



# Trelissick Park/ Ngaio Gorge

## Key Native Ecosystem Management Area (KNEMA)



### Possum Control Operation Report N° 99/18

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## **1. Executive Summary**

Trelissick Park/Ngaio Gorge KNEMA covers a total area of 98 ha, of which Trelissick Park forms 18.3 ha. The area includes the steeper northern slopes of the Kaiwharawhara stream catchment in Ngaio Gorge. The area consists of secondary broadleaf forest and regenerating podocarp-broadleaf forest, with patches of mown grass, shrubland, gorse, broom and blackberry.

Preparation for the possum control operation began in November 1997. In January 1998 bait-stations were placed throughout the area at 150m spacing and filled with brodifacoum poison mixed at 0.02% concentration. The stations were checked and refilled on a regular basis until November 1998. No trap-catch population assessments were conducted before or after the poison operation as leg-hold traps could not be used close to a residential area.

The success of the operation was assessed by the amount of bait taken from the stations, the level of possum sign remaining and the recovery of the vegetation. The operation ended in November 1998 when bait takes were very low. The bait-stations were refilled again in September 1999 as part of the maintenance programme.

## **2. Recommendations**

### **2.1 For Wellington City Council**

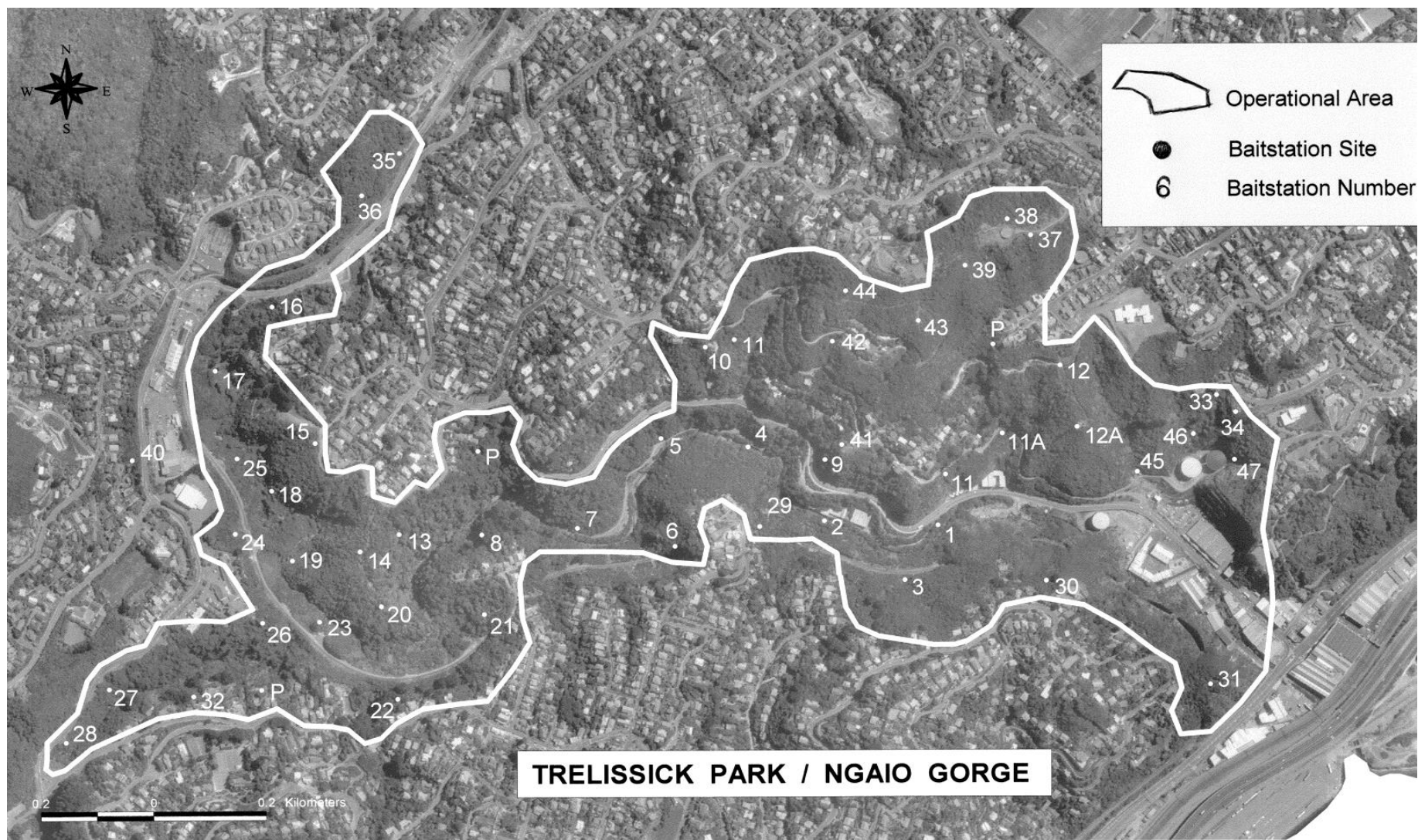
- A vegetation assessment plot was established in 1993 by Landcare Research to monitor the impact of possums on the vegetation. This plot should be reassessed at five-year intervals to determine vegetation recovery following possum control.
- Continue to control introduced pest plants and weeds with the assistance of the Trelissick Park/Ngaio Gorge Working Group.
- Continue supplying native plant species and assistance to the Trelissick Park/Ngaio Gorge Working Group.

