands Station, the establishment cost, maintenance cost and opportunity cost were \$300,000, \$4,000 per annum and \$1.5m, respectively. • In the case of Mahu Whenua, the establishment cost, maintenance cost and opportunity cost were \$10m, \$1m per annum and \$30m, respectively. • In the case of Duncraigen, the establishment cost, maintenance cost and opportunity cost were \$200,000, \$20,000 per annum and \$200,000, respectively.
<p>The landowners of the four case studies have aspirational plans for the future of their covenants.</p>	<p>The landowners are ambitious and have admirable plans for the future of these QEII covenanted areas that go beyond protecting the existing natural assets. These include increasing biodiversity and controlling weed and pest species. Landowners are active partners with neighbours, Non-Government Organisations (NGOs) and public agencies to enhance conservation outcomes.</p>

Investment in Covenanted Land Conservation

INTRODUCTION

Conservation covenants are important in many countries. They are an important tool to protect special natural and cultural features on private land. There are four separate legislative provisions for Statutory covenants in New Zealand, i.e., Reserves Act 1977, Queen Elizabeth the Second (QEII) National Trust Act 1977, Conservation Act 1987 and Te Ture Whenua Māori Act 1993. These Acts provide a vehicle for landowners that are willing to voluntarily protect their land in perpetuity without selling or donating it to a local authority, or the Crown.

Previous studies related to conservation covenants focused on the economic performance of some special programmes or the ecological contributions. There are very few studies which have estimated the cost of protecting the special natural and cultural features on private land at a national level using primary data.

This project estimated landowners' investment in their covenanted land. It provides a framework for estimating cost effectiveness of conservation activity facilitated by Queen Elizabeth II National Trust and quantify the financial commitment made by National Trust covenantors towards the protection of their land.

The research is potentially useful for Queen Elizabeth II National Trust managers and other analysts evaluating conservation funding and investment activities.

The report consists of six sections. The first section provides context to the study. The second section presents the history and core objectives of Queen Elizabeth II National Trust. The third section briefly reviews relevant literature. The fourth section

explains the methodology. The fifth section presents the results of the survey. The sixth section discusses the case studies and the seventh section provides the conclusions.

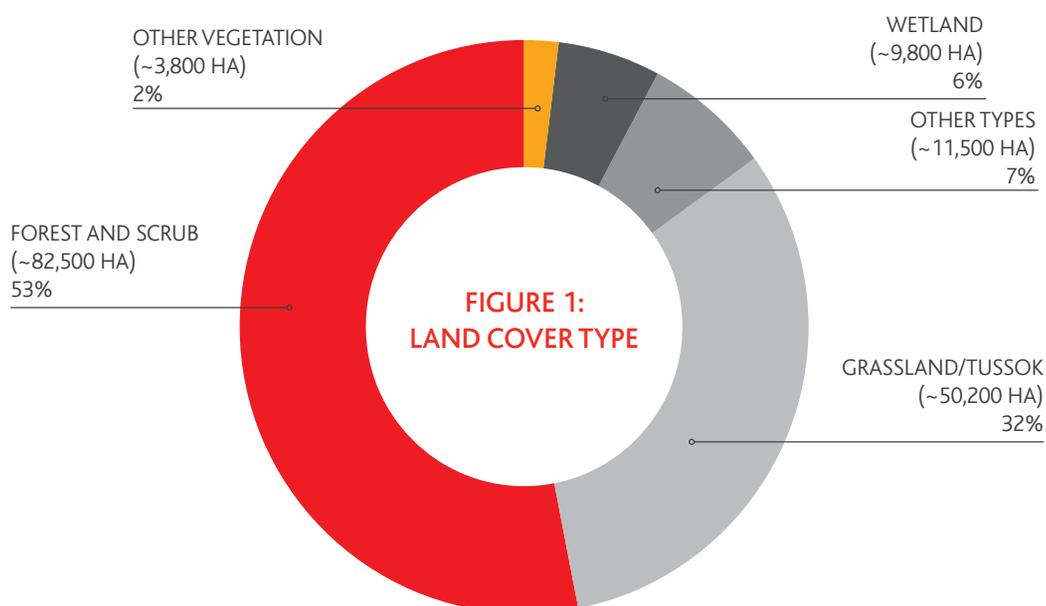
CONTEXT

Queen Elizabeth II National Trust assists private landowners in New Zealand to protect special natural and cultural features on their land with open space covenants. Considerable expenditure has been made and continues to be made by landowners and others to protect these assets. It is recognised there are multiple objectives associated with covenanting. It is also recognised there is diversity in the nature, size, and locations of covenanted land.

The total number of registered covenants with QEII National Trust at 30 June 2016 was 4,226 and the area protected more than 167,000 hectares (QEII National Trust, 2016). At this time a further 372 covenants to protect an additional 15,000 hectares had been approved by the QEII National Trust and were progressing towards registration.

Figure 1 shows that 85% of the covenanted area is forest/scrub (53%) and grassland/tussock (32%).

The costs related to protection of special natural and cultural features on private land with open space covenants include opportunity costs, establishment costs and ongoing maintenance costs. The purpose of this study is to estimate the private costs of protecting these properties.



Source: QEII National Trust Annual Report 2015

ABOUT QUEEN ELIZABETH II NATIONAL TRUST

Queen Elizabeth II (QEII) National Trust assists landowners to legally and permanently protect special natural and cultural features on their land with open space covenants. The Trust is governed by a board of directors who are supported by 16 staff and 26 regional representatives. The board consists of six directors. Four directors are appointed by the Minister of Conservation, while two directors are elected by QEII National Trust covenantors and financial members.

Brief History

QEII National Trust was established by its own Act of Parliament in 1977 as an independent statutory organisation and a registered charity. It helps private landowners to protect and improve natural and cultural heritage values. The QEII National Trust is governed by the Queen Elizabeth the Second National Trust Act 1977.

Core functions

The core function of the QEII National Trust is to encourage and promote the protection and enhancement of natural and cultural features on private land for the benefit of present and future generations. Its main protection mechanism is the use of open space covenants which apply to specified areas of a property. In order to achieve its objectives, the Trust partners with landowners that are willing to voluntarily protect their land without selling or donating it. The covenants exist in perpetuity to ensure the covenant remains protected even after the change of ownership or the death of landowner. In addition to establishing partnerships with landowners, the QEII National Trust also works with the Department of Conservation, Regional and District Councils, Heritage New Zealand, Landcare Research, the New Zealand Farm Environment Award Trust, and many other groups, organisations, and individuals to protect and enhance landscapes and biodiversity throughout the country.

The QEII National Trust protects diverse environments and values including but not limited to:

- Landscapes
- Native forest remnants
- High country
- Wetlands
- Tussock grasslands
- Threatened species habitats
- Streams and water features
- Arboretums
- Coastlines
- Geological features
- Archaeological features
- Wildlife habitats
- Community parks
- Cultural sites

Services offered to landowners

The National Trust maintains strong relationships with landowners and acts as the perpetual trustee in the covenant agreement. The Trust is responsible to regularly monitor covenants. The National Trust provides benefits to landowners. These include:

- The relationship between Trust and landowners is independent of other agencies;
- The Trust has almost 40 years of experience working in partnership with private landowners;
- The Trust has expertise in legal protection (open space covenants) as well as legal documentation;

- The Trust has expertise in ecological assessment and provision of stewardship advice to landowners;
- The Trust normally accepts responsibility for survey arrangements and costs; and
- The Trust provides up to half the cost to establish a stock-proof fence around a covenant when it is established. The Trust accepts responsibility for lodging necessary legal and survey documents with Land Information New Zealand in addition to formally registering the covenant on the property title.

QEII National Trust Progress to 30 June 2016

Table 1 reports a summary of Trust accomplishments as of 30 June 2016.

Table 1: QEII Covenants at 30 June 2016

Types of protected open space	Number	Hectares
Registered covenants	4,226	166,685
Approved covenants	372	15,064
Formal agreements	33	928
Total	4,631	182,677

The total number of covenants registered with the National Trust exceeded 4,200 in 2016 while the total area of registered covenants is more than 166,000 hectares. In addition, there are 372 approved covenants with a total area of 15,064 hectares progressing towards registration. The National Trust also has an additional 33 formal agreements with landowners. In total there are 182,677 hectares under QEII National Trust oversight.

LITERATURE REVIEW

The section focuses on three main areas, i.e., Statutory covenants and covenanting organisations, cost and benefits associated with protection of conservation values and previous literature related to effectiveness of conservation covenants.

Statutory covenants and covenanting organisations

A covenant is a contract between landowners and an individual or group of individuals which put restrictions on the use of land to protect specific attributes of the designated area. The covenants can be either for a specified period or in perpetuity. The common law allows the creation of restrictions where the land can be protected for a specified time while the covenants that exist in perpetuity permanently protect the land even if the ownership of land is changed (Edwards and Sharp, 1990).

The QEII National Trust was developed in 1977 by farming leaders and the Government as the principal covenanting organisation to effectively protect special natural and cultural features on private land with open space covenants. It allows private landowners to apply for a covenant (Edwards and Sharp, 1990) to bind current and all future owners of the covenanted area.

Since the establishment of QEII National Trust, covenants have been used to protect conservation values on private land. A covenant attached to a particular parcel of land remains exclusive to that land and almost all the QEII National Trust's covenants permanently protect the land. The number of registered covenants with QEII National Trust has increased during the last three decades as shown in Figure 2.

Figure 2 shows that at 30 June 2016 the number of registered covenants exceeded 4,200 with the total area of registered covenants exceeding 160,000 hectares.

Cost and benefits of protecting conservation values

The costs associated with the protection of special natural and cultural features on private land with open space covenants can be classified into three categories. First the costs relating to the establishment of the covenant. Usually the QEII National Trust makes a significant contribution to establishment costs. It costs the QEII National Trust approximately \$22,000 on average to progress a covenant to the point of registration. Forty percent of this cost is the National Trust's contribution to fencing, which generally matches dollar-for-dollar the landowners' contribution. Sixteen percent is the cost of survey to define the area to be protected, and the balance includes field work, ecological assessments, and the legal and processing costs required to approve and register the covenant. Landowners also incur significant costs to prepare the land for covenanting and to meet their portion of fencing costs.

The second type of cost is maintenance and monitoring cost. Maintenance costs are primarily incurred by the landowner whereas the QEII National Trust meets the ongoing costs of regularly monitoring covenants and providing advice to land managers and covenant holders.

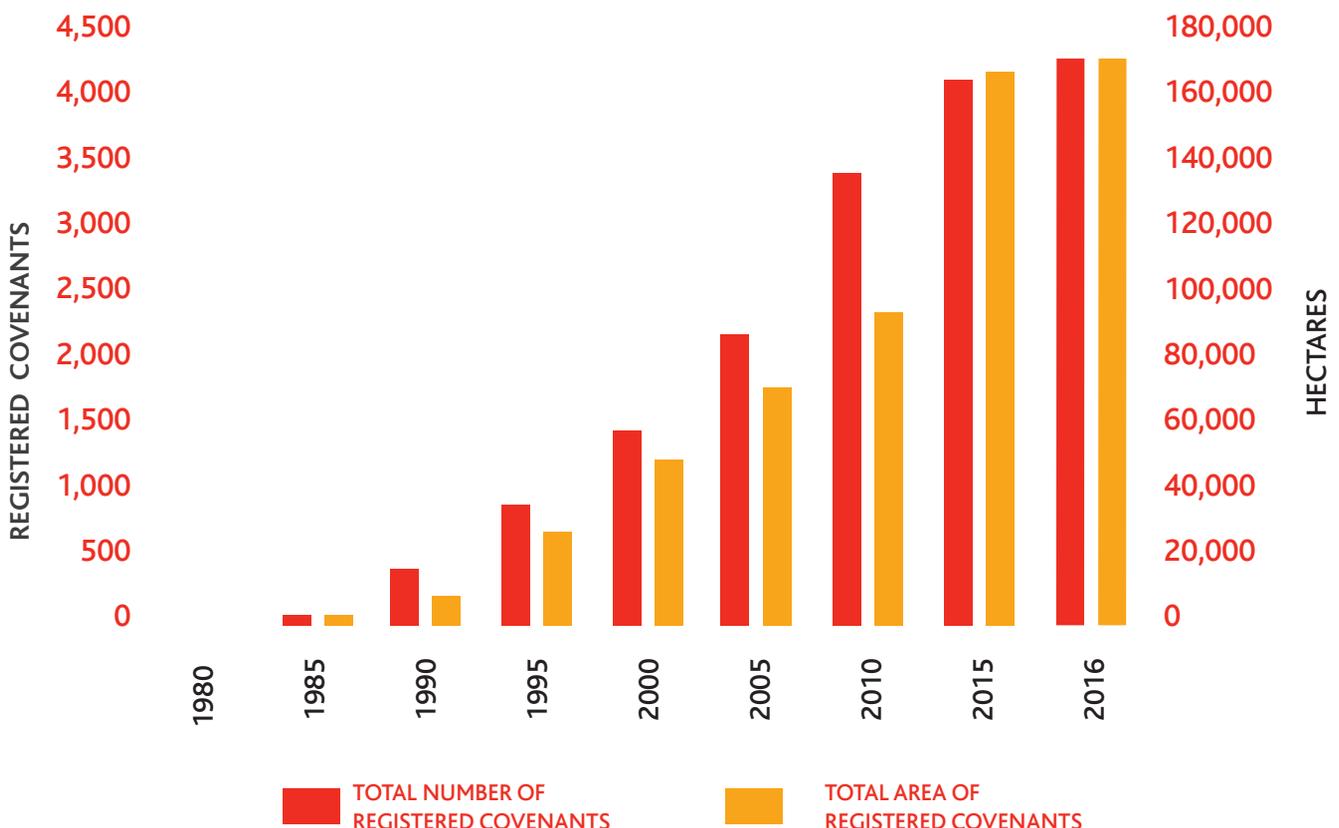
The third type of cost is the opportunity cost which is borne by private landowner due to the restrictions imposed on land use and development by the covenant agreement.

Benefits associated with covenants, while mainly indirect in nature include both private and public benefits and are very difficult to estimate. For example, the mechanism of protection ensures that the land will be protected even after the death of a landowner. Given covenants help secure New Zealand's unique natural habitats and native species on private land, present and future generations of New Zealanders are the ultimate beneficiary of covenant protection by landowners.

Previous studies

Fitzsimons and Carr (2014) studied conservation covenants related to biodiversity on private land in Australia. They suggested that conservation covenants are important tools for the protection of biodiversity and these covenants also help to meet international protection targets. Stroman and Kreuter (2015) investigated the factors that affect conservation-oriented land management practices on easement land-protected landscapes in Australia using survey responses from 251 landowners. Their findings suggest that perpetual easement programs can be successful tools for landscape protection if both the landowners and easement holders exhibit commitment and integrity.

FIGURE 2: REGISTERED COVENANTS



Source: QEII National Trust Annual Report 2016

Overall, the existing literature reflects that there are two main streams of studies related to effectiveness of conservation covenants. The first stream of studies focuses on the economic performance of some special programmes. These studies include the Bush Tender Auction mechanism by Stoneham, Chaudhri, Ha, and Strappazon (2003) and the Burdekin Water Quality Tender by Rolfe and Windle (2011). The second stream of studies highlights the ecological contributions. For example, the role and contribution of private land to biodiversity and the protected area system in Victoria by Fitzsimons and Wescott (2001) and other similar studies by Kirby (2003) and Young, Sánchez-Azofeifa, Hannon, and Chapman (2006).

There are very few studies which have estimated the cost of protecting special natural and cultural features on private land at a national level using primary data. This study aims to fill an important gap by estimating the cost of establishing and maintaining covenanted areas.

METHODOLOGY

This project estimates expenditure in establishing and protecting covenanted areas. The study utilised a stratified sample across 16 regions of New Zealand to gather information using a survey approach. The survey instrument is attached in an Appendix. The instrument was tested in face-to-face interviews with six respondents. The majority of data was collected using phone interviews during April 2016 and May 2016.

