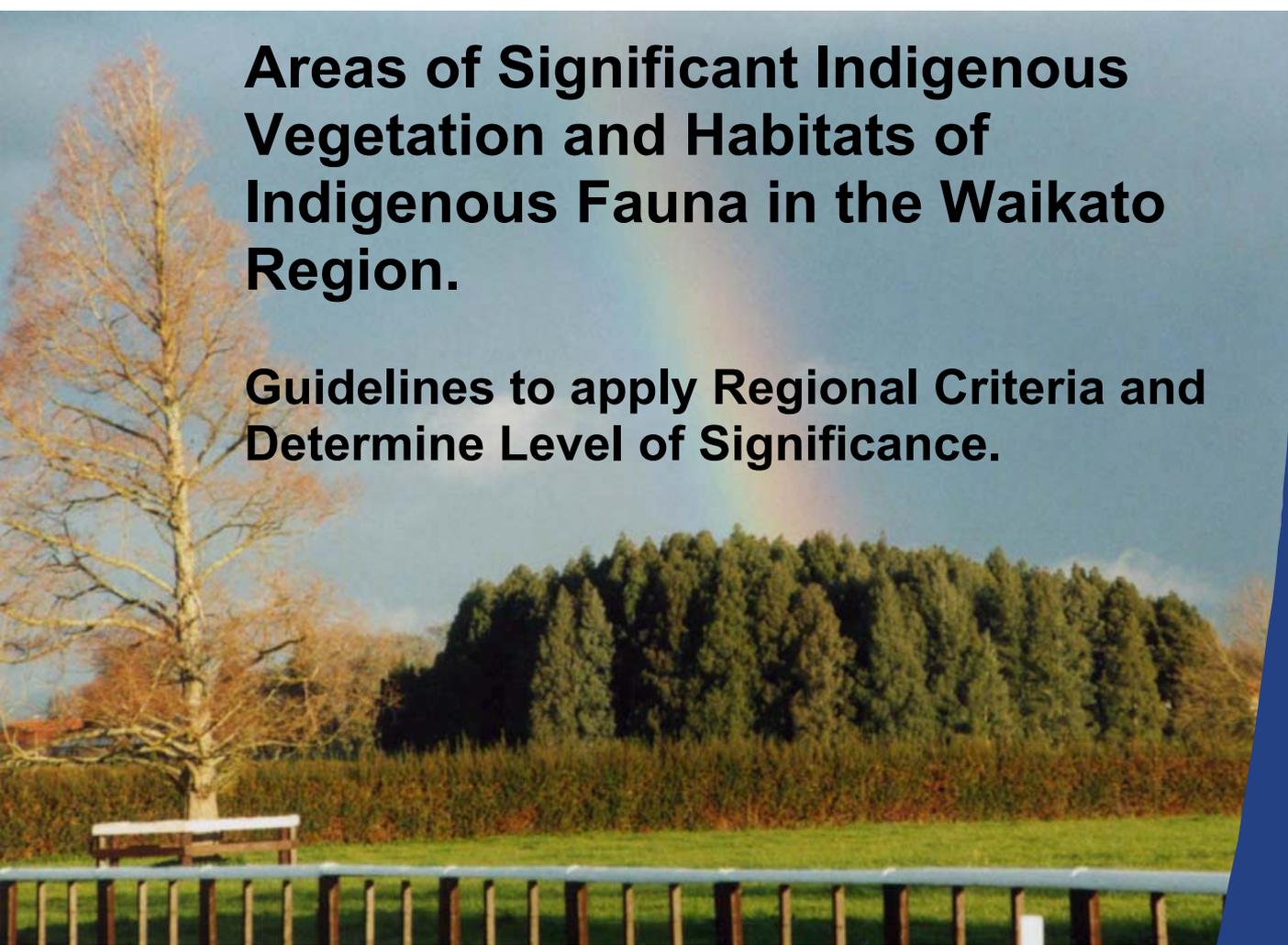


# Areas of Significant Indigenous Vegetation and Habitats of Indigenous Fauna in the Waikato Region.

## Guidelines to apply Regional Criteria and Determine Level of Significance.



Prepared by:  
Environment Waikato  
PO Box 4010  
Hamilton East

and

Wildland Consultants Ltd  
PO Box 7137 Te Ngae  
Rotorua

For:  
Environment Waikato  
PO Box 4010  
HAMILTON EAST

November 2002

Document #: 791472



# Table of Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Determine What You Need To Do</b>	<b>2</b>
<b>3</b>	<b>Application of Significance Criteria</b>	<b>3</b>
3.1	Step 1: Is a Site Significant?	3
3.2	Step 2: Optional: Why is a Site Significant?	3
3.3	Step 3: Optional: How Significant is a Site?	4
<b>4</b>	<b>Relative Importance of an area of Significant Indigenous Vegetation or Significant Habitat of Indigenous Fauna</b>	<b>15</b>
<b>5</b>	<b>References</b>	<b>26</b>
	<b>Appendix 1: Other Useful Information Sources</b>	<b>27</b>

## List of Tables

Table 1: Criteria for the Assessment of Significance and Reasons for Why a Site is Significant	5
Table 2: Relative Importance of an area of Significant Indigenous Vegetation or Significant Habitat of Indigenous Fauna	17
Table 3: Checklist for Assessing Relative Importance of an area of Significant Indigenous Vegetation or Significant Habitat of Indigenous Fauna	24



# 1 Introduction

The Resource Management Act, 1991 requires those enacting it to provide for, as a matter of national importance, the protection of areas of significant indigenous vegetation and significant habitats for indigenous fauna. The Act does not prescribe how to assess significance. Criteria have been developed for the Waikato Region to do this (Appendix 3, Regional Policy Statement). The Act also does not require differential protection of sites based on the degree of relative significance, however assigning a level of significance can help to prioritise the allocation of resources. A process is provided in this document for three options:

1. **Assessment of WHETHER an area of indigenous vegetation or indigenous fauna habitat (a site) is significant (the basic requirement in the Act).**
2. **Outlining WHY a site is significant.**
3. **Determining HOW significant a site is.**

Each successive option requires completion of the previous steps.

Unless a site is already legally protected or has been surveyed recently, a field visit will usually be required to be able to apply assessment criteria to determine whether it is significant indigenous vegetation or significant habitat for indigenous fauna. There are 11 criteria (see Table 1 below) that were developed for the Waikato Regional Policy Statement and tested by references to the Environment Court. A site is considered to be significant if one or more criteria is triggered in Table 1.

**Note: to classify a site as “Not Presently Significant” each criterion must have been tested and shown to be not relevant.**

If you wish to develop a list or schedule of significant sites within a wider area you can apply the criteria to all sites for which adequate information is available. Development of comprehensive schedules or lists of significant sites can require significant resources and it is difficult to ensure that the coverage is comprehensive, but they also provide detailed information to underpin the allocation of resources for active management.