### **2.2 For Wellington Regional Council**

- There are 36 bait-stations currently in Trelissick Park/Ngaio Gorge KNEMA. These should remain in place indefinitely for possum control maintenance.
- Biosecurity staff to refill the 36 bait-stations in the KNEMA every six months with Pestoff 20pp waxed brodifacoum pellets.

## **3. Objective**

To reduce the possum population in Trelissick Park/Ngaio Gorge KNEMA to as low as possible, assisting the restoration of the native forest ecosystem.



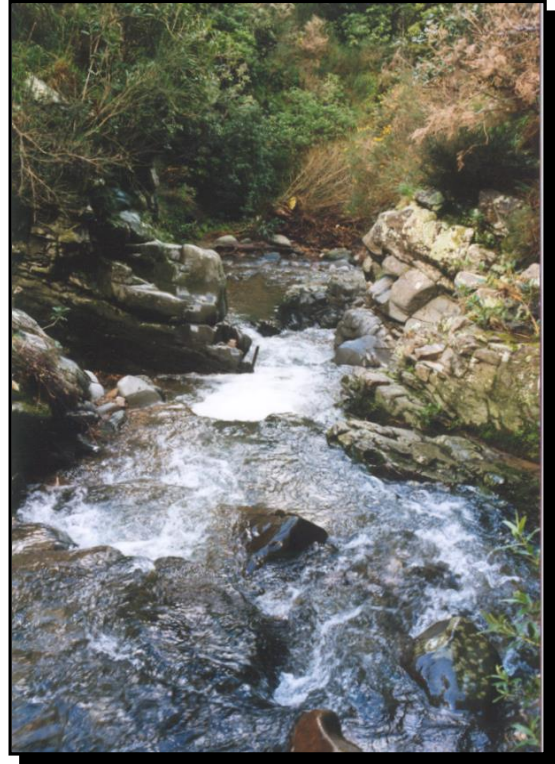
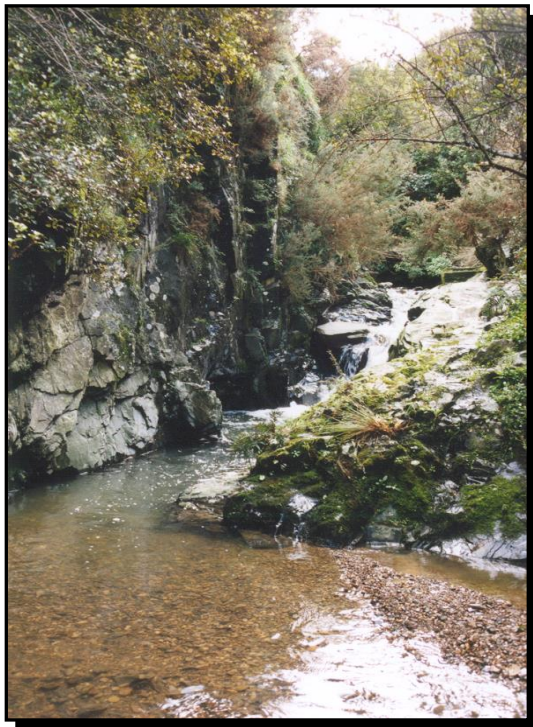
**Figure 1.** Aerial map of Treliissick Park/Ngaio Gorge KNEMA showing the operational area boundaries and the position of the bait-stations.