In order to investigate further, a framework was developed for case analysis of covenanting. This included consideration of the development potential forgone for the land that has been covenanted. Site visits and detailed face-to-face interviews were arranged with landowners. During the visits, all possible information was collected, including but not limited to the motivations; establishment, maintenance and opportunity costs; relationship with authorities and neighbours; challenges and future considerations. Four indepth case studies are reported.

Sample

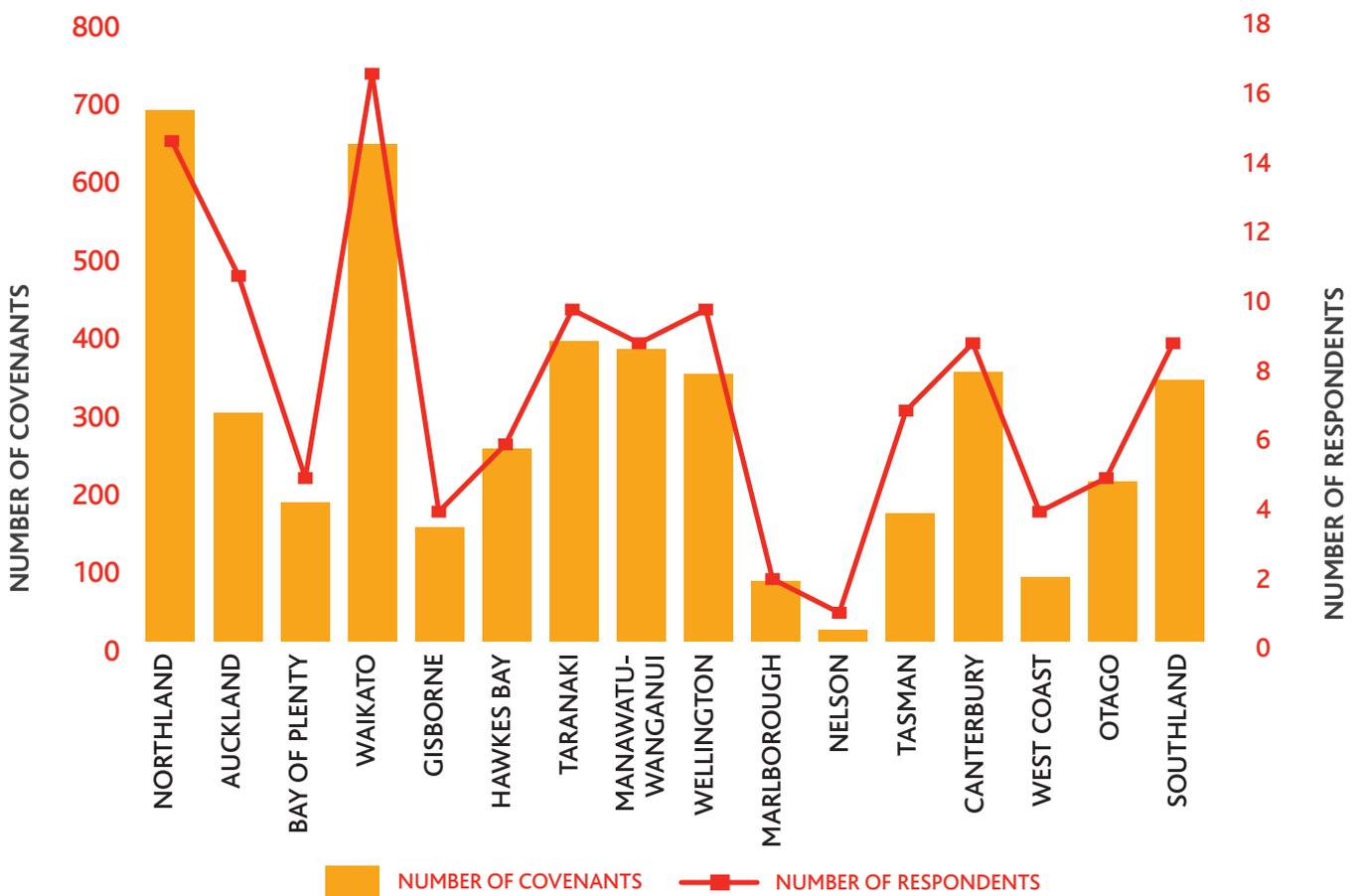
The survey resulted in 124 completed responses, with 85 in the North Island and 37 in the South Island. This reflects the current make-up of covenants with around 70% of covenants located in the North Island.

Table 2 reports descriptive statistics for the sample. Figure 3 shows the response by region relative to the number of covenants and Figure 4 shows response by region relative to initial the sample.

Table 2: Descriptive Statistics (n=124)

Variable	Mean	Median	Maximum	Minimum
Registration Year	2003	2005	2016	1981
Property Area (ha)	532	96	13,779	0.2
Covenant Area (ha)	14	5	255	0.1

FIGURE 3: RESPONSE BY REGION RELATIVE TO TOTAL NUMBER OF COVENANTS



The mean size of covenants in this sample was 14 ha and the median size was 5 ha. In comparison for all the 4,200 covenants registered with the QEII National Trust the mean size is 39.4 ha and the median size is 5.6 ha. This difference reflects the fact that the complete set of registered covenants includes a large number of small covenants (less than 10 ha) and a small number of large or

very large covenants (>200 ha). For example, the complete set of registered covenants includes 15 covenants larger than 10,000 ha in size and the largest single covenant is 21,909 ha. This is one of four covenants under the same ownership that collectively protect 51,550 ha.

FIGURE 4: RESPONSE BY REGION RELATIVE TO SAMPLE

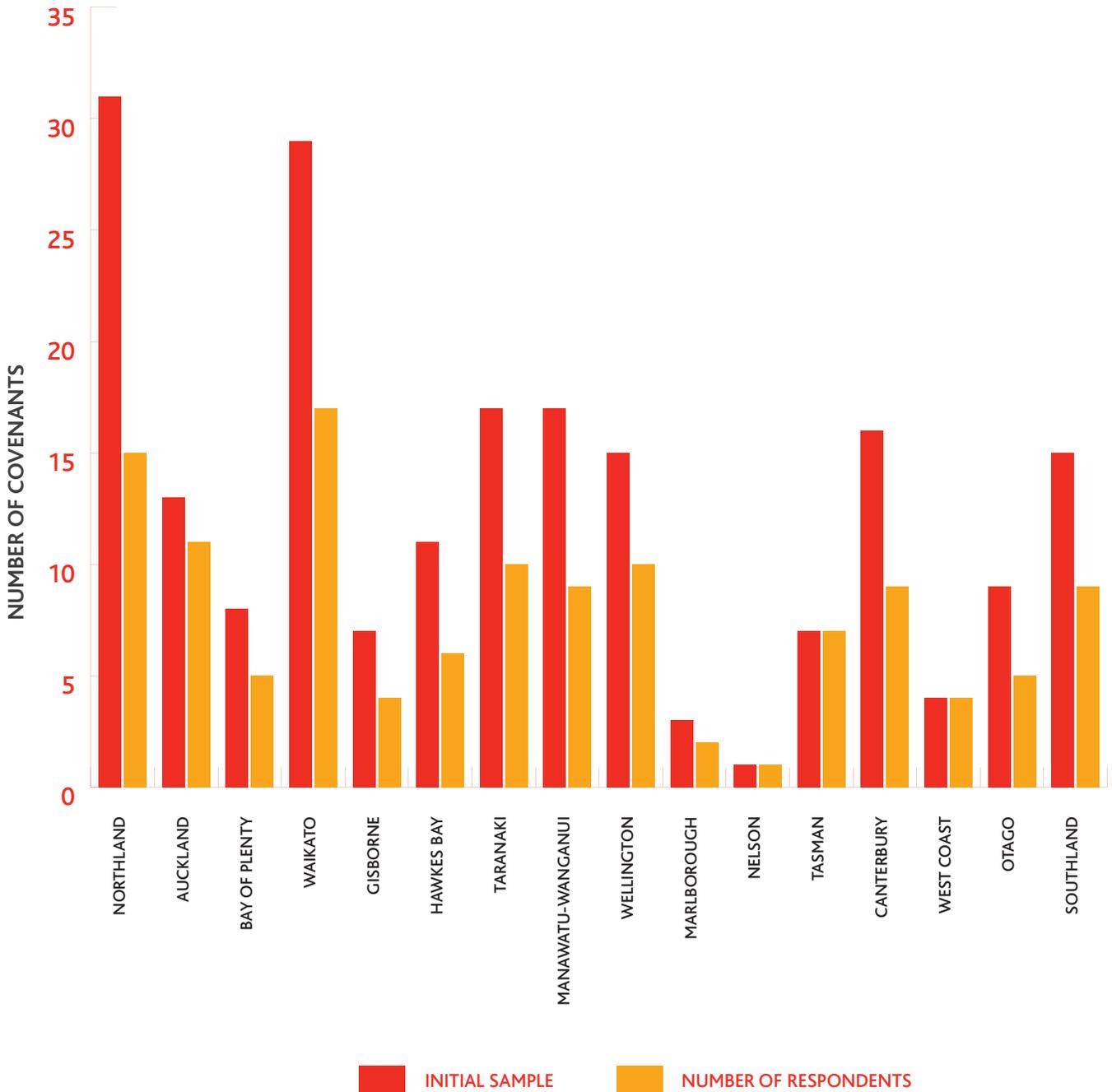


Table 3 shows the sample statistics for every region. It reports the mean and median values of covenant area (ha) and property area (ha) for the regions

Table 3: Sample Statistics by Region

Region	Respondents (Number)	Respondents (%)	Covenant Area Size (ha)		Property Area (ha)	
			Mean	Median	Mean	Median
Northland	15	12%	11.5	10.0	105.4	81.0
Auckland	11	9%	5.5	3.4	64.8	11.3
Bay of Plenty	5	4%	72.2	4.6	198.1	5.1
Waikato	17	14%	7.4	2.4	180.9	17.0
Gisborne	4	3%	7.9	7.2	1,017.8	865.5
Hawkes Bay	6	5%	42.7	23.0	601.0	477.0
Taranaki	10	8%	8.8	3.9	268.0	123.0
Manawatu-Wanganui	9	7%	13.8	9.9	433.9	475.0
Wellington	10	8%	5.2	4.5	439.9	155.5
Marlborough	2	2%	3.2	3.2	1,900.0	1,900.0
Nelson	1	1%	0.7	0.7	1.7	1.7
Tasman	7	6%	6.1	4.2	117.2	15.7
Canterbury	9	7%	13.9	7.7	2,175.6	336.0
West Coast	4	3%	26.5	29.8	1,078.3	533.3
Otago	5	4%	23.3	11.2	125.3	40.5
Southland	9	7%	17.3	5.6	1,538.4	554.5
New Zealand	124	100%	14.7	7.4	548.5	236.3

ECONOMIC ANALYSIS BASED ON SURVEY DATA

Descriptive statistics were calculated from the survey data. Care needs to be taken in interpreting data given that the data generally lacks a normal distribution with significant differences between means and medians.

It is important to distinguish between “don’t know” answers and answers with a value of zero.

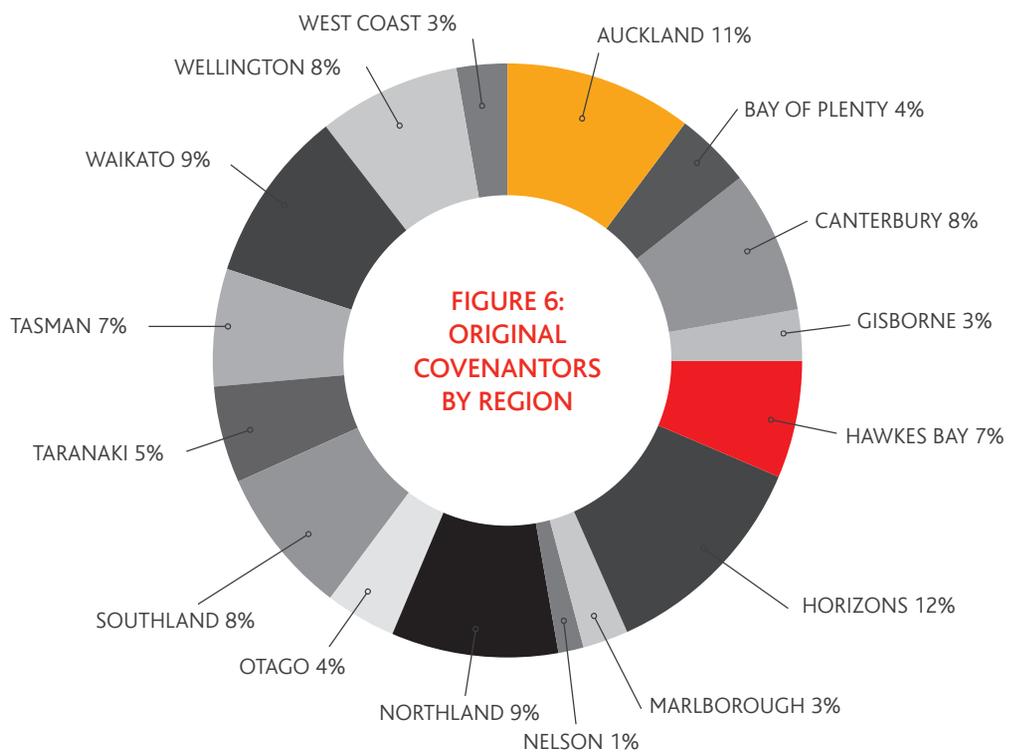
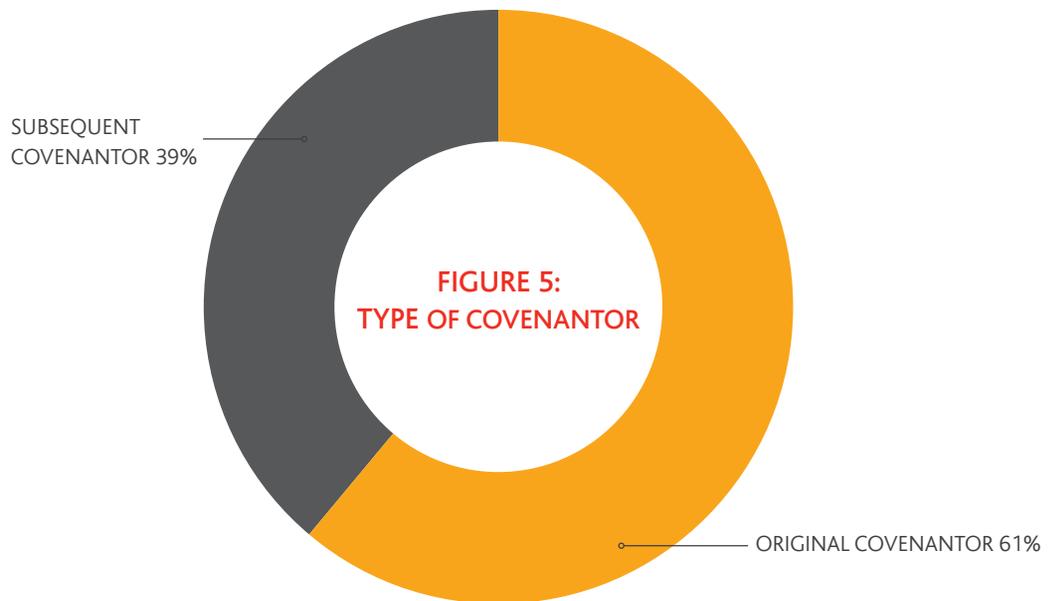
Further, it should be noted the expenditure estimates are conservative. Many respondents were reluctant to identify an expenditure as a covenant expense as they indicated that given their values and commitments they may well have made the expenditure even if the land was not covenanted. They noted some