Sites for which adequate information is not available should be considered to be potentially significant until proven otherwise. Alternatively, sites can be assessed on an “as required” basis.

***This is a guideline document, not Council Policy. We welcome feedback and suggestions.***

## 2 Determine What You Need To Do

It is important to consider the type and level of information needed and what this is required for.

What type and level of information do you require?	What is this information required for?
<p>Determine if a site is <b>ecologically significant, for any reason.</b></p>	<p>You might want to do this if you are attempting to create a map or schedule of sites that are considered to be significant and worthy of protection.</p> <p>It is advised you start with the easiest criteria to apply first, as it may not be necessary to apply all criteria once one is found to be applicable.</p>
<p>Assess <b>all of the ecological values</b> for which a site might be significant.</p>	<p>You will need to do this if an activity is planned that may adversely affect a site, for example a resource consent application to clear vegetation or divert water, to ensure the characteristics which make a site significant are protected from adverse effects. Regional Council policy requires that the characteristics that make a site significant are protected from adverse effects, rather than the geographic site only.</p> <p>You might want to do this if you have responsibility for active management of a site. Knowing all the values for which it is significant will enable you to determine the management needs, likely costs, and to establish priorities.</p>
<p>Find out <b>how significant</b> a site is, i.e. international, national, regional, or local significance.</p>	<p>You might want to do this if you are allocating resources between a number of sites.</p> <p>Sites that are assigned a lower level of significance, e.g. local, are still considered to be significant for the purposes of Policies 2 and 3 in Chapter 3.11 of the Waikato Regional Policy Statement, and in relevant sections of any other policy documents that cannot be inconsistent with the RPS, e.g., district plans.</p>

## 3 Application of Significance Criteria

Assessment of the 11 criteria set out in Table 1 below will enable the assessment of whether a site is significant, the reasons why a site is significant, and a relative level of significance (note that Table 2 would also need to be completed to assign a measure of relative significance).

### 3.1 Step 1: Is a Site Significant?

1. First complete the top of Table 1. Identify the site by providing a site name, land tenure/owner, location, area (hectares), ecological district name, and a brief general description.
2. To assist you to determine whether a site is 'Significant' or 'Not Presently Significant', assess each of the criteria listed in **Column A**. **Column B** contains further information and relevant definitions, while **Column C** provides likely sources of information.
3. Provide responses ("Yes", "No", "Not Sure") in **Column D**.
4. If you answer yes to **one or more** of the criteria then a site is significant<sup>1</sup> in terms of the Waikato RPS criteria.
5. If you only wish to know whether a site is significant, apply Table 1 only until a "Yes" response is triggered in **Column D**. This will help to save effort and cost.
6. Complete **Column E** if you respond "Yes" to justify your decision.
7. The criteria have been grouped, but are listed roughly in order of ease of access to information. They are not presented in any implied order of importance.
8. Assessment of some criteria (e.g. 6-11) will require the assistance of a suitably qualified ecologist/biologist. The opinion of an ecologist is not necessarily the final answer, but may be used, with appropriate evidence, to argue for or against a site being classified as significant.
9. If you answer "No" for all of the criteria in Table 1 then a site is deemed "**Not Presently Significant**". To be confident of this assessment you must seek further information to eliminate all "Not Sure" responses. Note that any interest in the use or development of a site should not rely on an old assessment that determined that a site was *not presently significant*. Significance status can change, even over a few years, on the basis of a change in the environment or new information. A site should be re-surveyed and re-assessed if it is still an area of indigenous vegetation or habitat for indigenous fauna.

### 3.2 Step 2: Optional: Why is a Site Significant?

1. Complete **Column D** in **Table 1**. If you wish to know why your site is significant **assess all of the criteria**, rather than stopping the assessment at the first "Yes" response in Column D.
2. Note that the number of "Yes" responses in **Column D** is not necessarily an indication of a greater or lesser degree of significance, as one feature may carry particular weight (e.g. an extremely rare or unusual feature).

---

<sup>1</sup> Note however, that a site's significance may be determined ultimately by a decision-making body based on technical evidence from relevant specialists (usually qualified and experienced ecologists).

### 3.3 Step 3: Optional: How Significant is a Site?

1. If you wish to know how significant a site is, complete **Column E** in Table 1 for all criteria assigned a “Yes” response.
2. Use the responses in **Column E** of Table 1 to help assess the additional questions in **Table 2**. Complete Table 2 if you want to determine the level of significance (international, national, regional, local).
3. Table 2 contains detailed information to assist in your assessment. Table 3 is a summarised version of Table 2. You can use it to double-check your results in Table 2, or once familiar with the process, as an alternative to Table 2.

# Table 1: Criteria for the Assessment of Significance and Reasons for Why a Site is Significant

Site Name:

Area (ha):

Ecological District:

Land Tenure:

Location (grid reference and general location):

General Description:

A. Criteria	B. Definitions and Further information	C. Likely Information <sup>1</sup> Sources	D. Response (Yes? No? Not Sure?)	E. If Yes, provide the information requested below to justify your decision and to assist with determining level of significance
<p><b><u>SITE PROTECTED OR ASSESSED PREVIOUSLY</u></b></p> <p>1 It is indigenous vegetation or habitat that has been specially set aside by statute or covenant for protection and preservation, unless the site can be shown to meet none of Criteria 3-11.</p>	<p>This may include sites protected under the Conservation Act, Resource Management Act, or with QEII or NWR.</p> <p>The assumption inherent in this criterion is that legally protected areas have been assessed and deemed worthy of protection. Therefore such sites are assumed to be significant unless challenged, in which case the challenger would have to show that the site does not meet criteria 3-11.</p>	<p>DOC, EW, NWR, QEII, TA.</p>	<p>Y / N / NS</p>	<p>What type of legally protected area is it? e.g. Scenic Reserve, National Park, QEII Covenant.</p> <hr/> <hr/>

<sup>1</sup> CE = Consultant Ecologist, CRI= Crown Research Institute e.g. Landcare Research or National Institute of Water and Atmospheric Research (NIWA), DOC = Department of Conservation, EW = Environment Waikato , NHF = Nature Heritage Fund, NWR = Nga Whenua Rahui, P = Published reports or maps, QEII = QEII National Trust, TA= Territorial Authority (district or city council), UW = University of Waikato..