#### 4. Operational Area

Trelissick Park/Ngaio Gorge KNEMA is a 98 ha area surrounded by the Wellington suburbs of Ngaio, Chartwell, Wadestown, and Crofton Downs (fig. 1). Trelissick Park forms 18.3 ha of the operational area and is owned by Wellington City Council. The Park is classified as a Scenic Reserve and a Recreation Reserve in terms of Section 19(1) of the Reserves Act 1977. Other parts of the operational area are owned by Tranzrail and private landowners.

Trelissick Park lies mainly in the area north of the Kaiwharawhara Stream in the upper parts of Ngaio Gorge. The Kaiwharawhara Stream forms the main gorge through the area with steep slopes and loose rock on each side (fig. 2&3). Dramatic bluffs, spurs, steep rock faces and outcrops occur throughout the area. Altitudes range from 20 m to 100 m above sea level.



**Figures 2 & 3.** Kaiwharawhara Stream in Trelissick Park/Ngaio Gorge KNEMA. The stream passes through steep rock faces and loose rock.

Approximately 12 % of Trelissick Park is in mown grass and streamside shrubland, with gorse and broom covering another 20% (WCC Culture and Recreation Division, 1995). Regenerating forest in the area is largely composed of tawa, titoki, karaka, rewarewa and mahoe. Relatively large open areas on the southern slopes are covered by blackberry, wandering Willie, exotic grasses and flatweeds. On the south side of the stream there are large stands of pine, sycamore and willow.

In the upper tributaries of Kaiwharawhara Stream inanga, banded kokopu, giant kokopu, koaro and eels have been found (WCC Culture and Recreation Division, 1995). Aquatic fauna declined dramatically in the past ten years due to high pollution levels in the stream. However, water quality has improved and led to an increase in fauna (WCC Culture and Recreation Division, 1995).

Birds recorded in the area include starlings, blackbirds, fantails, waxeyes, tuis and kereru. Moreporks and shining cuckoos have been heard (WCC Culture and Recreation Division, 1995).

## **5. History**

### **5.1 Project Initiative**

Wellington Regional Council Biosecurity staff first conducted a Key Native Ecosystem survey in 1997. Initially the area received a Regional Priority Score of 4.5. Following a revision of the scoring system in May 1998 the score was adjusted to 6.0 (Appendix 1). The KNEMA forms a vegetation link from the Harbour to the outer town belt, as well as forming a 'native habitat corridor' with two other KNEMAs. (Otari Botanical Garden and Huntleigh Park).

The Trellissick Park Working Group is a volunteer-based group representing a number of organisations in the area. The Working Group, with the assistance of WCC, are involved in weed control track, maintenance and planting native species.

Originally Wellington City Council contracted WRC to undertake possum control in this area as part of their requirements under the Pest Animal Strategy. Controlling possums in Trellissick Park/Ngaio Gorge was considered important for both the protection of native habitat in the area and because of the value placed on the area by the public. The initial low score meant that the park did not qualify as a KNEMA. However, following the revision of the KNE scoring part way through the operation Trellissick Park was accepted as a KNEMA and WRC agreed to share part of the costs of the operation.