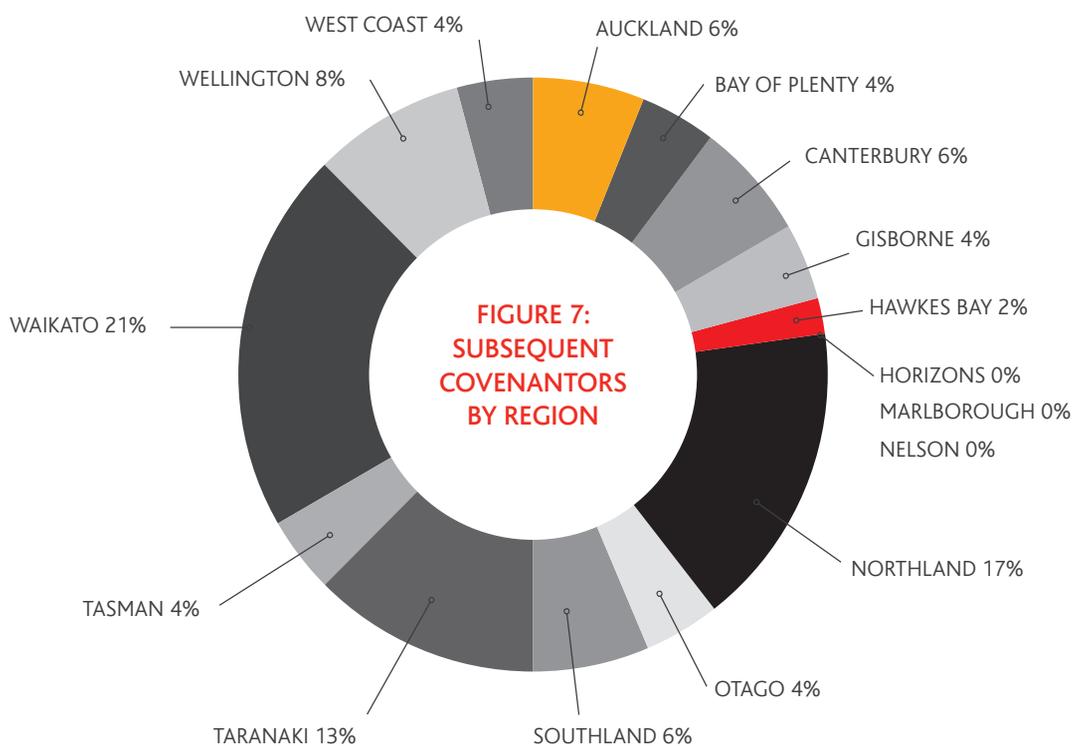
expenses had occurred prior to establishing a covenant. Likewise, they sometimes noted they would have spent certain funds to protect a “block” of land whether or not it was covenanted.

Following the descriptive statistics for the survey, analysis was undertaken to establish national costs. The national establishment cost per covenant is calculated by multiplying the mean per hectare cost (obtained from the survey) with the mean covenant size (ha) from the total population of covenants in New Zealand. Similarly, the national maintenance cost per covenant is calculated by multiplying the mean per hectare cost (obtained from the survey) with the mean covenant size (ha) from the total population of covenants in New Zealand. The national establishment cost is calculated by multiplying the per covenant establishment cost with the total number of registered covenants.

Establishment Covenantors relative to Subsequent Landowners

Figure 5 shows that type of covenantors. The survey reveals that 61% of the respondents were original covenantors while 39% were subsequent covenantors. Figure 6 shows the distribution of original covenantors across regions and Figure 7 shows the distribution of subsequent covenantors across regions.





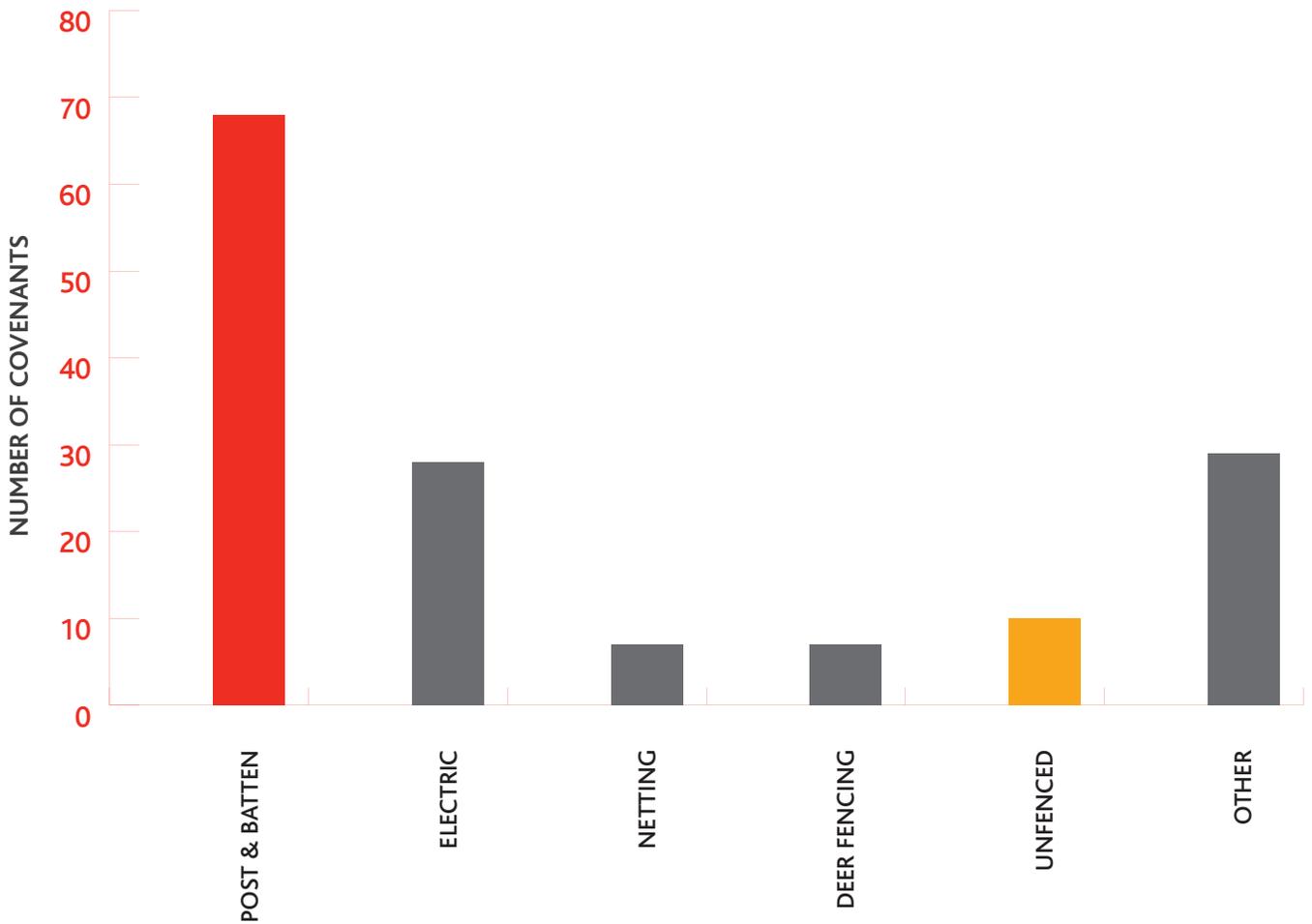
Fencing

Table 4 reports the basic data related to fencing and wires. It shows the mean fence length per hectare of covenant area is 132 meters. Further, the results show that 92% of the covenants are fenced. Figure 8 shows the type of fencing. The survey reveals that 55% of covenanted areas are fenced with post.

Table 4: Basic data related to fencing and wires (n=124)

Mean fence length (m) per hectare of covenant area	132
Covenants that are fenced	92%
Fencing post and batten (%) (with and without electric wires)	55%
Fencing post and batten (%) (without electric wires)	47%
Fencing post and batten (%) (with electric wires only)	8%
Fencing electric only (%)	23%
Fencing other (%)	14%
Electric + Post and batten fencing / Total covenants (%)	78%
Mean wires on post and batten fencing	7
Mean electric wires on electric fencing	2
Mean electric wires on post and batten fencing	2

FIGURE 8: TYPE OF FENCING



Establishment Costs

Table 5 reports the mean establishment cost per covenant. Fencing is the highest component of establishment costs. Figure 9 shows the mean establishment cash cost shares. Figure 10 shows the mean establishment non-cash cost shares. Figure 11 shows the mean total establishment cost shares. The results show that mean total cost of fencing is 30% while mean total cost of non-fencing is 70%.

Table 5: Mean Establishment Costs per Covenant

Type of Cost	Cash (\$)	Non-Cash (\$)	Total Cost (\$)
Fencing (n=57)	\$14,233	\$1,136	\$15,369
Weed Control (n=13)	\$1,609	\$7,425	\$9,034
Restoration Planting (n=11)	\$2,327	\$4,588	\$6,915
Wetlands Restoration (n=5)	\$1,520	\$3,555	\$5,075
Other (n=8) ¹	\$12,412	\$306	\$12,718
Pest Control (n=8)	\$575	\$1,037	\$1,612
Waterways Protection (n=1)	\$200	\$0	\$200

¹ Other costs include expenditure incurred on purchase of land and development of tracks etc.

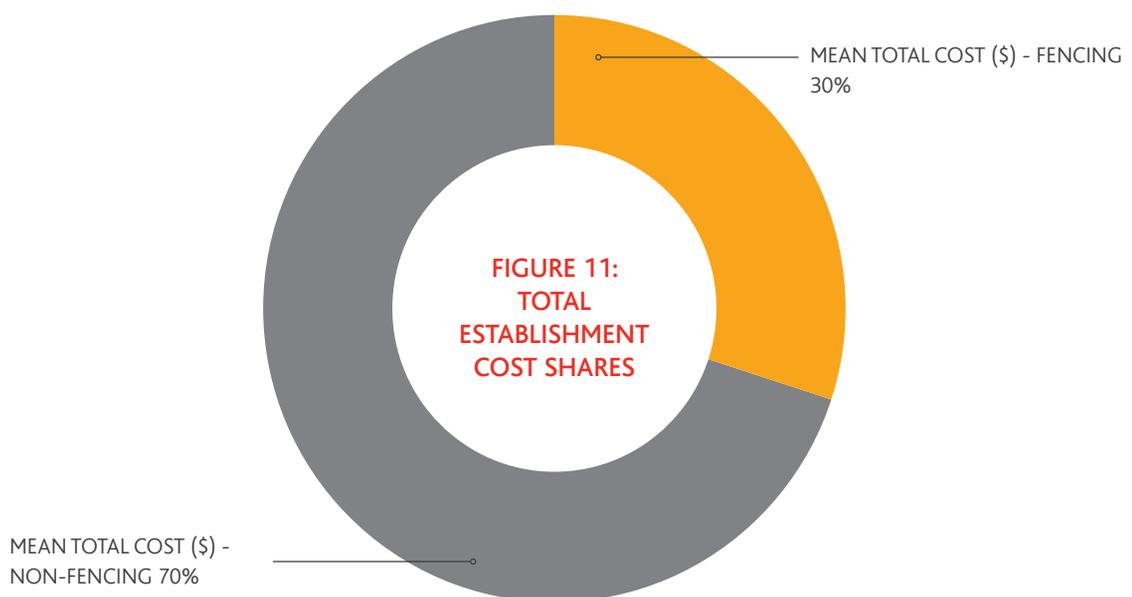
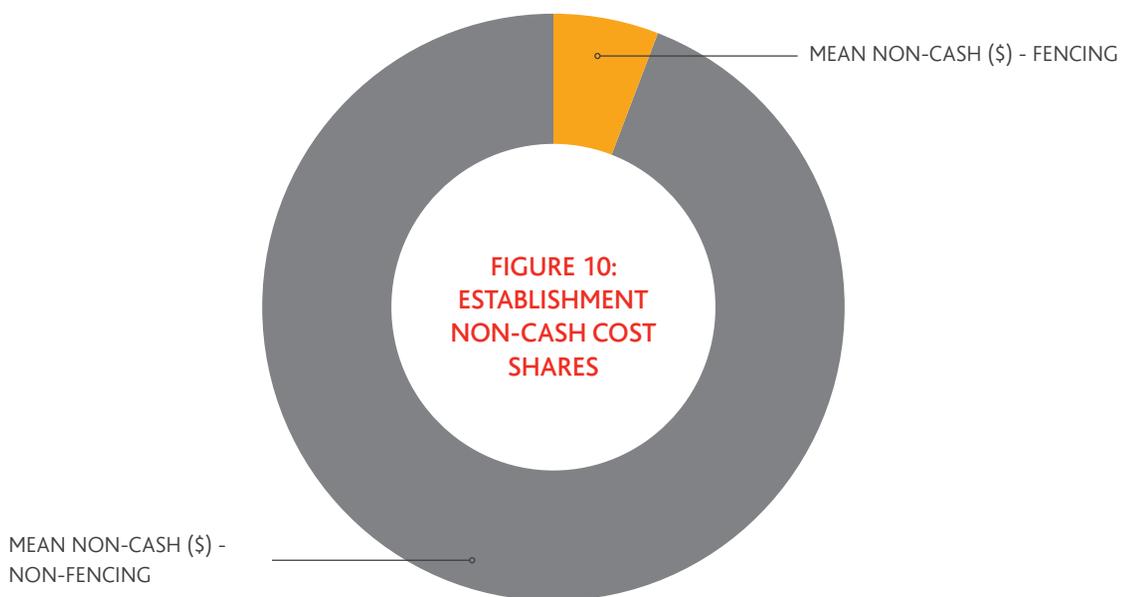
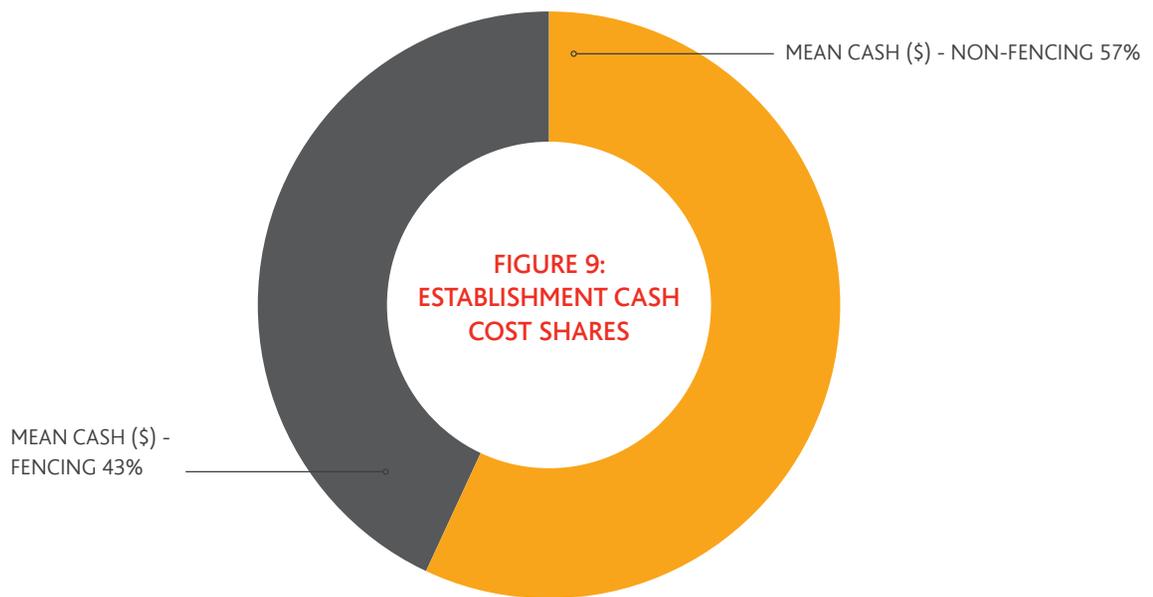


Figure 12 shows the mean establishment cash cost shares excluding fencing and other. Figure 13 shows the mean establishment non-cash cost shares excluding fencing and other. Figure 14 shows the mean total establishment cost shares excluding fencing and other and Figure 15 shows mean per covenant establishment cash and non-cash cost.