A. Criteria	B. Definitions and Further information	C. Likely Information <sup>1</sup> Sources	D. Response (Yes? No? Not Sure?)	E. If Yes, provide the information requested below to justify your decision and to assist with determining level of significance
2 It is indigenous vegetation or habitat recommended for protection by the Nature Heritage Fund or Nga Whenua Rahui committees, or the Queen Elizabeth the Second National Trust Board of Directors, unless the site can be shown to meet none of Criteria 3-11.	Assumption is as above.	NHF, NWR, QEII	Y / N / NS	What type of legal protection has been recommended? <hr/> <hr/> <hr/>
<b><u>RARE / DISTINCTIVE FEATURES</u></b> 3 It is vegetation or habitat that is currently habitat for indigenous species or associations of indigenous species that are: <ul style="list-style-type: none"> <li>• threatened with extinction, or</li> <li>• endemic to the Waikato Region</li> </ul>	Species that are threatened with extinction are indigenous species that have been evaluated and placed within any of the “Threatened” categories under the New Zealand Threat Classification System <sup>2</sup> .  Endemic to the Waikato Region, means currently only occurs naturally within the Waikato Region.	CE, CRI, DOC, EW	Y / N / NS	List the threatened species and their threat category, e.g. Nationally Critical, Serious Decline, Range Restricted. <hr/> <hr/> <hr/> List any threatened species that use the site which are international migrants. <hr/> <hr/> List any regionally endemic species <hr/> <hr/>

<sup>1</sup> CE = Consultant Ecologist, CRI= Crown Research Institute e.g. Landcare Research or National Institute of Water and Atmospheric Research (NIWA), DOC = Department of Conservation, EW = Environment Waikato , NHF = Nature Heritage Fund, NWR = Nga Whenua Rahui, P = Published reports or maps, QEII = QEII National Trust, TA= Territorial Authority (district or city council), UW = University of Waikato..

<sup>2</sup> Molloy, J. B. Bell, M. Clout, P. de Lange, G. Gibbs, D. Given, D. Norton, N. Smith, T. Stephens. 2001. Classifying species according to threat of extinction. A system for New Zealand. Biodiversity Recovery Unit, Department of Conservation, Wellington, NZ.

A. Criteria	B. Definitions and Further information	C. Likely Information <sup>1</sup> Sources	D. Response (Yes? No? Not Sure?)	E. If Yes, provide the information requested below to justify your decision and to assist with determining level of significance
<p>4 It is indigenous vegetation or habitat type that is under-represented (10% or less of its known or likely original extent remaining) in an Ecological District, or Ecological Region, or nationally.</p>	<p>Maps of ecological districts and regions (McEwen 1987) are available from DOC or EW.</p> <p>A “type” of indigenous vegetation or habitat could refer to a broad unit such as podocarp/tawa-dominant forest, or a more detailed classification and mapping unit such as harakeke (<i>Phormium tenax</i>) flaxland.</p> <p>Definitions (and examples) of vegetation/habitat structural classes and vegetation types are provided in Atkinson (1985) and, for wetlands, Clarkson <i>et al.</i> (2002). Vegetation types for non-wetland vegetation in the Waikato Region are described in Leathwick <i>et al.</i> 1995.</p> <p>Comparison with known or likely original extent may require analysis (e.g. using a Geographic Information System) of current extent and previous extent.</p> <p>Leathwick <i>et al.</i> 1995 mapped and described the extent of indigenous vegetation types in 1840 and 1995. Vegetation types are not directly comparable and many vegetation types need to be grouped for comparison with the estimated 1840 extent. Future analysis using frameworks such as Land Environments may enable comparison with vegetation patterns prior to human occupation. In the meantime comparison with the 1840 datum will provide useful information for most vegetation classes.</p>	<p>CE, CRI, DOC, EW, P</p>	<p>Y / N / NS</p>	<p>List under-represented vegetation/habitat type(s) and state whether rare at the national, regional, or ecological district scale?</p> <hr/> <hr/> <hr/> <hr/>

<sup>1</sup> CE = Consultant Ecologist, CRI= Crown Research Institute e.g. Landcare Research or National Institute of Water and Atmospheric Research (NIWA), DOC = Department of Conservation, EW = Environment Waikato , NHF = Nature Heritage Fund, NWR = Nga Whenua Rahui, P = Published reports or maps, QEII = QEII National Trust, TA= Territorial Authority (district or city council), UW = University of Waikato..

A. Criteria	B. Definitions and Further information	C. Likely Information <sup>1</sup> Sources	D. Response (Yes? No? Not Sure?)	E. If Yes, provide the information requested below to justify your decision and to assist with determining level of significance
<p>5 It is indigenous vegetation or habitat that is, and prior to human settlement was, nationally uncommon, such as geothermal, Chenier plain, or karst ecosystems.</p>	<p>Geothermal habitats can include geysers, springs, sinter terraces, and hydro-thermally altered soils. They provide habitat for geothermally-influenced vegetation, and heat-tolerant bacteria.</p> <p>Chenier plain is a plain comprising shell ridges with infilled muds and other sediment between the ridges. An extensive area at Miranda provides habitat for international wader migrants.</p> <p>Karst ecosystems are limestone systems, providing habitat for specialist limestone plants (e.g. <i>Asplenium cimmeriorum</i>, <i>Gymnostomum calcereum</i>) and fauna (e.g. cave weta).</p> <p>Note that these three examples are not a comprehensive list of nationally uncommon vegetation or habitat types.</p>	<p>CE, CRI, DOC, EW</p>	<p>Y / N / NS</p>	<p>Type of feature: _____</p> <p>_____</p> <p>Area: _____</p> <p>_____</p> <p>Condition: _____</p> <p>_____</p>

<sup>1</sup> CE = Consultant Ecologist, CRI= Crown Research Institute e.g. Landcare Research or National Institute of Water and Atmospheric Research (NIWA), DOC = Department of Conservation, EW = Environment Waikato , NHF = Nature Heritage Fund, NWR = Nga Whenua Rahui, P = Published reports or maps, QEII = QEII National Trust, TA= Territorial Authority (district or city council), UW = University of Waikato..

A. Criteria	B. Definitions and Further information	C. Likely Information <sup>1</sup> Sources	D. Response (Yes? No? Not Sure?)	E. If Yes, provide the information requested below to justify your decision and to assist with determining level of significance
<p>6 It is wetland habitat for indigenous plant communities and/or indigenous fauna communities<sup>2</sup> that has not been created and subsequently maintained for or in connection with:</p> <p>(a) waste treatment; or  (b) wastewater renovation; or  (c) hydro electric power lakes<sup>3</sup>; or  (d) water storage for irrigation; or  (e) water supply storage;</p> <p>unless in those instances they meet the criteria in Whaley <i>et al.</i> (1995).</p>	<p>Wetlands have been severely depleted nationwide, and are recognised as a rare habitat type. The RMA definition of a wetland is: "Wetland" includes permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions.</p> <p>Wetlands may have fluctuating water levels and the edge of a wetland may be difficult to define but will generally be where wetland plant species (e.g. raupo) are replaced with dryland species (e.g. kanuka). Note that manuka can occur in wetland and dryland habitats.</p> <p>All artificially-created wetlands listed in Criterion 6a-e should <u>also</u> be evaluated using the criteria in Whaley <i>et al.</i> (1995), as well as criteria 1-5 and 7-11 in Table 1.</p>	<p>CE, CRI, DOC, EW, P</p> <p>Copies of Whaley <i>et al.</i> (1995) can be obtained from EW.</p>	<p>Y / N / NS</p>	<p>Type of wetland habitats/indigenous communities present:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Origins of wetland (natural, artificial):</p> <p>_____</p> <p>_____</p> <p>Area (ha): _____</p>

<sup>1</sup> CE = Consultant Ecologist, CRI= Crown Research Institute e.g. Landcare Research or National Institute of Water and Atmospheric Research (NIWA), DOC = Department of Conservation, EW = Environment Waikato, NHF = Nature Heritage Fund, NWR = Nga Whenua Rahui, P = Published reports or maps, QEII = QEII National Trust, TA= Territorial Authority (district or city council), UW = University of Waikato.