### **5.2 Social and Ecological History**

Before European settlement the area was used extensively by Maori. The Kaiwharawhara Pa was situated at the mouth of the Kaiwharawhara Stream and was inhabited by Ngati-tama. The gorge was a much-used access to Whanganui and Taranaki (WCC Culture and Recreation Division, 1995).

The New Zealand Company purchased the land in 1839. Captain Daniel, who commissioned the construction of a road through the gorge in 1845, owned 'Trellissick Farm' at the head of gorge. Wellington City Council has progressively acquired land for recreation since 1920.

The pre-European vegetation was mixed broadleaf-podocarp forest with tawa, rimu kahikatea and possibly northern rata forming the main canopy (WCC Culture and Recreation Division, 1995). The area was logged in the mid-nineteenth century, dramatically reducing the number of large native tree species and allowing the colonisation of exotic grasses, blackberry, broom and gorse.

### **5.3 Operational History**

<b>1983</b>	Ngaio Gorge was identified as a potential SSWI (Site of Special Wildlife Interest) in a study conducted by Parrish (1983). This classification was confirmed in a second study in 1984.
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<b>1993</b>	A report prepared by C J Pekelharing (1993) stated that possum impact in Trellissick Park was low and no control was recommended at present.
<b>1996</b>	WCC identifies Trellissick Park as a conservation area requiring pest control in accordance with landowner responsibilities under WRC Pest Management Strategy. Negotiations began between WRC and WCC for a possum control operation in Trellissick Park.
<b>April 1997</b>	KNE survey conducted by Wellington Regional Council Biosecurity Department.
<b>January 1998</b>	Possum control operation conducted by Wellington Regional Council began. The main operation concluded in November 1998.

## **6. Operational Procedures**

### **6.1 Operational Plan**

Slow acting poisons in bait-stations were used as the main control method. A condition of the Wellington City Council trapping bylaws requires traps to be set at least 200m from residential housing. As a result trapping (and acute poisons) could not be used in the treatment area. This condition also precluded any pre/post trap-catch monitoring of the area.

As a requirement under the Public Health Act (Section 29), Medical Officer of Health and Wellington City Council Environmental Health approvals were granted to WRC to lay brodifacoum poison in the area.

### **6.2 Bait-Station Placement**

Thirty-four plastic Pelifeed bait-stations were positioned throughout the area in January 1998. Other stations were added to the area as needed and in November 1998 11 stations were removed. Currently there are 36 stations remaining in Trellissick Park/Ngaio Gorge KNEMA.

Placement of the bait-stations was initially planned using a 150m x 150m grid pattern drawn on an aerial map of the control area. Biosecurity staff then used this map as an approximate guide. The actual placement of the bait-stations varied depending on track access and suitable sites. Using the grid pattern as a guide ensured that the stations were placed 100m to 150m apart.

The bait-stations were nailed on to trees at a height of at least two metres above the ground. The Medical Officer of Health and Wellington City Council requested that stations be placed at this height as the area has high public use, and to avoid accidental poisoning of domestic dogs and cats.