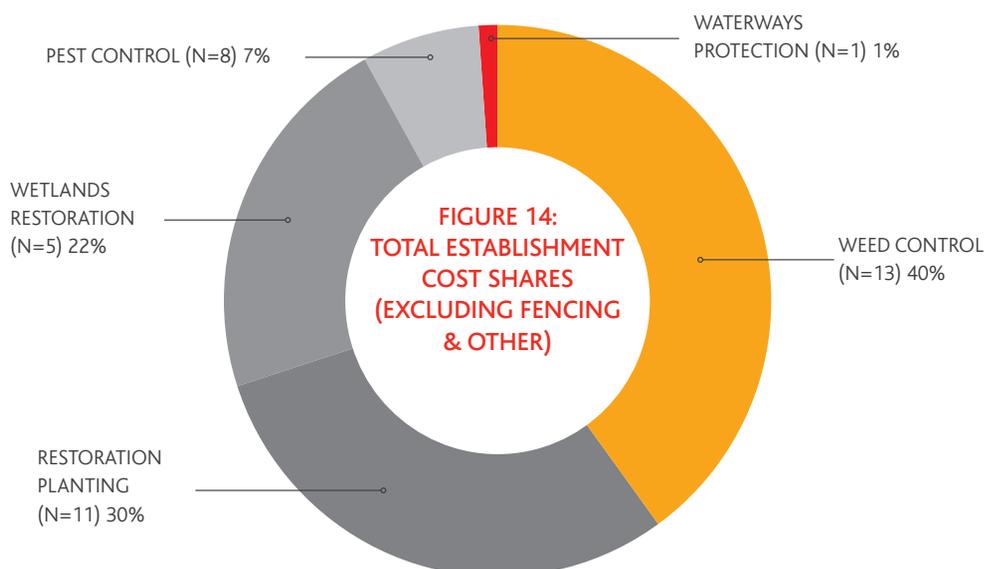
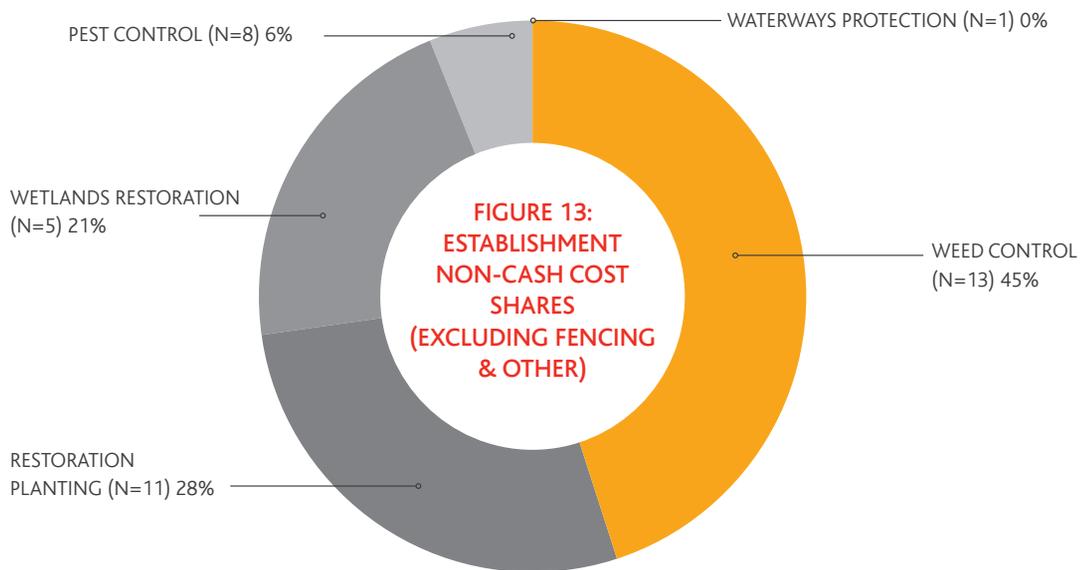
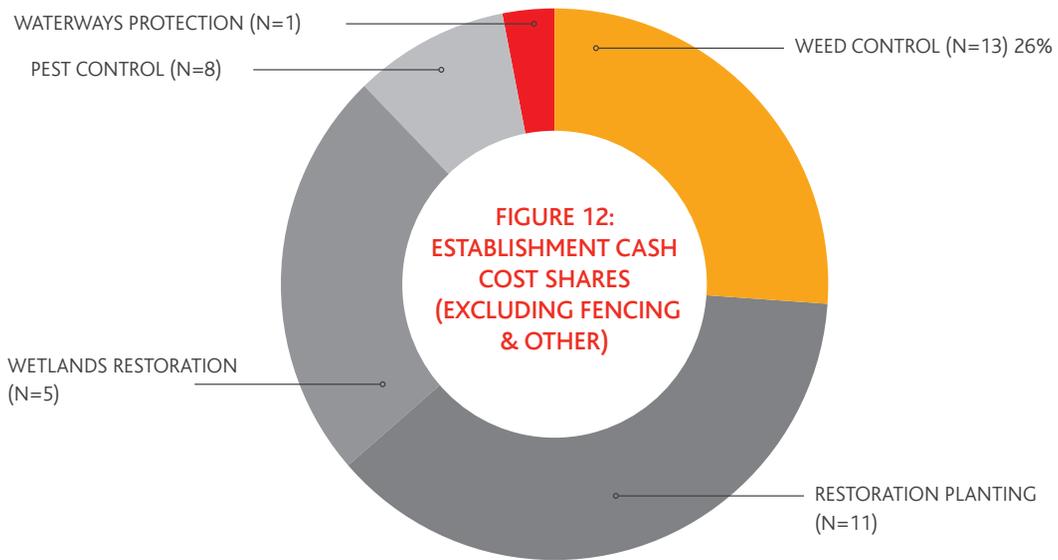
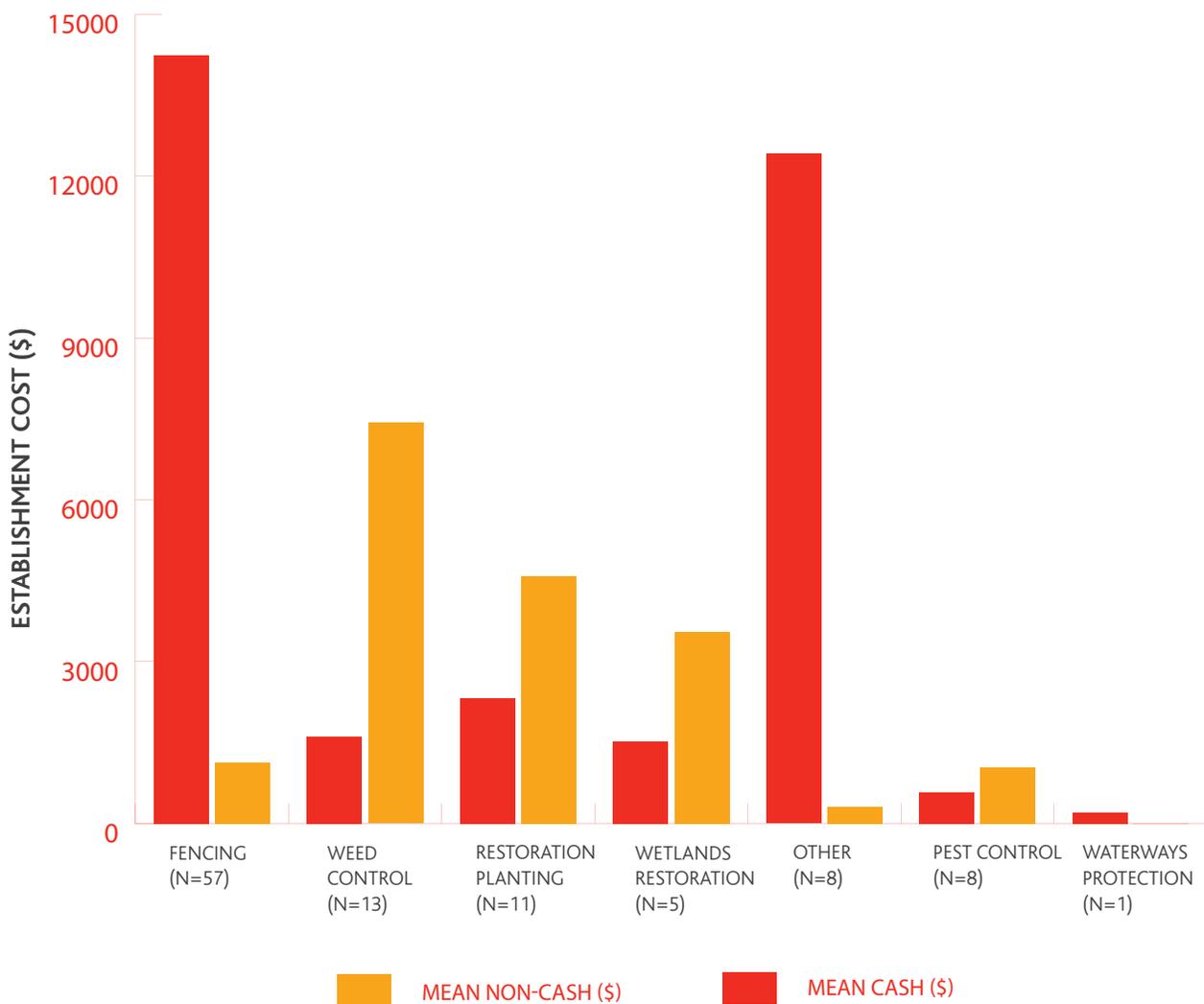


FIGURE 15: PER COVENANT ESTABLISHMENT COST CASH (\$) & NON-CASH (\$)



Ongoing Maintenance Costs

Table 6 shows mean annual maintenance cost per covenant. Waterways protection appears to have the highest mean annual maintenance cost. Figure 16 shows ongoing maintenance mean cash cost shares. Figure 17 shows ongoing maintenance mean non-cash cost shares. Figure 18 shows ongoing maintenance mean total cost shares and Figure 19 shows ongoing per covenant maintenance cost.

Table 6: Mean Annual Maintenance Costs per Covenant

Type of Cost	Cash (\$)	Non-Cash (\$)	Total Cost (\$)
Waterways Protection (n=2)	\$2,000	\$480	\$2,480
Restoration Planting (n=13)	\$1,142	\$1,169	\$2,311
Wetlands Restoration (n=1)	\$500	\$1,782	\$2,282
Other (n=9)	\$711	\$1,188	\$1,899
Weed Control (n=69)	\$532	\$1,291	\$1,823
Fencing (n=43)	\$516	\$347	\$863
Pest Control (n=41)	\$396	\$367	\$763