<sup>2</sup> Does not include exotic rush/pasture communities.

<sup>3</sup> Does not include Lake Taupo.

A. Criteria	B. Definitions and Further information	C. Likely Information <sup>1</sup> Sources	D. Response (Yes? No? Not Sure?)	E. If Yes, provide the information requested below to justify your decision and to assist with determining level of significance
<p>7. It is an area of indigenous vegetation or naturally occurring habitat that is large relative to other examples in the Waikato Region of similar habitat types, and which contains all or almost all indigenous species typical of that habitat type.</p>	<p>This criterion is not intended to select the largest single example of a habitat type in the Waikato Region.</p> <p>Refer to vegetation maps (e.g. Leathwick <i>et al.</i> 1995), to determine which other parts of the Region have similar habitat, and the size of those examples.</p> <p>Refer to natural area inventories (e.g. report by Wildland Consultants Ltd and EPRO Ltd 1999), DOC compilations of Sites of Special Wildlife Importance (SSWI), DOC Conservation Management Strategies for Waikato, Bay of Plenty, Wanganui, Auckland, and Tongariro/Taupo Conservancies, Protected Natural Area Programme reports (e.g. Coromandel PNAP) to help determine the species that are typical of each habitat type.</p>	<p>CE, CRI, DOC, EW</p>	<p>Y / N / NS</p>	<p>Broad habitat types present:</p> <p>_____</p> <p>_____</p> <p>Area (ha)</p> <p>Notable flora or fauna:</p> <p>_____</p> <p>_____</p> <p>How does the size compare with other similar habitat types in the Region? <i>e.g. the site is part of one of the largest examples of similar habitat types in the Region.</i></p> <p>_____</p> <p>_____</p>

<sup>1</sup> CE = Consultant Ecologist, CRI= Crown Research Institute e.g. Landcare Research or National Institute of Water and Atmospheric Research (NIWA), DOC = Department of Conservation, EW = Environment Waikato , NHF = Nature Heritage Fund, NWR = Nga Whenua Rahui, P = Published reports or maps, QEII = QEII National Trust, TA= Territorial Authority (district or city council), UW = University of Waikato..

A. Criteria	B. Definitions and Further information	C. Likely Information <sup>1</sup> Sources	D. Response (Yes? No? Not Sure?)	E. If Yes, provide the information requested below to justify your decision and to assist with determining level of significance
<p>8 It is aquatic habitat that is a portion of a stream, river, lake, wetland, intertidal mudflat or estuary, and their margins, that is critical to the self sustainability of an indigenous species within a catchment of the Waikato Region and which contains healthy, representative populations of that species.</p>	<p>Excluding artificial water bodies, except those created for the maintenance and enhancement of biodiversity or as mitigation for a consented activity.</p> <p>Critical means essential for a specific component of the life cycle and includes breeding and spawning grounds, juvenile nursery areas, important feeding areas, and migratory pathways.</p> <p>It is likely that sound technical advice will need to be obtained from an appropriately qualified and experienced aquatic ecologist.</p>	<p>CE, CRI, DOC, EW, UW</p>	<p>Y / N / NS</p>	<p>Catchment:</p> <p>_____</p> <p>_____</p> <p>Area (ha) or length of habitat:</p> <p>_____</p> <p>Breeding species present:</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p><b><u>REPRESENTATIVE EXAMPLES</u></b></p> <p>9 It is an area of indigenous vegetation or habitat that is a healthy, representative example of its type because:</p>	<p>Fencing and pest control would be required for most mainland sites in the Region (irrespective of habitat type).</p>	<p>CE, CRI, DOC, EW, P</p>	<p>Y / N / NS</p>	<p>Rank the following factors High (H), Medium (M) or Low (L):</p> <ul style="list-style-type: none"> <li>• structural intactness _____</li> <li>• ratio of indigenous:exotic species _____</li> </ul>

<sup>1</sup> CE = Consultant Ecologist, CRI= Crown Research Institute e.g. Landcare Research or National Institute of Water and Atmospheric Research (NIWA), DOC = Department of Conservation, EW = Environment Waikato , NHF = Nature Heritage Fund, NWR = Nga Whenua Rahui, P = Published reports or maps, QEII = QEII National Trust, TA= Territorial Authority (district or city council), UW = University of Waikato..

A. Criteria	B. Definitions and Further information	C. Likely Information <sup>1</sup> Sources	D. Response (Yes? No? Not Sure?)	E. If Yes, provide the information requested below to justify your decision and to assist with determining level of significance
<ul style="list-style-type: none"> <li>its structure, composition, and ecological processes are largely intact, and</li> <li>if protected from the adverse effects of plant and animal pests and of adjacent landuse (e.g. stock, discharges, erosion), can maintain its ecological sustainability over time.</li> </ul>	<p>Ecological sustainability means a site's ability to continue to exist as an area of indigenous vegetation or habitat for indigenous fauna when taking into account its size, shape, buffering from external effects, connection to other natural areas, and likely threats. It may change naturally into a different habitat but will remain essentially as indigenous species and of natural character.</p> <p>Ecologists assessing this criterion should take into account the site's size, shape, buffering from external effects, and connection to other natural areas. Other factors to be considered include indigenous regeneration (presence of fruit, seedlings, nests, juvenile animals etc), structural tiers (layers), hydrological processes in wetlands, invasive weeds, pest animals, domestic stock, threat management, management history.</p> <p>Representative areas are sites that are the best examples of sites that form a network covering the full range of landforms, soil sequences, vegetation and fauna communities within an ecological district (c.f. Shaw 1994). The reality for many landscapes, particularly throughout much of the Waikato, is that a 'representative example' will be the larger and most diverse remaining examples of indigenous vegetation and habitats.</p>	<p>This criterion will require the input of an experienced and qualified ecologist.</p> <p>Good information will be required, and, in most instances, a field visit will be necessary.</p>		<ul style="list-style-type: none"> <li>connectivity to other natural areas ____</li> <li>size of the area in the context of the relevant ecological district ____</li> <li>degree of protection from likely threats (e.g., fenced, buffered) ____</li> <li>species diversity ____</li> </ul> <p>List no. of responses to the above questions:  H ____  M ____  L ____</p> <p>Indicate overall ecological quality of the site.</p> <hr/> <p>Would you consider this to be among the best examples of its type nationally (Y/N), in the Waikato Region (Y/N), or in a particular ecological region/ district (Y/N)? Provide justification.</p> <hr/> <hr/> <hr/>

<sup>1</sup> CE = Consultant Ecologist, CRI= Crown Research Institute e.g. Landcare Research or National Institute of Water and Atmospheric Research (NIWA), DOC = Department of Conservation, EW = Environment Waikato , NHF = Nature Heritage Fund, NWR = Nga Whenua Rahui, P = Published reports or maps, QEII = QEII National Trust, TA= Territorial Authority (district or city council), UW = University of Waikato..