### **6.3 Brodifacoum Poison**

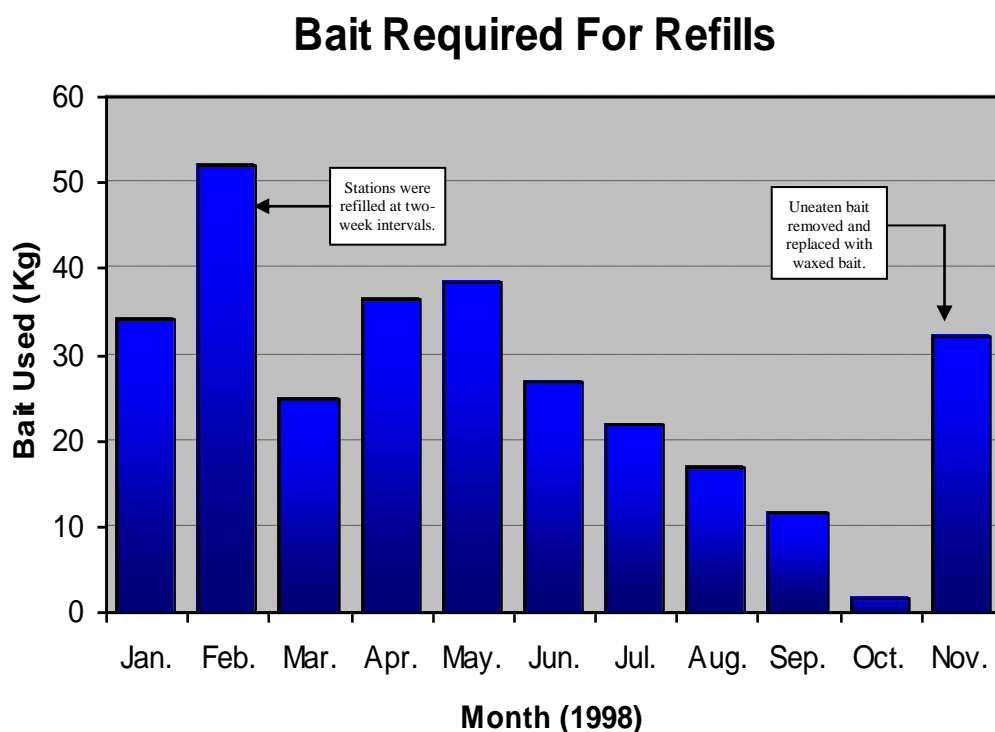
The stations were first filled on 20 January 1998 with Pestoff brodifacoum possum bait. The poison is a slow acting anticoagulant mixed at 0.02% concentration into an unwaxed cereal-based pellet. The bait-stations were checked and refilled every two weeks for the following six weeks. This was to ensure a quick initial knockdown of possums in the area. The stations were then refilled approximately once a month until November 1998. This marked the end of the main possum control operation.

In November 1998 the stations were refilled with Pestoff waxed brodifacoum (0.02%) possum pellets. The waxed poison bait does not degrade as quickly as unwaxed bait, allowing a longer time period between refills. The stations were refilled again in September 1999. Five of the bait-stations were checked and refilled at regular intervals by Richard Northmore from the Trelissick Park Working Group. Wellington Regional Council supplied Mr Northmore with the poison bait.

## 7. Operational Results

The close proximity of the KNEMA to residential properties meant that neither leg-hold traps nor acute toxins could be used in the area. As a result, it was not possible to establish a pre or post monitoring trap-catch rate, or keep a record of the number of possums killed.

A record of the amount of poison bait needed to refill the bait-stations (Figure 4) shows a dramatic decline towards the end of the operation in November. From this, it can be assumed that possum numbers (and possibly rat numbers) had been reduced to very low levels.



**Figure 4.** The amount of bait required to refill the bait-stations during the main control operation in Trelissick Park/Ngaio Gorge KNEMA in 1998.

## 8. Discussion

The possum control operation at Trelissick Park/Ngaio Gorge has been a very worthwhile project. Although no formal post-operational trap catch index was recorded, the success of the operation has been evident from the very noticeable vegetation recovery.



Local residents would also have benefited from the operation with a reduction in the number of possums invading their gardens and an increase in native birds frequenting the area. There has been very positive feedback from the public through comments to Biosecurity staff. A resident of Imlay Crescent commented to WCC that they now regularly see tuis and fantails after 20 years of having no native birds in their garden. An improvement in the vegetation and number of native birds present is noted in a letter of thanks from Francis Lee of the Trelissick Park Working Group (appendix 3).