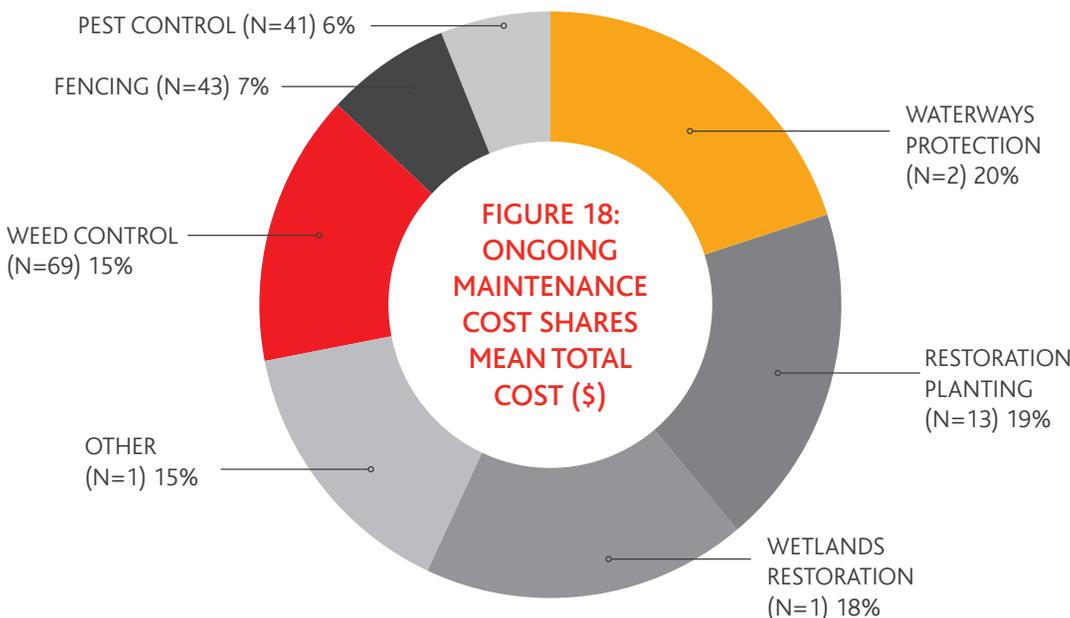
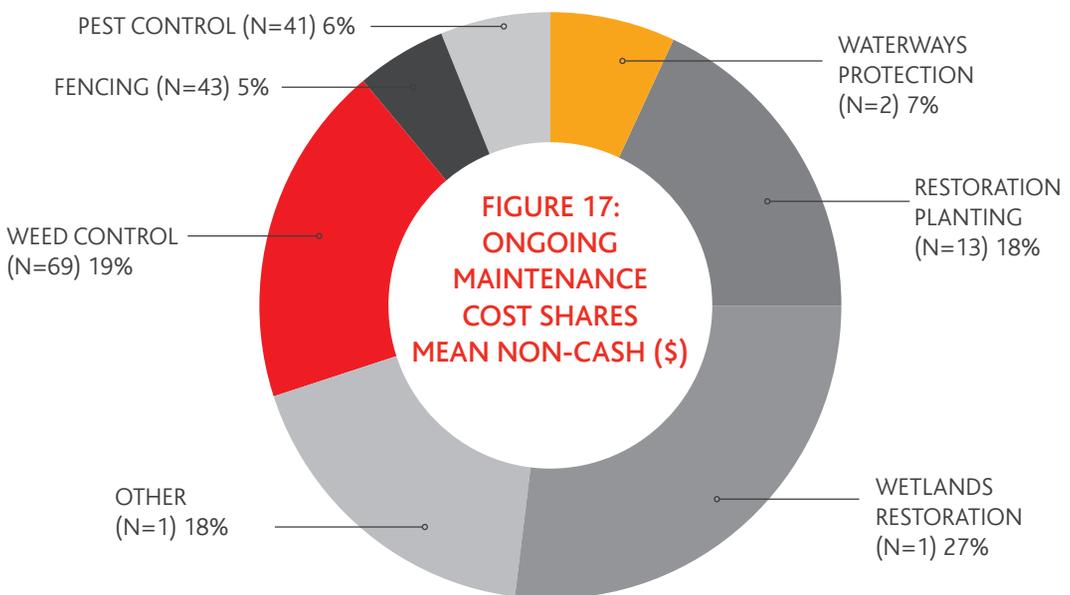
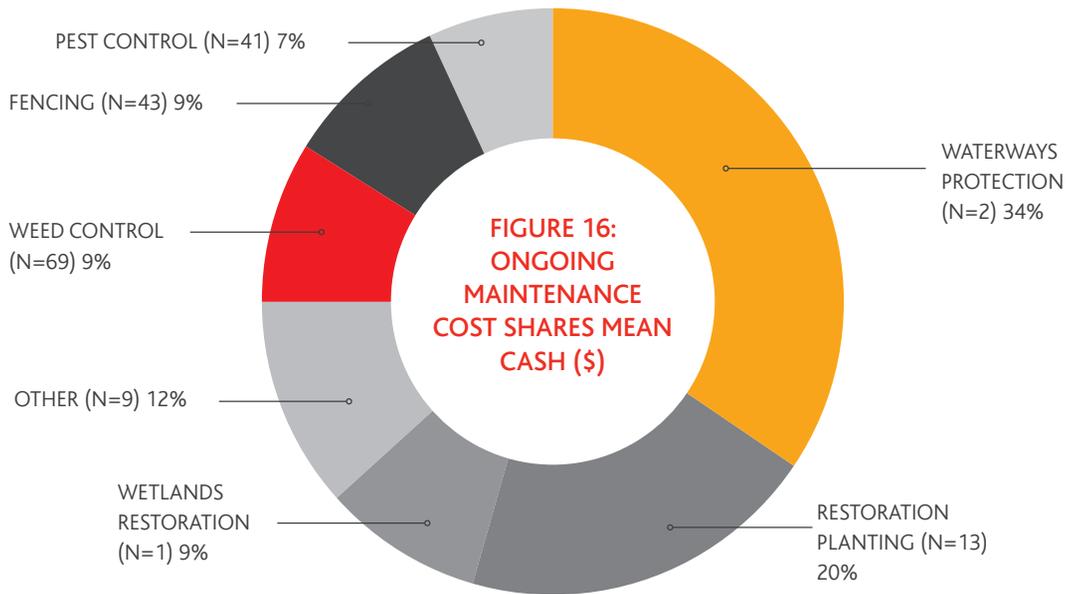
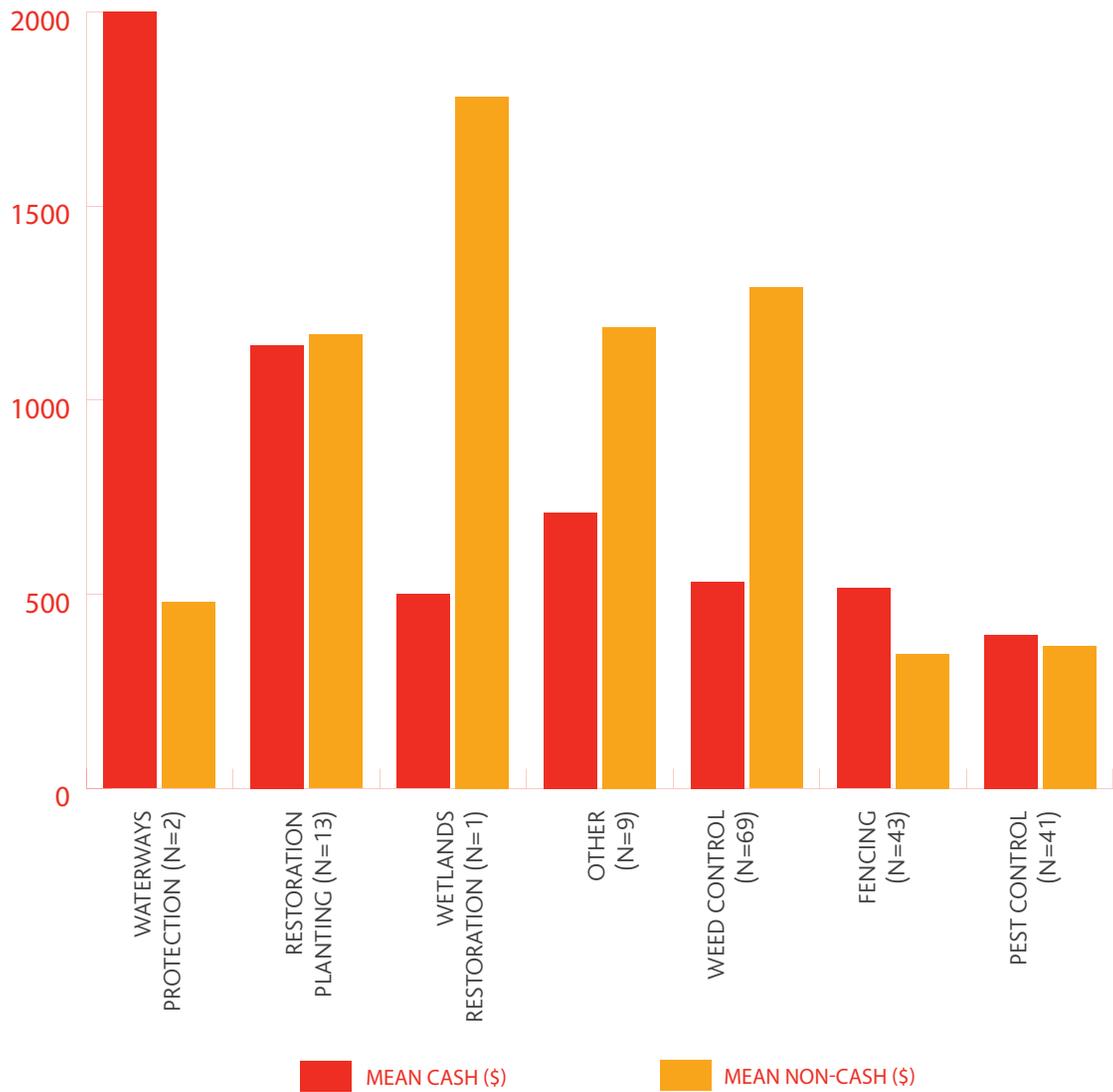
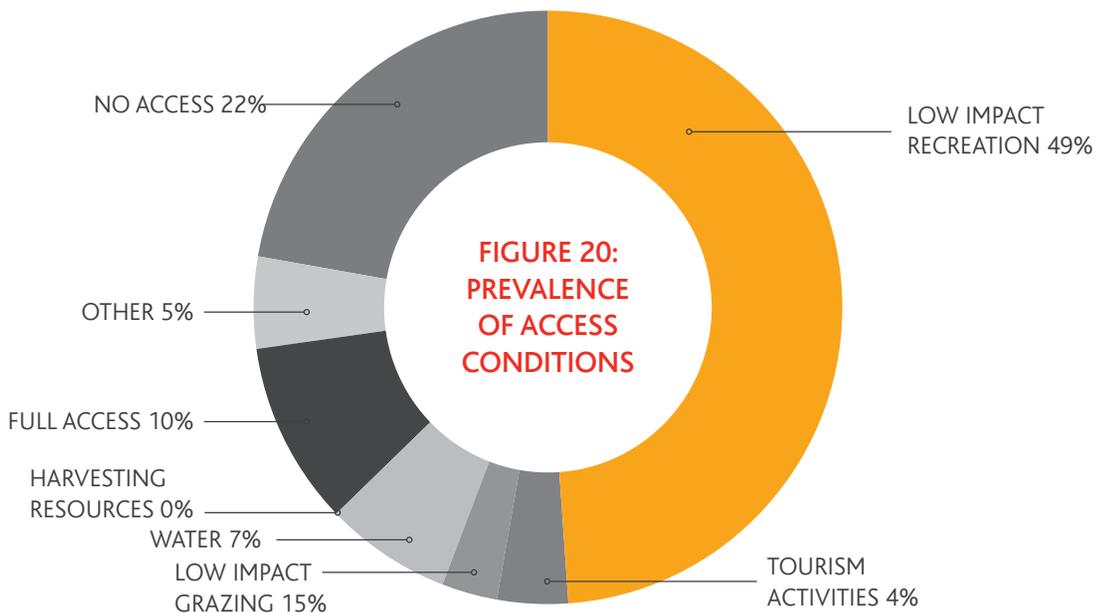


FIGURE 19: ONGOING PER COVENANT MAINTENANCE COST



Access Conditions

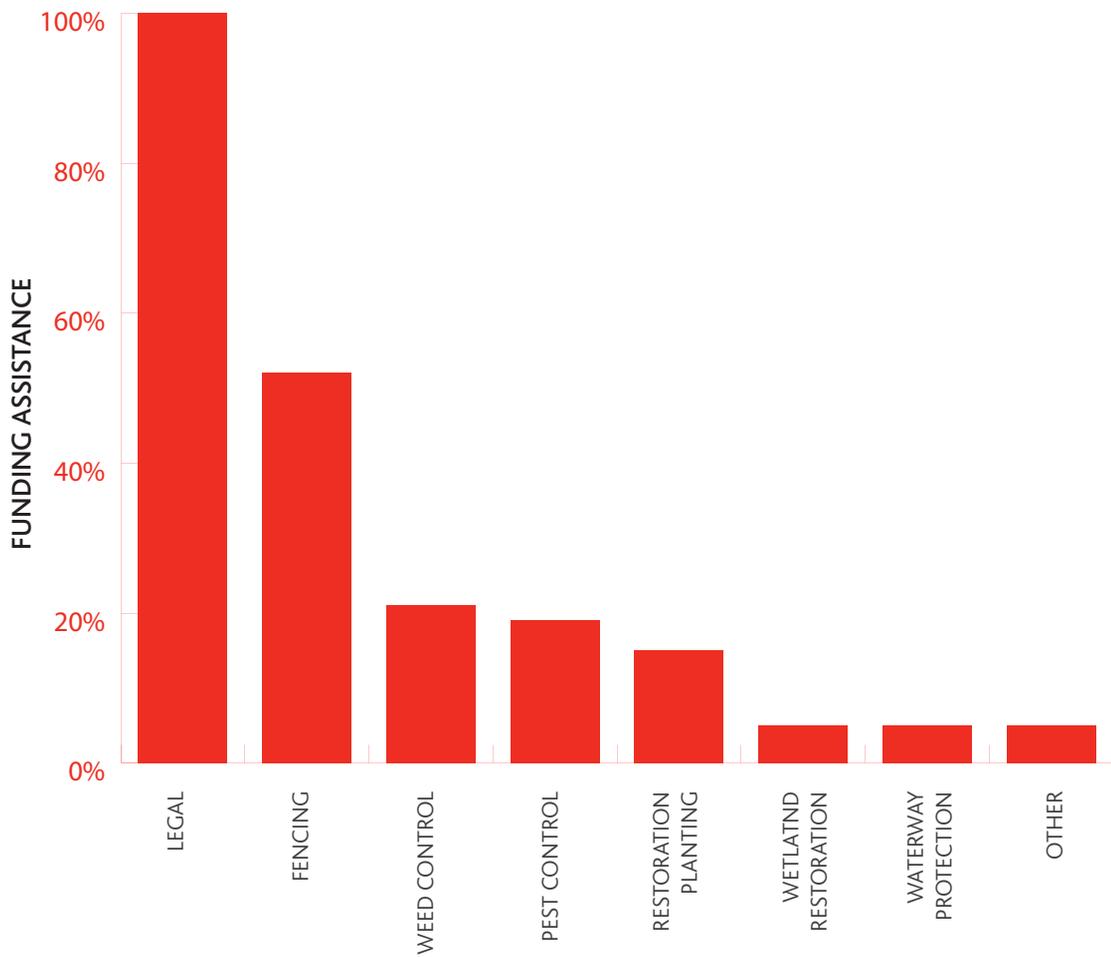
Figure 20 reports the prevalence of access conditions. The survey results reveal that 49% of covenants provide access for low impact recreation.



Funding Assistance

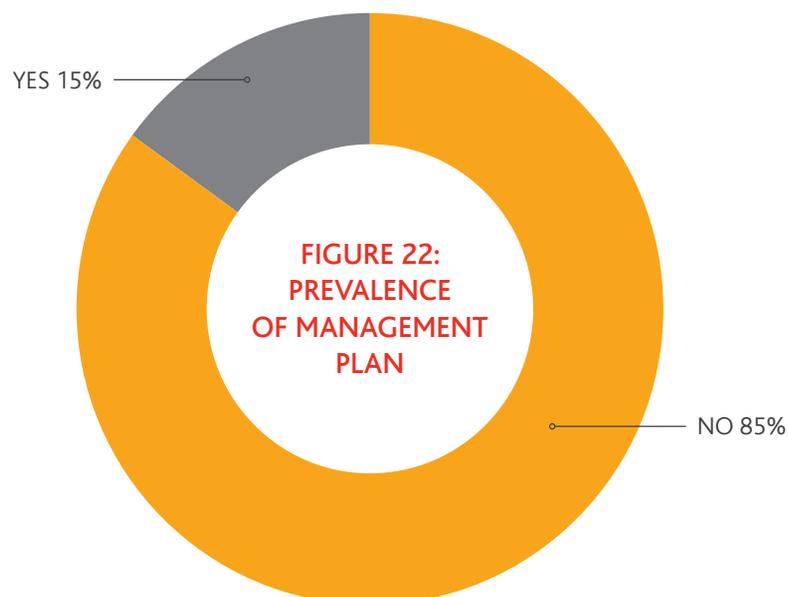
Figure 21 reports the prevalence of funding assistance. The survey results reveal that all respondents received funding assistance for legal costs when establishing covenants and 52% received funding towards fencing costs.