A. Criteria	B. Definitions and Further information	C. Likely Information <sup>1</sup> Sources	D. Response (Yes? No? Not Sure?)	E. If Yes, provide the information requested below to justify your decision and to assist with determining level of significance
<p>10 Is it an area of indigenous vegetation or habitat that forms part of an ecological sequence that is either not common in the Waikato Region or an ecological district, or is an exceptional, representative example of its type.</p>	<p><b>Ecological sequence</b> means a series of two or more connected ecosystem or vegetation types that retain natural transition zones along an environmental gradient.</p> <p>Ecological sequences that are not common in the Waikato Region include, but are not restricted to, native dune vegetation through to coastal scrub or forest, lake margins or geothermal systems to native forest, coastal to montane or alpine vegetation.</p> <p>Such sequences should be largely intact (e.g. perhaps bisected by roads but not by large tracts of non-native land cover), such that they can be traversed by the majority of indigenous species that are reliant on such sequences for the completion of part or all of their life-cycles (either by deliberate movement or dispersal of propagules such as seed or pollen).</p> <p>An exceptional, representative sequence will be one of the best examples of its type, taking into account its intactness, composition, and ecological processes.</p> <p>It will probably be necessary to provide or obtain a map(s) of the sequence and the main vegetation types and habitats that it comprises.</p> <p>GIS analysis using a vegetation map and an appropriate evaluation framework (e.g. ecological district boundaries) may demonstrate if a sequence is uncommon or one of the better examples.</p>	<p>CE, CRI, DOC, EW, P</p>	<p>Y / N / NS</p>	<p>Does the site include or is it part of one of the best or only examples of this type of ecological sequence nationally (Y/N), regionally (Y/N), or in the relevant ecological district (Y/N)?</p> <p>Location:</p> <p>_____</p> <p>Key elements of sequence:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Justification:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

<sup>1</sup> CE = Consultant Ecologist, CRI= Crown Research Institute e.g. Landcare Research or National Institute of Water and Atmospheric Research (NIWA), DOC = Department of Conservation, EW = Environment Waikato , NHF = Nature Heritage Fund, NWR = Nga Whenua Rahui, P = Published reports or maps, QEII = QEII National Trust, TA= Territorial Authority (district or city council), UW = University of Waikato..

A. Criteria	B. Definitions and Further information	C. Likely Information <sup>1</sup> Sources	D. Response (Yes? No? Not Sure?)	E. If Yes, provide the information requested below to justify your decision and to assist with determining level of significance
<p><b><u>ROLE IN PROTECTION OF ECOLOGICALLY SIGNIFICANT AREA</u></b></p> <p>11 It is an area of indigenous vegetation or habitat for indigenous species (which habitat is either naturally occurring or has been established as a mitigation measure) that forms, either on its own or in combination with other similar areas, an ecological buffer, linkage or corridor, and which is necessary to protect any site identified as significant under Criteria 1-10 from external adverse effects.</p>	<p>This also includes riparian vegetation that protects a significant aquatic habitat, e.g. a freshwater fishery.</p>	<p>CE, CRI, DOC, EW, P</p>	<p>Y / N / NS</p>	<p>Key ecological function(s) of site (buffer, ecological linkage, other):</p> <hr/> <hr/> <p>Which site(s) does this area provide a buffer or linkage for?</p> <hr/> <hr/> <p>Which of criteria 1-10 does the buffered or linked site comply with?</p> <hr/> <hr/> <p>Justification:</p> <hr/> <hr/> <hr/>

<sup>1</sup> CE = Consultant Ecologist, CRI= Crown Research Institute e.g. Landcare Research or National Institute of Water and Atmospheric Research (NIWA), DOC = Department of Conservation, EW = Environment Waikato , NHF = Nature Heritage Fund, NWR = Nga Whenua Rahui, P = Published reports or maps, QEII = QEII National Trust, TA= Territorial Authority (district or city council), UW = University of Waikato..

## 4 Relative Importance of an area of Significant Indigenous Vegetation or Significant Habitat of Indigenous Fauna

Environment Waikato recognises four levels of importance or relative significance: international, national, regional, and local.

Factors to be assessed to assign a level of significance to a site are provided below in Table 2. These are **elements** of the primary criteria 1-11 in Table 1 and they provide additional detail to enable recognition of features that are significant within an international, national, regional, or local context.

Sites assessed using Table 2 must first have been assigned a “Yes” response to at least one of the criteria in Table 1. A site cannot be assigned to a level of significance unless it has first been shown to be ecologically significant.

A site will be assigned to **the highest level at which it meets any one of the factors in Table 2**. If a site is assigned a “Yes” response at the International level, for instance, there is no need to progress further down the table, although the site is also likely to comply with elements lower in the hierarchy.

Sites can be assigned a level of significance based on the following factors:

- Legal status (Criterion 1), and/or
- Previous assessment (Criterion 2), and/or
- Rarity/Threat status (species, habitats, ecosystems) (Criteria 3, 4, 5, 6, 8), and/or
- Relative quality (Criteria 7, 9, 10), and/or
- Ecological function as a buffer, linkage or corridor (Criterion 11).

Table 3 is a checklist that summarises the features that a site must hold to be considered to be of international, national, or regional significance. Use it as a double-check when assessing level of significance. After becoming familiar with the detail in Table 2 you may find it more convenient to use Table 3 directly to apply a level of significance.



## Table 2: Relative Importance of an area of Significant Indigenous Vegetation or Significant Habitat of Indigenous Fauna

In Column A, circle the criteria numbers for which you scored a 'Yes' in Table 1. Then consider the factors to be assessed, and complete column D, using your answers in Table 1 Col E to justify your response.