There are several other areas adjacent to, and near Trelissick Park that have also had possum control work completed as part of the KNE programme. These areas include Otarti Native Botanic Garden, Khandallah Park, Johnsonville Park and Karori Wildlife Sanctuary. Over the next year, the Wellington Regional Council intend to undertake possum control in Huntleigh Park, Tyres Gully and Kaiwharawhara/Ngaio Gorge, which also lie adjacent to Trelissick Park. Together these areas will form a corridor of possum-reduced native bush. It is hoped that this corridor will enhance the feeding habitat for native birds, thereby increasing their numbers and encouraging them back to the urban areas of the Wellington Region.

## 9. Resources

### 9.1 Labour

Wellington Regional Council staff spent a total of 171 field hours on this operation. There was no accurate record kept by Richard Northmore from the Trelissick Park Working Group. However, it has been estimated that he spent at least 25 hours checking and refilling the bait-stations.

### 9.2 Materials

**Table 1.** The number of bait-stations used in the Trelissick Park/Ngaio Gorge KNEMA possum control operation

	<b>N° Installed</b>	<b>N° Removed</b>
January	<b>34</b>	
March	<b>2</b>	
May	<b>8</b>	
July		<b>1</b>
October	<b>4</b>	
November		<b>11</b>
<b>Total Remaining</b>	<b>36</b>	

**Table 2.** The amount of poison bait used in the Trelissick Park/Ngaio Gorge KNEMA possum control operation

	<b>Brodifacoum Poison Used</b>
Unwaxed Bait	235 kg
Waxed Bait	40 kg
Bait Supplied to Volunteers	100 kg
<b>Total</b>	<b>375 kg</b>

### 9.3 Costs

**Table 3.** Summary of costs charged to Wellington City Council for the main control operation from November 1997 until November 1998.

<b>Activity</b>	<b>Total Costs</b>
Labour	\$4324.00
Materials	\$1839.10
Travel	\$792.70
Administration	\$171.99
<b>Total</b>	<b>\$7127.79</b>
Total charged to WCC	\$5641.94
Total Paid by WRC	\$1485.85

## 10. Acknowledgements

Wellington Regional Council would like to thank Wellington City Council with their assistance in this programme, in particular Derek Thompson.

The Council would also like to thank Richard Northmore for religiously checking bait-stations and keeping us well informed. Richard had a lot of good ideas regarding the restoration of Trelissick Park, which he put into practice in his own time. Trelissick Park is lucky to have such a valuable volunteer.

Many thanks to Andrew Cutler agreeing to have a bait-station on his property and checking it regularly. Thanks also to the Ngaio Gorge residents who allowed us to put bait-stations in their backyards and gave us access through their properties.

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## Appendix 1 - Definition of Terms

<b>KNE</b>	Key Native Ecosystem. Areas of prime native habitat which have significant conservation values, and are not administered by Department of Conservation (DoC), including conservation covenants. A Wellington Regional Council initiative.
<b>KNEMA</b>	Key Native Ecosystem Management Area. A <b>KNE</b> that received a high <b>Regional Priority Score</b> during a <b>KNE Survey</b> and was therefore eligible for possum control work on a cost-share basis with WRC.
<b>KNE Survey</b>	A survey undertaken by WRC Biosecurity staff to determine the conservation value and local significance of a <b>KNE</b> . The Primary score is derived from DoC's national priority ranking system, which takes into account native flora and fauna values as well as susceptibility to possum damage. The Local Significance score is ranked according to the value that is placed on the habitat and the level of use by the people of the Wellington Region.
<b>Regional Priority Score</b>	The final score given in a <b>KNE survey</b> . This score is a combination of the Primary score and the Local Significance score. If the <b>Regional Priority Score</b> is sufficiently high, WRC will make arrangements with the land owner/occupier to undertake possum control on a cost share basis.
<b>Trap-Catch Rate</b>	<p>Number of possums captured over three nights in an operational area using Leg-Hold traps. The trap-catch rate is calculated as:</p> $\text{N}^{\circ} \text{ caught} / (\text{N}^{\circ} \text{ traps set} \times \text{N}^{\circ} \text{ nights trapped}) \times 100\%$ <p>The trap-catch rate is an index used to calculate the level of possums occurring in an operational area before and after control.</p>