FIGURE 21: PREVALENCE OF FUNDING ASSISTANCE



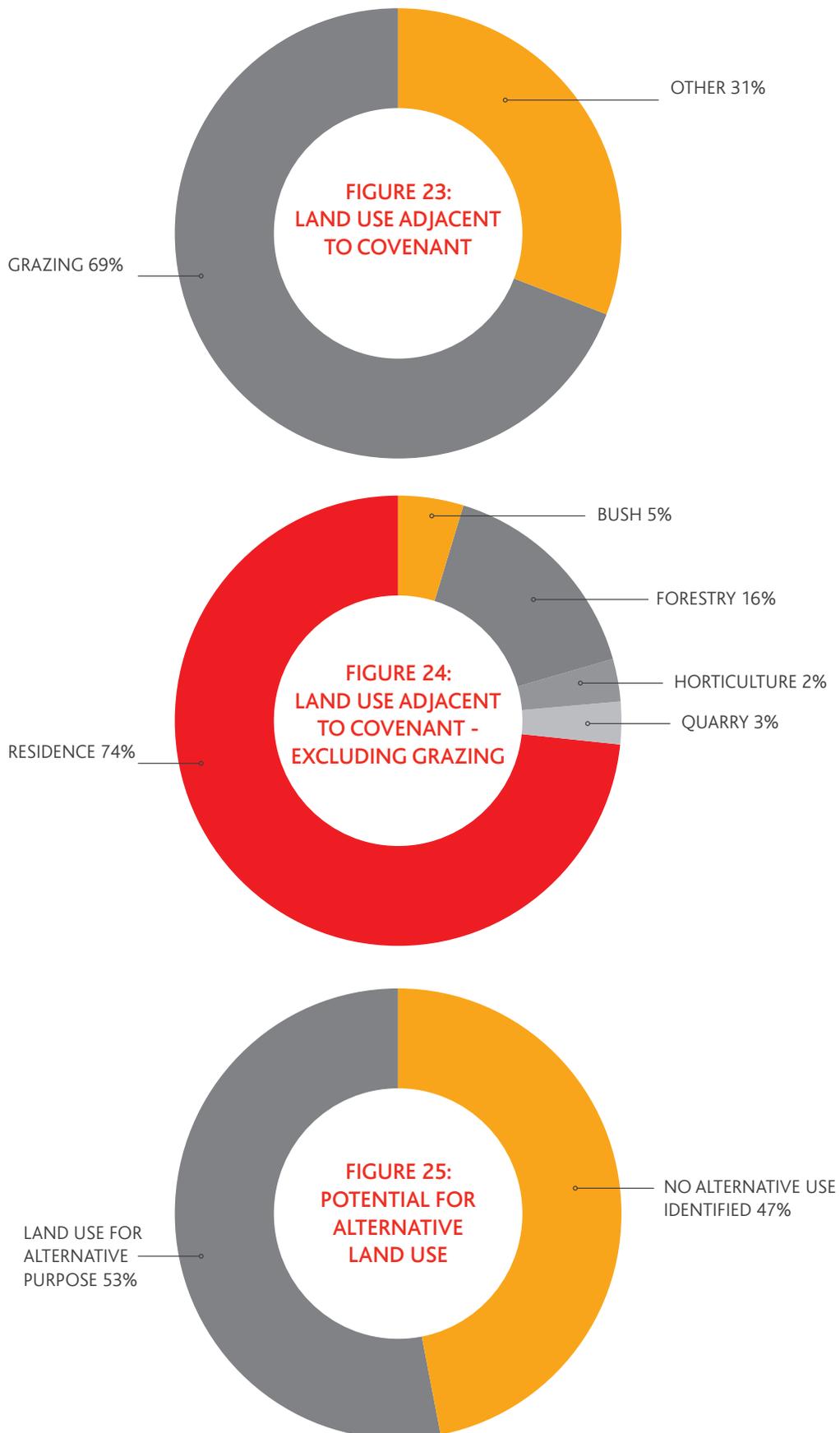
Management Plans for Covenanted Area

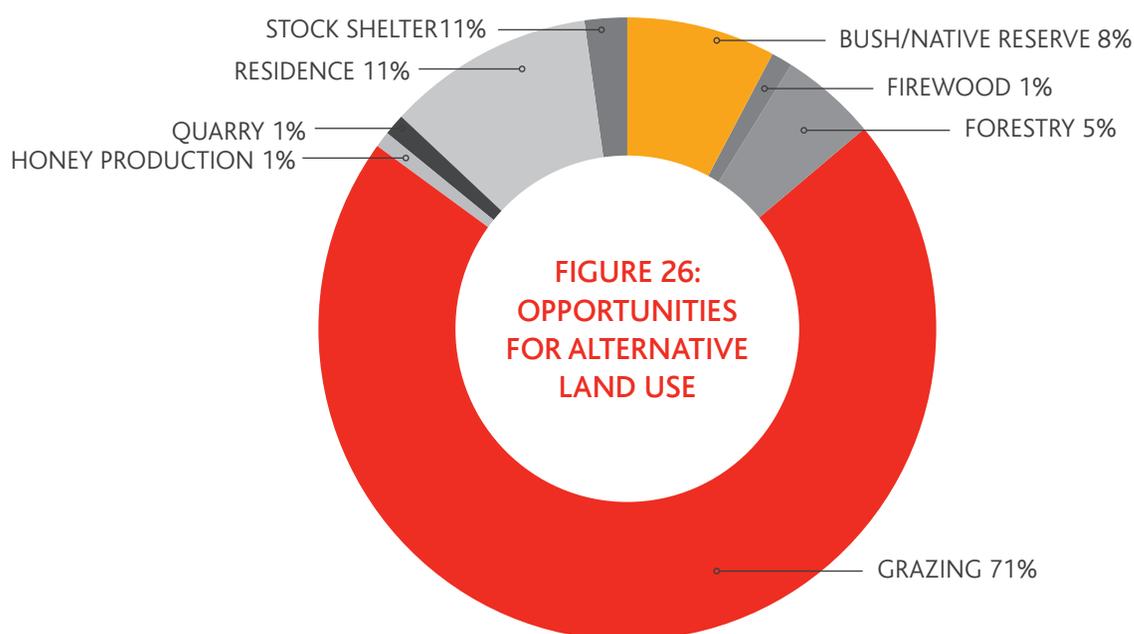
Figure 22 reports the prevalence of management plans. It shows that 15% of the respondents have a formalised management plan to guide management and investment.



Land Use

Figure 23 shows the land use adjacent to covenant. It shows that 69% of respondents use their properties adjacent to the covenants for grazing. Figure 24 shows the land use adjacent to covenant excluding grazing. It shows that after excluding grazing, 74% of respondents use their properties adjacent to the covenants for residence purpose. Figure 25 shows the potential for alternative land use. It appears that 53% of covenanted areas would have had an alternative economic use that is foregone by the covenants.





TOTAL NEW ZEALAND INVESTMENT IN COVENANTED AREAS

The total landowner investment in covenants is reported in Table 7. These expenditures are in nominal dollars. The total expenditure across the nation is calculated on the basis of the total 4,226 registered covenants as at 30 June 2016.

The national establishment cost per covenant of approximately \$48,400 is the mean per hectare cost (obtained from the survey) multiplied by the mean covenant size (ha) from the total population of covenants in New Zealand. The mean per hectare cost from the survey is \$1,228 whereas the mean size for the population is the total area of land covenanted in New Zealand divided by total registered covenants, i.e., $166,685/4,226=39.4$ ha.

The national maintenance cost per covenant of approximately \$5,960 is the mean per hectare cost (obtained from the survey) multiplied by the mean covenant size (ha) from the total population of covenants in New Zealand. The mean per hectare cost from the survey is \$151 whereas the mean size for the population is the total area of land covenanted in New Zealand divided by total registered covenants, i.e., $166,685/4,226=39.4$ ha.

The national establishment cost of \$204.6m is per covenant establishment cost multiplied by number of covenants. It should be noted that in 2016 dollars the total establishment cost would be a much larger figure given the inflation that has occurred through time. The national maintenance cost of \$25.2m per annum is per covenant maintenance cost multiplied by number of covenants.

Table 7: Investment Expenditures to Date

Nominal expenditures	Per covenant	Per ha	Nationally
Establishment Costs	\$48,423	\$1,228	\$204,637,510
Maintenance Costs	\$5,964	\$151	\$25,202,173
Total Costs	\$54,387	\$1,379	\$229,839,684

Table 8a and 8b report the total value of landowner investment in covenants. The opportunity cost is derived from approximately half the covenants where there is potentially an alternative land use for the covenanted areas such as grazing, residential sites and other uses. The opportunity cost is estimated to be \$440m in Scenario 1 and \$640m in Scenario 2. In Scenario 1, the estimated cost per covenant is \$300k for each residential site (6% of the covenants) and other use (10% of the covenants). In Scenario 2, the estimated cost is \$600k (implying there is twice as much opportunity foregone as in say higher amenity values or the

potential for two building sites rather than one). In both scenarios the estimated cost of grazing (38% of the covenants) is \$156k per covenant. The establishment costs were converted to 2016 dollars using a Statistics New Zealand farm expenses price index. The maintenance costs were assumed to be annual costs continuing over a 30-year period at 5% discount rate. The estimated net present value of the total investment across the nation is in the range of \$1.1b to \$1.3b.

Table 8a: Net Present Value of Investment (Scenario 1)

	Per covenant	Per ha	Nationally
Opportunity Costs	\$104,813	2,657	\$442,938,893
Establishment Costs	\$64,108	1,625	\$270,922,104
Maintenance Costs	\$91,556	2,321	\$386,915,907
Total Costs	\$260,477	\$6,604	\$1,100,776,904

Table 8b: Net Present Value of Investment (Scenario 2)

	Per covenant	Per ha	Nationally
Opportunity Costs	\$137,783	3,493	637,799,753
Establishment Costs	\$64,108	1,625	\$270,922,104
Maintenance Costs	\$91,556	2,321	\$386,915,907
Total Costs	293,448	7,440	1,295,637,764

Landowner expenditures varied significantly between regions. Table 9 reports establishment expenditures by region and Table 10 reports annual maintenance costs by region.

Table 9: Mean Establishment Expenditure per Covenant by Region

Region	Cash	Non-Cash	Total
Northland	\$7,083	\$3,038	\$10,121
Auckland	\$8,457	\$2,818	\$11,275
Bay of Plenty	\$46,000	-	\$46,000
Waikato	\$6,617	\$10,179	\$16,796
Gisborne	\$1,000	\$450	\$1,450
Hawkes Bay	\$34,367	-	\$34,367
Taranaki	\$23,250	\$2,070	\$25,320
Manawatu-Wanganui	\$5,789	\$1,640	\$7,429
Wellington	\$12,104	\$630	\$12,734
Marlborough	\$3,200	\$720	\$3,920
Nelson	\$1,300	\$1,350	\$2,650
Tasman	\$2,475	\$725	\$3,200
Canterbury	\$51,050	\$176	\$51,226
West Coast ²	NA	NA	NA
Otago	\$9,500	\$13,500	\$23,000
Southland	\$18,567	\$4,104	\$22,671

² Respondents did not have any information about the establishment costs.

Table 10: Mean Annual Maintenance Expenditure per Covenant by Region

Region	Cash	Non-Cash	Total
Northland	\$477	\$1,234	\$1,710
Auckland	\$319	\$1,062	\$1,381
Bay of Plenty	\$1,310	\$198	\$1,508
Waikato	\$1,785	\$1,951	\$3,736
Gisborne	\$300	\$149	\$449
Hawkes Bay	\$1,433	\$1,176	\$2,609
Taranaki	\$1,290	\$634	\$1,924
Manawatu-Wanganui	\$756	\$640	\$1,396
Wellington	\$244	\$1,615	\$1,859
Marlborough	\$1,100	\$720	\$1,820
Nelson	-	\$4,320	\$4,320
Tasman	\$879	\$1,085	\$1,964
Canterbury	\$161	\$2,338	\$2,499
West Coast	\$375	\$14	\$389
Otago	\$1,180	\$5,846	\$7,026
Southland	\$461	\$536	\$997

OTHER MATTERS REPORTED

More than 96% of respondents interviewed spoke favourably about their covenanting experience.

Some gave positive feedback about support received from staff members from Territorial Authorities, Regional Councils, the Department of Conservation and volunteers.

A small minority provided negative feedback about difficulties with staff from Territorial Authorities, Regional Councils, and the Department of Conservation.

Some respondents spoke of challenges associated with neighbours such as weed infestations from neighbouring properties.

Some respondents spoke favourably about neighbours working together to achieve their goals.

Some respondents spoke of concerns associated with aging volunteers and the inability to fund weed and pest control.

A small number of respondents spoke of challenges associated with low dairy prices reducing resources in the same year that flooding caused fence damage.

Some respondents spoke of their appreciation of rates relief associated with their covenants, whilst others indicated they received no rates relief or the rates relief they did receive was minimal and from their perspective irrelevant.

ANALYSIS OF CASE STUDIES

This section provides in-depth analysis of four covenanted areas. The sites were selected in order to describe details of four diverse cases where landowners are making very substantial investment in QEII covenanted land. In order to carry out the analysis, site visits to the properties and face-to-face interviews were conducted with the landowners. During the interviews, all possible information was collected that includes information about motivations; establishment cost, maintenance costs and opportunity costs; relationships with authorities; challenges and future considerations.

The four cases studies are:

- McNeil family properties, Whitianga;
- Highlands Station, Bay of Plenty;
- Mahu Whenua, Central Otago; and
- Duncraigen Station, Southland.

Basic descriptive information concerning the selected cases is presented in Table 11 below.

Table 11: Description of Selected Cases

Case	Location	Primary Landuse of Property	Area of property (ha)	Area Covenanted (ha)
McNiel Family	Whitianga	Conservation	82	82 (4 covenants)
Duncraigen,	Southland	Sheep & cattle farming	1,346	49 (8 covenants)
Mahu Whenua,	Central Otago	Sheep farming	55,522	51,544 (4 covenants)
Highlands Station	Bay of Plenty	Cattle farming	1,200	143 (8 covenants)



CASE 1: MCNIEL FAMILY PROPERTIES, WHITIANGA

Introduction

The open space covenants examined in the following case study are those that were established by, and are held by the family of, the late Jo McNiel. It consists of 82 hectares of mostly regenerating native bush, in a prominent location overlooking the Whitianga Harbour and township. It was covenanted with the intention of providing a pleasant, natural "back drop" to the holiday town in an area of ongoing housing development.

Basic facts and timeline

The 82 hectares of covenant was registered in 2005 as a single block, but was split between Mrs McNiel's children upon her passing and is now registered as four separate blocks, that are largely treated as a single continuous piece of native bush. The four current blocks in this case study are held in two family trusts, one 12.75 ha block is held by the Ryan Family Trust alongside three blocks held by the Backdrop Trust; one of 60.7 ha and two 4.04 ha blocks that both have building rights which could be exercised at a later date. The covenant blocks make up all of the property held by these trusts, which is to say there is no uncovenanted land on the properties, and the blocks are bordered by Whitianga Harbour, Department of Conservation (DoC) and Thames-Coromandel District Council lands and some cattle grazing on neighbouring properties.

Relationships with neighbouring properties

The respondents have described their relationships with private property owners adjoining the covenants as very good, allowing the covenant owners access through their properties to the most practical entry points of the covenanted areas and assisting with conservation activities such as tree planting and track clearing within the QEII blocks. The relationship with DoC is said to involve minimal contact, to the point where the respondents believe the Department has little interest in the conservation activities they are undertaking, especially given current issues with asparagus fern in the area and its potential to spread to nearby DoC land. Seed spreading of this pest and other exotic tree and plant species by birds from neighbouring properties is seen as potentially the most adverse effect on the QEII covenants.

Purpose, motivations, and benefits achieved

As noted earlier, these blocks were covenanted with the QEII National Trust to protect the regenerating native bush on the block and provide a vast, natural vista for the Whitianga township. It is understood that when the covenanting owner, Jo McNiel, was considering how best to protect the area, there was consideration of leaving the property to the Crown, but it was believed that a QEII open space covenant provided protection in perpetuity that may have been at risk under other scenarios.

Current motivations are to continue restoring the blocks to their full, native state and reduce the prevalence of exotic or introduced plant species within the covenant. The current and ongoing planting programmes are set to build further canopy cover in the coming years, establishing a stock of natural capital for future regeneration.

Securing the property for conservation purposes is viewed by the current owners as a significant success, in a district where ongoing

resort development is common. The presence of kiwi in and around the covenant, as noted by a neighbour who witnessed one on their property in 2016, is perhaps confirmation that the owner's efforts are creating positive conservation outcomes.

Establishment costs

Establishment costs of the covenant blocks are described by the current owners as very little, as the blocks were fenced off 2 years prior to the covenants being registered by Mrs McNiel. Lawyers' fees involved in the process of applying for and processing the open space covenant were paid by the covenantor, and are viewed as being the most significant establishment costs that were involved for this property.

Opportunity costs

The primary opportunity cost involved with these QEII blocks is the potential sales value of the land for development, most probably into holiday or high value housing given the location of the property near a holiday resort town and its natural, aesthetic value. The current owners indicated that the land was valued at approximately \$5.5m when it was covenanted in 2005, but could be potentially worth close to \$20m now.

Maintenance costs

Maintenance costs for these covenants are significant. Weed control was described as being a "continual" cost and battle, particularly with regard to asparagus fern in recent times.

The three blocks held by the Backdrop Trust (total 68.8ha), require maintenance to a cost of approximately \$14,100 per annum, or about \$205 per hectare. This value includes hours volunteered by the owners, costs of fuel, machine use, tree and plant costs, accountant fees, rates, pest control as well as travel and accommodation costs to the owners, as they reside a few hours away from the covenant property itself. These blocks have not yet required any one-off enhancement or replacement capital costs.

The Ryan Family Trust block (12.75 ha) has noted an annual maintenance cost of around \$3,100 inclusive of hours volunteered. This \$243 per hectare value includes costs for rates and track clearance, and travel costs for the owners who reside elsewhere. Furthermore, this covenant block has also incurred \$3,820 of capital costs to the owners for replacing a portion of boundary fencing; this figure represents approximately 50% of the overall cost of the project, with the QEII National Trust contributing towards the remaining half in meeting the material costs, as noted in the Funding section.

With regard to the conservation activities on the blocks, the owners all indicated that the amount of work being undertaken at present is at a satisfactory and preferred level, in terms of both time and financial costs. Increases in the property value and the rates on the blocks have not been significant enough to affect the efforts and contributions they are making towards the covenants at this point, but the owners are mindful that these increases could have a negative impact in the future. Some difficulties are presented to the owners because they do not live on the property requiring them to make trips to the blocks for the purpose of meeting Council or QEII National Trust staff or conducting maintenance or conservation activities.

Map of McNeil Family Covenants



Relationships with authorities

The relationships that landowners have with relevant authorities can be described as mixed in this case. The relationship with the QEII National Trust has been positive, with some Trust funding assistance for conservation activities and infrastructure costs (as detailed in the next section). Arrangements concerning covenant inspections have not always been easy. The owners noted that there is perhaps a role for QEII National Trust representatives to play as more of a 'facilitator' between landowners and staff of Territorial Authorities, Regional Councils, Government or other groups which are relevant to their plans or needs.