A. RPS Criteria met (see Table 1 above)	B. FACTORS TO BE ASSESSED	C. NOTES	D. RESPONSE (Yes / No / Not Sure)
	<p><b><u>INTERNATIONALLY SIGNIFICANT</u></b></p> <p>A site is Internationally Significant if you respond 'YES' to any of the questions in this section:</p>	<p><b>Internationally significant</b> natural areas have usually been identified in previous assessments. These sites are so important that some of them are already protected by international conventions. For example, the Tongariro National Park is a World Heritage Area, and there are three wetlands in the Waikato listed as Wetlands of International Importance under the international RAMSAR Convention (Whangamarino Swamp, Kopouatai Peat Dome, and the Firth of Thames estuary).</p> <p>Other natural areas may be internationally significant if they contain high quality vegetation or habitat that is unique in the world - for example, geothermal systems at Waiotapu and Orakeikorako.</p> <p>Internationally significant sites are likely to attract the interest of overseas and NZ scientists, and be a primary attraction for international and national tourists, e.g. Miranda bird sanctuary, Tongariro National Park.</p>	
1	Has it been recognised under international legislation or convention as an internationally significant area (e.g. as a World Heritage Site or a RAMSAR site)?		Y / N / NS

A. RPS Criteria met (see Table 1 above)	B. FACTORS TO BE ASSESSED	C. NOTES	D. RESPONSE (Yes / No / Not Sure)
2	Has it been recommended for protection as a World Heritage Site or Wetland of International Importance (RAMSAR site) by QEII or NWH, or NHF?		Y / N / NS
3	Is it currently habitat for an indigenous species which is threatened with extinction (in the categories Nationally Critical, or Nationally Endangered or Nationally Vulnerable) and endemic to the Waikato Region?		Y / N / NS
3	Is it a key habitat for the completion of the life cycle of species that migrate internationally and that would be threatened if these habitats weren't sustained?	An example of key habitat for international migrants is the Firth of Thames.	Y / N / NS
If meets several of 4 & 9 or 5 & 9 or 6 & 9 or 7 & 9 or 8 & 9 or 10 & 9	Is the site the best or only remaining large representative example in New Zealand of a <b>suite</b> of relatively intact indigenous ecosystems and ecological sequences e.g. a wetland/forest complex with altitudinal sequences?	This would need to be justified by several well-qualified and experienced ecologists.	Y / N / NS

A. RPS Criteria (see Table 1 above)	B. FACTORS TO BE ASSESSED	C. NOTES	D. RESPONSE (Yes / No / Not Sure)
	<p><b><u>NATIONALLY SIGNIFICANT</u></b></p> <p>The site is <b>at least</b> Nationally Significant if you can answer 'YES' to any of the questions in this section.</p>	<p><b>Nationally Significant</b> natural areas includes sites that contain healthy populations of threatened species (such as kokako and kaka habitat at Pureora), or are very good examples of nationally rare habitat or vegetation (such as the large wetlands in the northern Waikato). They also include sites that are the only location where certain species occur, such as the hooded orchid at Whangamarino, or the Mercury Islands tusked weta.</p> <p>Nationally significant sites tend to attract the interest of scientists, technical specialists, and/or tourists from other parts of New Zealand.</p>	
1 or 2	Is it protected, or recommended for protection, under the Conservation Act 1987 (as an Ecological Area, or Forest Sanctuary), National Parks Act 1980, Marine Reserves Act 1971, or Reserves Act 1977 (as a Nature Reserve or Scientific Reserve).	In the Waikato Region these include: Tongariro National Park, Waihaha Ecological Area, Waipapa Ecological Area, Mangatutu Ecological Area, Rapurapu Ecological Area.	Y / N / NS
3	Is it habitat for an indigenous species which is under serious threat in the categories Nationally Critical, Nationally Endangered, Nationally Vulnerable, Serious Decline, or Gradual Decline?		Y / N / NS
4 & 9 or 5 & 9 or 6 & 9	Is it indigenous vegetation or habitat for indigenous species that is under-represented nationally (10% or less remains), or nationally uncommon (including wetland) that is a good quality example that is representative of its type?	<p>Good quality examples would receive mostly highs or mediums for Criterion 9 in Table 1(taking into account size, presence of plant and animal pests, stock damage, other damaging effects).</p> <p>For the definition of vegetation types refer to Criterion 4 in Table 1 above - Column B, Definitions and Further Information.</p>	<p>List no. of responses to criterion 9 in Table 1:</p> <p>H _____</p> <p>M _____</p> <p>L _____</p> <p>Y / N / NS</p>

A. RPS Criteria (see Table 1 above)	B. FACTORS TO BE ASSESSED	C. NOTES	D. RESPONSE (Yes / No / Not Sure)
	<p><b><u>REGIONALLY SIGNIFICANT</u></b></p> <p>The site is <b>at least</b> Regionally Significant if you can respond 'YES' to any of the the questions in this section:</p>	<p><b>Regionally significant</b> natural areas include the best examples in the Waikato Region of habitats that may be common elsewhere in New Zealand - for example, our best dune systems or largest mangrove-filled estuaries, or large examples of more common vegetation types. They may also include examples of nationally rare features that are not in good condition.</p>	
1	Is it protected under the Reserves Act 1977, as a Wildlife Management Reserve, Wildlife Refuge, Scenic Reserve, Nga Whenua Rahui Kawenata, or for any conservation purpose under the Conservation Act such as a Conservation Area or Conservation Park, with significant fauna and/or flora values.		<p>Y / N / NS</p> <p>Status: _____</p> <p>Recommended Status: _____</p>
1	Is it protected under the Queen Elizabeth the Second National Trust Act 1977 as an Open Space Covenant for any purpose other than those outlined for sites of international or national significance?		<p>Y / N / NS</p>
2	Is it a site that has been recommended for protection by NHF, NWR, or QEII?		<p>Y / N / NS</p>
3	Is it currently habitat for an indigenous species that is threatened, in the categories Sparse or Range Restricted, or endemic to the Waikato Region?	<p>Species currently known to be endemic to the Waikato Region (defined as currently only occurs naturally within the Waikato Region) include: <i>Sporadanthus ferrugineaus</i>, Mercury Is. Tusked weta, Te Aroha stag beetle, Moehau stag beetle, Hebe 'Awaroa', <i>Corybas carsei</i></p>	<p>Y / N / NS</p> <p>Species: _____</p> <p>Threat Status: _____</p>

A. RPS Criteria (see Table 1 above)	B. FACTORS TO BE ASSESSED	C. NOTES	D. RESPONSE (Yes / No / Not Sure)
4 & 9	Is it indigenous vegetation or habitat for indigenous species that is under-represented regionally (i.e. within relevant ecological regions and districts) and which is a good quality example that is representative of its type (taking into account size, plant and animal pests, stock damage, other damaging effects)?	<p>Good quality examples would receive highs or mediums for Criterion 9 in Table 1.</p> <p>Assessment must be justified by a well qualified and experienced ecologist.</p>	<p>List no. of responses to question 9 in Table 1:</p> <p>H _____</p> <p>M _____</p> <p>L _____</p> <p>Y / N / NS</p>
4, 5, or 6	Is it a relatively large example of indigenous vegetation or habitat for indigenous species that is under-represented nationally, or nationally uncommon (including wetlands), but which is degraded in quality (taking into account presence of plant and animal pests, stock damage, other damaging effects)?	Assessment must be justified by a well qualified and experienced ecologist. Use the results from Criterion 9 in Table 1 to determine the relative quality of the site.	Y / N / NS
4	Is it the Region's only remaining representative example (irrespective of its size) of a particular indigenous vegetation type or indigenous species habitat that is degraded in quality?	<p>Representative areas are the best examples of indigenous vegetation and habitats that comprise a network covering the full range of landforms, soil sequences, vegetation and fauna communities within an ecological district (c.f. Shaw 1994). The reality for many landscapes, particularly throughout much of the Waikato, is that a 'representative example' will be the largest and most diverse remaining examples of indigenous vegetation and habitats.</p> <p>Degraded sites would receive mostly Low scores for the factors listed in Criterion 9.</p>	<p>List no. of responses to question 9 in Table 1:</p> <p>H _____</p> <p>M _____</p> <p>L _____</p> <p>Y / N / NS</p>

A. RPS Criteria (see Table 1 above)	B. FACTORS TO BE ASSESSED	C. NOTES	D. RESPONSE (Yes / No / Not Sure)
9 or 8 & 9 or 10 & 9	Is it one of the best representative examples in the Waikato Region of indigenous vegetation or habitat for indigenous fauna or an ecological sequence?	Assessment must be justified by a well qualified and experienced ecologist.	Y / N / NS
7 & 9	Is it a good quality example of indigenous vegetation or habitat for indigenous species representative of the ecological character typical of the Waikato Region?	This may include examples of indigenous vegetation that are large or moderately large relative to other similar habitats in the Region or within the relevant ecological district. They should be relatively intact and retain the main elements of their original composition structure. Examples would include relatively large tracts of indigenous forest and habitats on the Hakarimata Range and Kaimai Range.	Y / N / NS
11	Is it a buffer (or a key part of a buffer) to a site that is of international or national significance?	The site buffered must have first been shown to be of national or international significance using relevant sections above in Table 2.	Y / N / NS

A. RPS Criteria (see Table 1 above)	B. FACTORS TO BE ASSESSED	C. NOTES	D. RESPONSE (Yes / No / Not Sure)
All	<p><b><u>LOCALLY SIGNIFICANT</u></b></p> <p>The site is <b>at least</b> of Local Significance if you answered “Yes” to at least one criterion in Table 1 but did not answer “Yes” to any of the questions above in Table 2.</p>	<p><b>Locally significant</b> natural areas are healthy examples of relatively common vegetation and habitat types. They are often small areas, but large enough to enable key ecological processes to occur, such as regeneration of seedlings or reproduction of indigenous fauna. These sites may not be particularly significant in their own right, but nevertheless play an important part in a network of natural areas. For example, a locally significant site might be important as a seasonal feeding or breeding area. It might also act as a stepping stone between other natural areas, allowing indigenous fauna to move in search of food or mates.</p> <p>Such sites are likely to provide representative examples of common or typical vegetation types or habitat for common indigenous species. They will not be among the best examples in the Region but will meet Criterion 9 as healthy, functioning, and ecologically viable sites.</p>	Y / N
<b>HOW SIGNIFICANT IS THE SITE?</b>		Circle the highest level for which you allocated at least one “Yes” response in Table 2. This indicates the relative importance of the site.	International, National, Regional, Local

**Table 3: Checklist for Assessing Relative Importance of an area of Significant Indigenous Vegetation or Significant Habitat of Indigenous Fauna**

Crit.	Reason for Significance*	Significance Levels*		
		International	National	Regional
1	Legally protected	RAMSAR or WHS	Ecological Area, Forest Sanctuary, National Park, Marine Reserve, Nature Reserve, Scientific Reserve	Other Reserves Act or Cons. Act. or a QEII covenant
2	Recommended for protection	As a RAMSAR or WHS	As an Ecological Area, Forest Sanctuary, National Park, Marine Reserve, Nature Reserve, Scientific Reserve	As another reserve type under Reserves Act or Cons. Act. or a QEII covenant
3	Threatened species Waikato Endemic species	Acutely threatened species that are endemic to the Waikato	Acutely or chronically threatened species	At risk threat category, range restricted or sparse
		International migrants that would be threatened if habitat was lost		Non-threatened Waikato endemic
4	Under-represented ecosystem	Best*** or only remaining, large example of a suite or sequence of ecosystems. <i>(For criteria 4, 5, 6, and 10, sites in this category would also be likely to meet a number of other criteria and form a complex of ecosystems.)</i>	Good quality example of nationally under-represented site (must also meet Crit. 9)	Good quality example of regionally under-represented site (must also meet Crit. 9)
				Relatively large but degraded example of nationally under-represented site
				Degraded, but Region's only remaining example (of any size)
5	Nationally uncommon ecosystem	Best*** or only remaining large example in NZ of a suite of ecosystems	Good quality example of a nationally rare type (must also meet Crit. 9)	Relatively large but degraded example
6	Wetland habitat	Best*** or only remaining large example in NZ of a wetland type	Good quality example (must also meet Crit. 9)	Relatively large but degraded example
7	Large example of wildlife habitat **	<i>See notes below**</i>	<i>See notes below**</i>	Good quality representative example (must also meet Crit. 9)
8	Aquatic habitat **	<i>See notes below**</i>	<i>See notes below**</i>	The Region's best or only example of a good quality example (must also meet Crit. 9)
9	Representative example**	<i>See notes below**</i>	<i>See notes below**</i>	One of the Region's best examples
10	Uncommon or exceptional ecological sequence	Best*** or only remaining large example of a suite or sequence of ecosystems	Good quality example of a nationally rare ecological sequence (must also meet Crit. 9)	One of the Region's best examples (must also meet Crit. 9)
11	Buffer	-	-	Buffers a site that is of national or international significance

### Notes for Table 3

**If a site is not of international, national, or regional significance, but meets one of the 11 criteria, it is locally significant.**

- \* Levels of significance are applicable to any site that is part of a larger area that qualifies under any criterion.
- \*\* A site that is significant as a large area of wildlife habitat, aquatic habitat or a representative example of its type, will only be of greater than regional significance if it also meets one of the other criteria for which national or international levels apply. For instance, if the site was **also** habitat for acutely threatened species, it would be assessed using Criterion 3 as well as Criteria 7, 8, or 9.
- \*\*\* Sites that are the 'best' example of their type will also meet Criterion 9. For international significance such sites will also be likely to meet a number of other criteria and must form a complex of ecosystems.