The owners noted that the relationship with the Waikato Regional Council (previously Environment Waikato) has been very good, particularly with regard to funding and information about plant pest species, assisting with organising weed-spraying crews and specifically noted the input of an individual council staff member based in the Whitianga area.

The relationship with the local Thames-Coromandel District Council however is poor, to the point that the owners believe the TCDC "don't want to know us". One main issue is the difficulty with which a rebate is obtained on local rates, where TCDC required applications and/or correspondence from owners each year to gain a rebate. This was until recently when the TCDC changed the rate rebate period to 3 years. This is in comparison with the Waikato Regional Council, who have adjusted rates automatically upon registration of the covenant.

Funding

Funding of the conservation activities on these blocks is largely from the families which hold the blocks in trust, however it is noted that for some specific activities, funding has been received from the Waikato Regional Council, the QEII National Trust or both.

In one case, efforts to remove wilding pines from the covenants was funded in parts by the owners; who spent approximately \$20,000. The QEII National Trust provided a similar amount and the Waikato Regional Council also provided funding. And in another action, the cost of materials for replacing a large section of boundary fence on the Ryan Family Trust block was met by the QEII National Trust, representing around 50% of the overall cost of the work.

The respondents also commented that the WRC have been willing to contribute on an ongoing basis, towards the costs of trees for restoration planting, and the cost of sprays and gels required for weed control.

The Future

The owners indicated some ambitious and admirable plans for the future of these QEII blocks and spoke of these plans with passion. In the near term, increasing biodiversity of native species through further planting programmes and controlling weed species is their main focus, particularly in the regenerating Backdrop Trust blocks. The block held by the Ryan Family Trust consists of more mature native bush and so the owner's focus is more on protecting and enhancing the block's natural capital.

In the longer term, the landowners spoke of a 'dream' to eventually establish an entirely native, ecological island that exemplifies New Zealand's establishment native environment within the covenant blocks, by erecting a predator-proof fence and clearing exotic or introduced plant species from within the area. However, it was noted that this vision would be costly, and may require the sale of one or both of the four-hectare blocks with building rights to fund the ambitious plan.

Such a natural asset could present significant tourism value to the Whitianga area as well, an area which already boasts

natural features such as Cathedral Cove, Hot Water Beach and Te Whanganui-A-Hei Marine Reserve. The owners noted that concerns over human-related factors such as fire, invasive weeds, littering and damage to new plants all represent risks or factors that could limit the blocks' use for public access and tourism.

In a general sense, the owners mentioned that for these blocks or any other QEII covenanted area, the greatest limitation to its potential is the education of owners in what could be achieved with an open space covenant.

Conclusion

This case of a cohesive set of co-located QEII covenanted areas is not representative of a 'typical' open space covenant in that it relates to property that is 100% covenanted. However, it is an important example of landowners bearing significant opportunity cost and making ongoing investment to ensure the protection of valuable natural assets. Further analysis is possible to determine the challenges and successes associated with these covenants.



John Poulton and his daughter Zari planting in their covenant

CASE 2: HIGHLANDS STATION, BAY OF PLENTY

Highlands Station is a family sheep and beef farming operation, with a prolonged commitment to conservation by the Ford family, initially under the guidance of Harry Ford and latterly on the part of John (Harry's son) and Catherine Ford. The family's conservation activities were recognised nationally with the Supreme Award in the 2015 Ballance Farm Environment Awards. The farm consists of

approximately 1,200 ha of hill country land south of Rotorua, with 143 ha of native bush held in a number of covenants with the QEII National Trust. Information for this case was obtained through a meeting with John and Catherine Ford in October 2016. A map of the property is presented below.

Map of Highlands Station Covenants



Approach to Conservation Investment

Long-run planning and day-to-day farm management have a significant influence on the environmental decisions and outcomes of the property, in such ways as selecting suitable native species for riparian planting along waterways or in-fill planting within the QEII blocks, based on their ability to stabilise soils or their resilience to adverse weather. Scientific evidence and support are important factors shaping both farming and environmental decisions on the property.

The baseline for investment in QEII areas on this property is not common in the sense that the blocks have been retained in their natural, native bush state since the establishment development of the farm in the early 20th Century. These areas were not productively used aside from some selective rimu harvesting. They were fenced off from the productive section of the property at the owner's expense well in advance of being placed under QEII covenant. Some reimbursement for a portion of these costs was met by the Regional Council at a later date. The QEII blocks are surrounded by approximately 20 km of fencing, which is predominantly 7-wire post and batten. Additionally, in-fill planting between the edge of the native bush and the mostly straight fence lines that were erected around them has been undertaken by the

owners. It is estimated 4,000 to 5,000 plants were planted. These establishment fencing and planting costs are therefore a significant investment made on the part of Highlands Station and have been estimated to be in the order of \$300,000 in 2016 dollars.

Motivation and History

Protection, conservation and regeneration of native bush on valued but unproductive areas of the property has been a long-term priority for the Highlands Station ownership, dating back to some of the earliest dates of the farm development, when bracken was cleared and burned and pasture sown. These areas were mostly retained in their natural state and remained unfenced until the mid-1980s before being placed under QEII protection in the early 1990s. The decision to place the areas in QEII covenant was taken by Harry Ford as part of his succession planning and his clarification of his aspirations for the future.

Under the ownership of John and Catherine Ford the property has continued to operate with a focus on productive agriculture alongside preservation and enhancement of the natural bush area. Ponds to trap sediment flow off this hill country property have been utilised within some of the covenant areas, just as they have been in uncovenanted portions of the property. This not only

protects these areas from soil erosion but also contribute to a significant improvement in water quality in nearby waterways such as the Waiua stream.

Opportunity Costs

The opportunity cost of the covenanted portions of Highlands Station have been described by the owners as "huge". They did recognise value to the natural environment that is retained under QEII but noted that in most situations no one is willing to pay the landowner for this. The owners estimate this opportunity cost to be \$10,000 to \$15,000 per hectare, meaning the total opportunity cost of the QEII blocks of Highlands Station could be up to \$2.1m. Development costs of converting this land to an alternative use, such as pastoral grazing would erode any gains that could be unlocked should this hypothetical scenario be able to be realised in practice. Further the Resource Management Act and planning rules have changed through time making such change in landuse more difficult to achieve. However, this should not be used to minimise the opportunity cost paid. At the time of covenanting, alternative uses were possible and the Ford family did not pursue them in order to pursue the conservation goal.

Estimated Establishment Costs

Establishment costs at the time of covenanting were minimal in this case, given the level of existing fencing and planting that had already taken place by the 1990s when the covenants were registered with the QEII National Trust. The current owners believe that the only cash expenditures involved in formalising the covenant at this time were the surveying costs, which the Trust covered. Also, as the covenants were surveyed with regards to the existing fence lines, there are not believed to be any issues that exist relating to legal boundaries of the covenants.

Estimated Maintenance Costs

Maintenance costs on this property consist of two parts. They include a labour cost for time spent on fence repairs or planting each year and more irregular capital replacement costs particularly on fencing.

Annual Maintenance

Maintaining the fences around the QEII blocks on Highlands Station to exclude livestock is required at a similar level to the other stock fencing throughout the rest of the property. However, this is found to be for differing reasons, as stock pressure on the QEII block fences is low but damage from falling trees or branches is the major issue. The cost of these repairs is typically a labour cost, in clearing fallen debris, retightening of wires or replacement of broken battens and the like. In the owners' experience, these costs are no more or less than expected throughout the rest

of the farm and so these costs are usually met by farm operating expenses or labour, estimated to be 30 to 40 hours per year for the QEII fencing. Also, clearing stock that have entered QEII portions of the property also incurs a small amount of labour costs for the farm each year, estimated to be in the range of 15-20 hours each year.

Some planting of native species within the QEII areas is usually completed annually in the order of 15-20 hours per year. Overall then, annual covenant maintenance labour costs incurred by the Highlands Station operation, assessed at a rate of \$18/hr, are estimated to approximate \$1,500 per annum.

Capital Replacement

Replacement fencing costs are the primary form of irregular capital costs faced by this property. These are incurred each three to five years when a section of fence is replaced. One recent expenditure of around \$12,000 was required in 2013. It is believed this was funded in part by the QEII National Trust. Such fence replacement costs are likely to be recurring over the coming years as many of the establishment fences are 30 years or more old. Given this, the Fords expect to spend approximately \$20,000 in the next 4 to 5 years.

Given this information it can be expected that fencing replacement costs would tend to mean around \$4,000 per annum over a short to medium term. Changes to the farm operation however could result in a variance in this value: e.g., increased grazing of larger beef cattle could require increased investment due to greater stock pressure on the fencing.

Conservation Investment and neighbouring properties

Highlands Station has active protection of covenanted areas for damage by people and domestic animals. However, the vegetation and birdlife does suffer from mammalian pests that frequent the bush. It is impractical to effectively control these pests whilst neighbouring properties in both public and private ownership make no significant effort to control them.

Conclusion

There has been a sustained commitment to conservation by the Ford family. Highlands Station operates with a focus on productive agriculture alongside preservation and enhancement of the natural bush area. It has involved significant opportunity cost, establishment investment and ongoing investment in maintenance. However, the family understands the value they have protected and enhanced, even though they do not expect any market reward from this value enhancement.

CASE 3: MAHU WHENUA, CENTRAL OTAGO

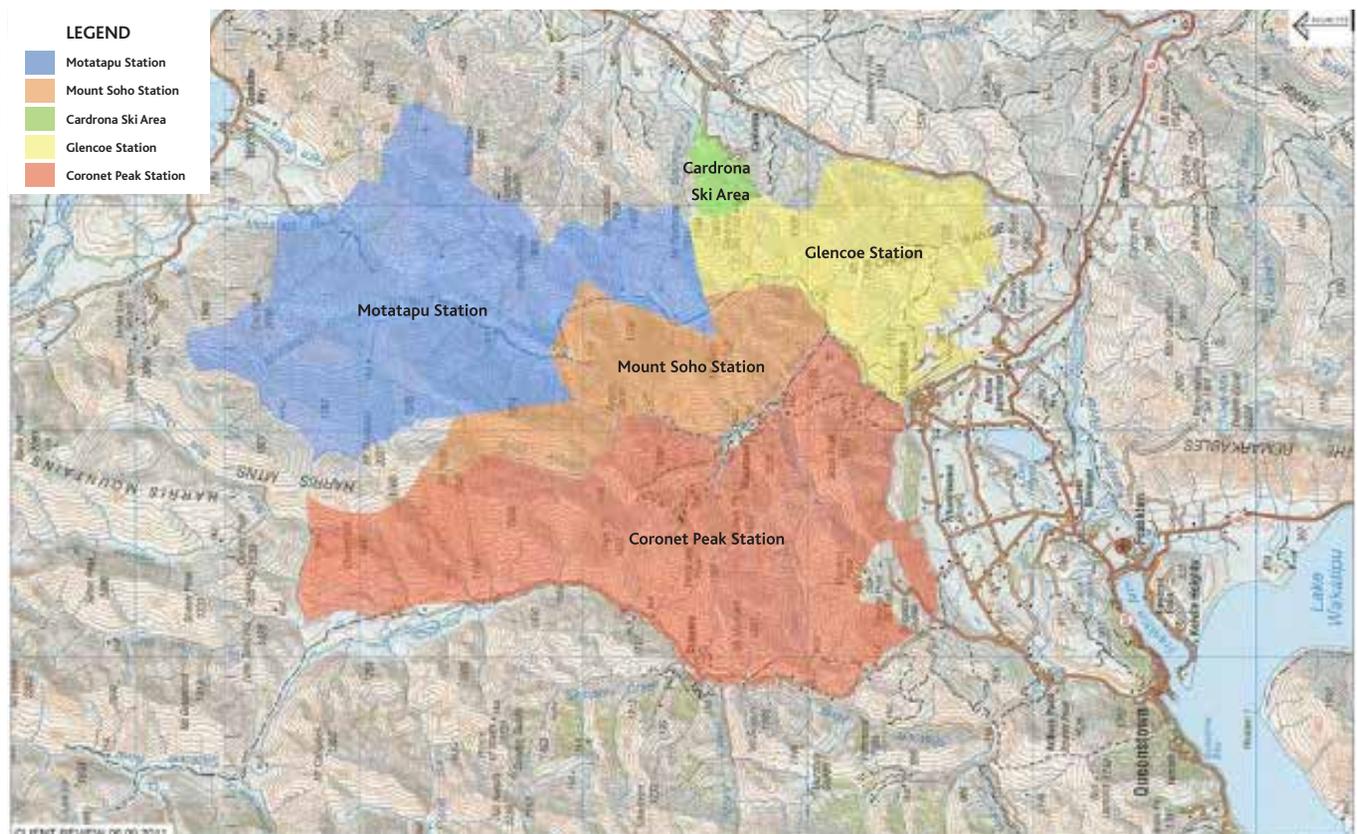
Mahu Whenua is a major conservation initiative in its own right. It is located within the Queenstown-Lakes District in Central Otago New Zealand. Mahu Whenua has worked closely with QEII National Trust and as a result 51,544 ha of land has been covenanted. Mahu Whenua is a private initiative of Soho Property Limited. Information for this case was obtained from a meeting with Russell Hamilton (Soho property manager) during August 2016 and from accessing www.mahuwhenua.com.

Four properties were purchased to create Mahu Whenua. Motatapu and Mt Soho Stations were purchased in 2003, Glencoe Station in 2010 and Coronet Peak Station in 2011. The four stations have a combined legal area of 55,522 ha, predominantly mountains

and gullies and most of the land is very steep. As the legal measurement uses a flat measure of the area, the surface area is up to a third larger (73,700 ha). Following establishment of the covenants, only 8% of the land is still utilised for farming, and 92% (51,600 ha) is covenanted. The owners pay particular attention to both sustainable farming and the conservation of natural assets. Although the four stations are spectacular, they have been harmed by historic pastoral practice, gold mining, and more recently by unsustainable land development during the 1980s when policy signals in the form of subsidies encouraged this.

Some core features of the stations can be seen in the map of Mahu Whenua.

Map of Mahu Whenua which includes Covenants



The Approach to Conservation Investment

Mahu Whenua has a vision for sustainability of the land, balancing economic and environmental elements. It is focused on renewal of the land by restoring biodiversity through truly sustainable farming, with economic and ecological elements working in harmony. The philosophy is *"to only farm areas with sustainable farming values and to ensure that the farmed area financially supports our overall vision for the land. Application of this philosophy has resulted in greater yield from the 15% of farmed land than was previously produced from the entire 33,000 ha of Motatapu, Soho and Glencoe stations, and this philosophy will continue with development of Coronet Peak station"*.

This results in a holistic approach to investment in conservation that includes the following elements:

- Retiring stock from land;
- Tree planting and vegetation establishment;
- Pest and predator control and eradication;
- Weed control and eradication;
- Reintroduction of birdlife; and
- Enhancing accessibility and improving infrastructure.

Retiring stock from land

Over 92% of the combined areas of Coronet Peak, Motatapu, Soho and Glencoe stations has been fenced off to exclude stock and covenanted. This is because the land is unstable and eroded, as a result of 150 years burning to promote new growth associated with unsustainable stocking rates. Protection of rivers, wetlands and areas of natural significance has also been a focus. The rivers flowing through the property include Cardrona, Arrow, Soho, Golspie, Motatapu, North Branch, Highland Creek and Fernburn. These areas are being fenced to ensure stock is excluded to guarantee their protection and allow them to recover their biodiversity. Excluding stock enhances vegetation growth, and makes the land more resilient, particularly during periods of drought. This results in reduced erosion and benefits not only the property but the entire watershed.

Tree planting and seedling programme

In the decade through to 2015 an estimated 2.2m trees and seed balls have been planted across 500 ha of the property. They provide a link between the economic and environmental aspects of the operation through the potential opportunity to trade in carbon credits.

The activity includes a pioneering seedling programme to support the planting and conservation plan. Though a challenging and expensive process, real advances are being made in the propagation and survival of native plants in order to enhance both biodiversity and the sustainability of the land.

Pest and predator control and eradication

Pests including goats, deer, chamois, rabbits, hares, possums, cats and ferrets pose significant threats for native species on the properties. They harm native vegetation, birdlife and other wildlife. Management of these pests is ongoing across the property. Numbers have been vastly reduced, with in excess of 6,000 goats, 5,000 possums, as well as large numbers of red deer, rabbits and hares being destroyed over the area. Cats and mustelids are also of particular concern and the resident populations have been reduced to low levels by control activities. The focus is now on controlling boundaries to maintain the excellent progress to date. To this end two full-time staff are employed specifically for this important mission.

Weed control and eradication

In addition to animal pests, introduced plant species also pose a threat to the native environment. While retired land gives native grasses and plants the opportunity to thrive, it does the same for introduced species. In order to ensure natives are not outcompeted by stronger introduced species (particularly wilding trees), significant work has been undertaken to eradicate non-native plants in the conservation areas including oregons, sycamores, larches and pines.

Reintroduction of birdlife

Mahu Whenua is encouraging natural wildlife to return to the area and assisting by reintroducing a number of birds. This involves cooperation with the local Department of Conservation and

Māori Iwi, Ngai Tahu, to initiate trans-location of endangered and endemic species to the property. Species of interest include buff weka, blue duck (pio pio), mohu (bush canary), wood pigeon (kereru), kaka, saddleback, takahe and kiwi. The reintroduction of pukeko already appears to be successful. A further development is the 3,000 ha sanctuary for an endangered bird recovery programme in discussion with the Department of Conservation staff and Ngai Tahu representatives.

Accessibility and Infrastructure

Tracks have been developed to enable access for both conservation and farming purposes. Predator control staff, tree planters and staff monitoring and maintaining conservation areas all require access throughout the property. In addition, 23 public trails have been created or upgraded for recreational purposes, allowing the public to enjoy the grandeur of this precious area in a low-impact way. Soho Property constructed both the trail and three hiker huts as a major link in the Te Araroa Trail which runs the length of NZ. This trail was opened by the Prime Minister in 2008 and is now administered by the local Department of Conservation. Some trails overlook Arrowtown. These trails offer spectacular short walks with panoramic views over the village of Arrowtown and the Wakatipu basin. Dilapidated musterers' huts have been restored for recreational use and workers' shelters.

Achieving Purpose

Achieving Mahu Whenua's purpose has required and continues to require significant investment by the landowners in conjunction with partners. The key elements are summarised below:

- Purchase of land for conservation purposes;
- Fencing costs and other costs of retiring stock from land;
- Tree planting and vegetation establishment costs;
- Pest and predator control and eradication costs;
- Weed control and eradication costs;
- Costs of reintroduction of birdlife; and
- Costs of enhancing accessibility and improving infrastructure.

The costs of investment in the covenanted areas can be summarised as follows: The land costs of securing 53,000 ha are estimated to be well in excess of \$20m (The actual costs remain confidential). The precise value is hard to determine given the conservation land and the production land were purchased as part of the same transactions. Investment in establishing the conservation platform over the period 2003 to 2016 is estimated to be in excess of \$10m.

Conclusion

Mahu Whenua is New Zealand's largest area under QEII covenants. It is a successful conservation initiative. It has involved significant opportunity cost in terms of land taken out of production. It has also required significant investment to build a conservation platform. Further ongoing maintenance of Mahu Whenua is essential to sustain the investment and grow the quantity and quality of conservation outcomes.

CASE 4: DUNCRAIGEN STATION, SOUTHLAND

Dun CRAIGEN Station is owned by Landcorp farming Ltd. which is a State Owned Enterprise. It is located in the Waiau valley, Southland, New Zealand. Dun CRAIGEN has worked closely with QEII National Trust with 8 covenants established on the property. Information for this case was obtained from a meeting with Greg Crombie (Farm Manager) and Mark Sutton (QEII National Trust, and Waiau Fisheries and Wildlife Enhancement Trust) during August 2016. Some core features of the farm can be seen in the map below.

Dun CRAIGEN is a 1,346 ha sheep and beef station with an effective area of 1,183 ha. The farm has a flock of ewes, finishes lambs and the beef breeding operation which produces breeding stock for Landcorp farms in the South Island. The farm largely has easy contours and significant areas of crop are grown each year. The farm is located next to the Waiau River. It is also located on the boundary of Fiordland National Park.

The Approach to Conservation Investment

The Dun CRAIGEN approach to conservation investment is based on the Landcorp policy. The company is "*committed to systematic rejuvenation of the environment, alongside the productive and profitable use of land*". The company is seeking to be proactive

in its management of nutrients, water quality, and vegetation (including forests). Across the country investments have been made to protect high-value conservation areas on Landcorp-owned properties. Progress so far has protected 16,281 ha of high conservation value under covenants with the Department of Conservation, the QEII National Trust and other bodies. The areas include bush, wetlands, streams and ponds.

At the farm level, farm staff together with external advisors have progressively identified areas of significant natural value, identified pathways to protection and established covenants. Particular attention has been paid to catchment-wide effects of conservation investment so that areas of beauty and uniqueness are protected and in anticipation of maintaining river water quality.

This results in a pragmatic approach to investment in conservation that includes the following elements:

- Fencing to exclude livestock from covenanted areas;
- Tree planting and vegetation establishment;
- Pest and predator control; and
- Weed control.

Map of Dun CRAIGEN Station Covenants



Pursuing these objectives has resulted in 8 covenants being established on Duncraigen as reported in Table 1.

Table 12: Duncraigen Covenants

Covenant	Size (ha)
Big Bend	8.1
Manning's	10.7
Rose's	7.6
Office	1.5
Collar	7.0
Ben's	4.5
Tim's	4.5
Crombie's	5.0
Total	48.9

Fencing to exclude livestock from covenanted areas

Landcorp has invested in fencing the covenanted areas to secure them from livestock. High quality fencing has ensured maintenance costs will be low for a considerable period of time. Given the number of covenants and their size, this has required at a minimum 20 km of fencing and the real cost of this is over \$200,000 in 2016 dollars. The cost of fencing has been kept economical using farm staff instead of employing contractors. In addition to the Landcorp investment, QEII National Trust and Waiiau Fisheries and Wildlife Enhancement Trust made important financial contributions.

Tree planting and vegetation establishment

Tree planting and vegetation establishment has been a minor investment as the approach is to focus on natural regeneration.

Weed, pest and predator control

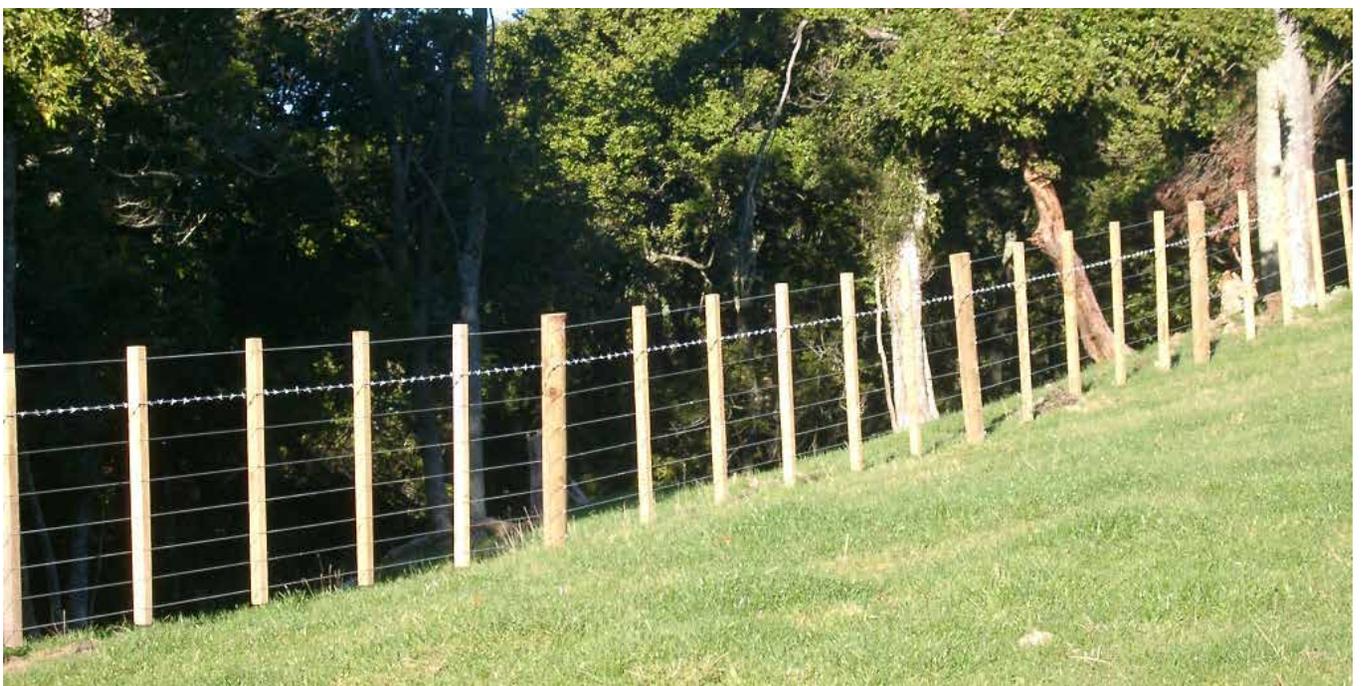
Modest expenditure is made on a regular basis to control weeds, pests and predators. Ragwort is one of the problematic weeds which is frequently dispersed by wild deer. The major pests are mustelids, wild cats and deer. Volunteers control activities help keep the cost of pest animal control down.

Achieving Purpose

Achieving Duncraigen's environmental goals has required significant investment by Landcorp in conjunction with partners. The Landcorp investment in the covenanted areas can be summarised as follows: The opportunity cost of the approximate 50 hectares of land is estimated to be approximately \$200,000. Although much of this land was not ideal farming country it was valuable because it mitigated against risk and was used during times of feed shortages. Fencing off the covenanted areas and establishing the covenants cost Landcorp approximately \$50,000 according to the QEII records. However, given the costs of fencing it appears this is an understatement, accounting for perhaps approximately half of the expenditure. The rest would have been charged directly to farm expenses. Ongoing maintenance of the covenants through pest control (deer and mustelids), and weed control (especially ragwort) is modest and probably less than \$20,000 per year.

Conclusion

Duncraigen is an example of significant conservation activity on a large farm which is part of a multi-farm business. The farm has invested significantly in QEII National Trust covenanted areas and provided protection to a variety of valuable landscape and conservation areas. The Company leadership and farm managers have had a major role in implementing a significant vision which has achieved enduring outcomes.



SUMMARY OF THE CASE STUDIES

The four case studies reveal landowners investing from \$0.8m to \$58.2m in QEII covenants. The details are summarised in Table 13 below. While precise estimates can be debated and refined

further the results suggest very significant investment activity. There are significant opportunity costs, establishment costs and maintenance costs associated with the covenants and landowners are grateful to the QEII National Trust for its contributions towards establishment costs and maintenance costs.

Table 13: Investment Summary for Selected Cases in 2016 Dollars

Case	Establishment Investment	Annual Investment	Opportunity Cost	NPV of total Investment
McNiel Family	\$15,000	\$17,000	\$20,000,000	\$20,325,351
Duncraigen,	\$200,000	\$20,000	\$200,000	\$765,119
Mahu Whenua,	\$10,000,000	\$1,000,000	\$30,000,000	\$58,255,925
Highlands Station	\$300,000	\$4,000	\$1,500,000	\$1,873,024

The case studies also show landowner commitment to restoring and enhancing covenant resilience and reducing the prevalence of exotic or introduced species within the covenanted area. The landowners are ambitious and have aspirational plans for the future of these QEII blocks and continue to invest in them. The natural assets in these covenanted areas have potential to present significant tourism benefits, water quality benefits and other value not only to the particular regions where these covenants exist but also to the rest of the nation. These landowners are modelling exemplary practice to other landowners. As investors they develop important initiatives. They are often key collaborators with other conservation investors and volunteers. Further, this analysis does not value all the voluntary contributions that have been made in support of these cases.

CONCLUSIONS

The survey results from the sample of 124 respondents has shown:

- The covenanted areas vary largely in terms of both covenant size and proportion of total property under covenant.
- The mean and median covenanted areas vary significantly from region to region.
- More than 60% of respondents are establishment covenantors.
- Overall 92% of covenants are fenced with 55% being fenced with a post and batten fence.
- Though fencing constitutes 30% of total establishment cost, it constitutes only 6% of non-cash establishment costs. However, it is highly likely these non-cash contributions are understated.
- Waterway protection, restoration planting and wetland restoration are the major contributors to total maintenance costs with 20%, 19% and 18%, respectively. However, it should be noted that waterway protection is highly concentrated in a small proportion of covenants.

- 49% of covenanted areas provide access for low impact recreation, 10% grant full access while 22% do not provide for access.
- All respondents received funding assistance for legal costs when establishing covenants and 52% received funding towards fencing costs.
- For compliance, all covenants are regularly monitored. 15% of the landowners go an extra step of a management plan where appropriate.
- 92% of respondents used their properties adjacent to the covenants for either grazing (69%) or residence purposes (23%) such as lifestyle blocks or holiday homes.
- 53% of covenanted areas would have had an alternative economic use (grazing, residential development, exotic forestry etc.) that is foregone by the covenants. Grazing was the most common economic use foreclosed by the covenant followed by housing development.

Subsequent analysis of the data collected has shown:

- The total opportunity costs associated with covenanted land in New Zealand is estimated to be in the range of \$443m to \$638m.
- The total estimated establishment nominal expenditure on covenants is \$205m which is approximately \$271m in 2016 dollars.
- The total estimated maintenance expenditure on covenants is \$25m per year and has a NPV of \$387m.
- The estimated net present value of the total investment across the nation in QEII open space covenants is in the range of \$1.1b to \$1.3b in total or over \$250,000 per covenant.

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QEII National Trust
Open Space New Zealand
Ngā Kairauhi Papa



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APPENDIX

Open Space Covenants Survey

Date

Name

Address

Postcode Region

Phone Email

Are you the establishment covenantor or a subsequent landowner? (please tick)

What year was the covenant registered?

What is the total area of your property? (hectares)

What size is the covenanted area? (hectares)

How do you use your land which is adjacent to the covenanted area?

.....

How would you describe the covenanted area?

.....

What are the special features of the covenanted area? (e.g., forest and bush remnants, wildlife habitats, streams, wetlands, tussocklands, coastlines, cultural sites, archaeological sites, geological features)

.....

.....

If the land was not covenanted what could it be used for?

What legal or other administrative costs did you pay to get the land covenanted?

.....

What is the total length of fencing around the covenanted area? (metres)

What type of fencing is in place? (please tick)

Electric	<input type="checkbox"/>	No. of Wires
Netting	<input type="checkbox"/>	
Y Post	<input type="checkbox"/>	
Post & Batten	<input type="checkbox"/>	
Deer	<input type="checkbox"/>	

What were your establishment establishment costs, within or around the area, with the intention of protecting the covenant area?

	Cash	Non-cash (time etc.)
Fencing
Weed control
Pest control
Restoration planting
Wetlands restoration
Waterways protection
Others (please specify)

What are the ongoing maintenance costs (per annum) for the covenanted area?

	Cash	Non-cash (time etc.)
Fencing
Weed control
Pest control
Restoration planting
Wetlands restoration
Waterways protection
Others (please specify)

Have you received funding assistance for any of the following? (please tick)

- Legal costs
- Fencing costs
- Weed control
- Pest control
- Restoration planting
- Wetlands restoration
- Waterways protection
- Others (please specify)

Do you have a management plan in place for the covenanted area?

- Yes
- No (please tick)

Are any of the following special access conditions in place relating to the covenanted area? (please tick)

- No access at all
- Access for low impact grazing
- Access to water
- Access for limited harvesting of traditional resources
- Access for low impact recreation
- Access for tourism activities
- Access with no special conditions
- Other (please specify)



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