## 5 References

- Atkinson I.A.E. 1985: Derivation of vegetation mapping units for an ecological survey of Tongariro National Park, North Island, New Zealand. *New Zealand Journal of Botany*, 23: 361-378.
- Beadel S.M. and Shaw W.B. 2000: Identification of significant natural areas in the Waikato Region using remote sensing and existing databases. *Wildland Consultants Ltd Contract Report No. 340*. Prepared for Environment Waikato. 103 pp.
- Clarkson B.; Sorrell B.; Reeves P.; Champion P. and Partridge T. 2002 (Draft): Handbook for Monitoring Wetland Condition. Ministry for the Environment, Wellington.
- Collier K.J.; Clarkson B.D.; Chadderton L. 2002: Draft criteria and framework for assessing natural heritage value of nationally important freshwater and estuarine ecosystems. Draft report prepared for the Department of Conservation, Wellington.
- Cromarty. P. & Scott, D.A. (eds). 1995: A Directory of Wetlands in New Zealand. Department of Conservation, Wellington, New Zealand.
- de Lange P.J.; Heenan P.B.; Given D.R.; Norton D.A.; Ogle C.C.; Johnson P.N.; Cameron E.K. 1999: Threatened and uncommon plants of New Zealand. *New Zealand Journal of Botany* 37: 603-628.
- Leathwick J.R.; Clarkson B.D. and Whaley P.T. 1995: Vegetation of the Waikato Region: current and historical perspectives. *Landcare Research Contract Report LC9596/002*. Manaaki Whenua-Landcare Research Ltd. Prepared for Environment Waikato. 54 pp.
- McEwen W.M. 1987: Ecological Regions and Districts of New Zealand. 3rd revised edition and 4 1:500,000 maps. *Biological Resources Centre Publication No. 5*. Department of Conservation, Wellington.
- Shaw W.B. 1994: Botanical Ranking for Nature Conservation. *Science and Research Series No. 72*. Department of Conservation, Wellington.
- Whaley K.J.; Clarkson B.D. and Leathwick J.R. 1995: Assessment of criteria used to determine 'significance' of natural areas in relation to section 6(c) of the Resource Management Act (1991). *Landcare Research Contract Report*. Prepared for Environment Waikato, Hamilton.
- Wildland Consultants Ltd and EPRO Ltd 1999: Key ecological sites for pest control in private tenure in Waikato Region - Waikato District and part Franklin District. *Wildland Consultants Ltd Contract Report No. 236*. Prepared for Environment Waikato. 140 pp.

# Appendix 1: Other Useful Information

## Sources

- Beadel S.M. 1992: Threatened and local plants of Bay of Plenty Conservancy. *Technical Report Series No. 13*. Department of Conservation, Rotorua. 77 pp plus maps.
- Beadel S.M. 1995: Vegetation and flora of lands administered by Bay of Plenty Conservancy. Department of Conservation. Rotorua. *Wildland Consultants Ltd Contract Report No. 130*. 556 pp.
- Beadel S.M. (In press): Otago ecological district. Survey report for the Protected Natural Areas Programme. Department of Conservation, Rotorua. 241 pp.
- Beadel S.M. and Bill A.M. 2000: Geothermal areas in the Waikato Region. *Wildland Consultants Ltd Contract Report No. 297*. Prepared for Environment Waikato. 178 pp.
- Bibby C.J.; Beadel S.M.; Ryan C.P.; Nicholls J.L., and Hosking M.A. 2000. Taumarunui Ecological District. Survey report for the Protected Natural Areas Programme. Department of Conservation, Wanganui. 334 pp.
- Cody A. 1994: Inventory of landforms, cold springs, geothermal fields and geothermal features. *Unpublished report and maps*. Department of Conservation, Rotorua.
- Denyer K.; Clarkson B.R.; Clarkson B.D. 1999: *Waikato Freshwater Wetland Monitoring Strategy: Scoping Exercise for State of the Environment Monitoring*. 71pp.
- Ecofx and Kessels and Associates 2000: Key Ecological Sites in the Coromandel Ecological Region for pest control. Report prepared for Environment Waikato. 117 pp plus Appendices.
- Emmett D.K.; Smale M.C.; Clarkson B.D.; Leathwick J.R.; Jessen M.R.; and Whaley P.T. 1998: Indigenous vegetation of the Awhitu and Manukau Ecological Districts. *Landcare Research Contract Report: LC9798/101*. Manaaki Whenua-Landcare Research, Hamilton. 155 pp.
- Humphries E.A. & Tyler A.M. 1990: Coromandel Ecological Region. New Zealand Protected Natural Areas Programme. Department of Conservation, Waikato Conservancy, Hamilton. 283 pp.
- McCullough C.D. 1998: *Habitat Requirements of Key Palustrine Wetland Species in the Waikato Region*. A technical report prepared for Environment Waikato. McCullough Freshwater Consultancy. 37 pp.
- McLeod M.; Leathwick J.R.; and Stephens R.T.T. 1997: Landforms of the Waikato Region. *Landcare Research Contract Report: LC9697/130*. Manaaki Whenua-Landcare Research NZ Ltd, Hamilton. 13 pp.
- Merrett M.F. & Clarkson B.R. 1999: Definition, description and illustrations of geothermally influenced terrestrial and emergent wetland vegetation. *Landcare Research Contract Report: LC9900/022*.
- Molloy J. and Davis A. 1994: Setting priorities for the conservation of New Zealand's threatened plants and animals. 2nd edition; collated by C. Tisdall. Department of Conservation, Wellington. 64 pp.

- Moynihan K.T. 1986: Wildlife and sites of special wildlife interest in the Western Waikato Region. *Fauna Survey Unit Report No. 41*. New Zealand Wildlife Service, Department of Internal Affairs, Wellington. 100 pp.
- Payton I.; Andreasen S.; Fastier M.; Burrows L.; Hall G. 1991: National Indigenous Vegetation Survey Database. Auckland Dataset Directory. *Forest Research Institute Contract Report: FEW 91/36*. Prepared for the Department of Conservation. 29 pp.
- Rasch G. 1989: Wildlife and wildlife habitats in the Bay of Plenty Region. *Regional Report Series No. 11*. Department of Conservation, Rotorua. 136 pp plus maps.
- Regnier C.E. 1987: Coromandel Ecological Region. Protected Natural Areas Programme. Phase 1. Biological Resources Centre, Department of Conservation, Wellington. 241 pp.
- Regnier C. and Clarkson B.R. 1988: Tainui Ecological Region Protected Natural Areas Programme: Phase 1. Compilation of information on protected natural areas and proposed reserves. Department of Conservation, Hamilton.
- Saunders A.J. 1983: Wildlife and wildlife habitat values of the Mamaku Plateau - an overview. *Fauna Survey Unit Report No. 37*. New Zealand Wildlife Service, Wellington. 57 pp.
- Shaw W.B. and Beadel S.M. 1998: Natural heritage of the Rotorua District. *Wildland Consultants Ltd Contract Report No. 176*. Prepared for Rotorua District Council. 657 pp.
- Tyrell M.; Cutting M.; Green C.; Murdoch G.; Denyer K. and Jamieson A. 1998: Hunua Ecological District. *New Zealand Protected Natural Areas Programme Survey Report No. 17*. Auckland Regional Council, New Zealand. 258 pp.
- Wildland Consultants Ltd 1999: Taumarunui Ecological District survey report for the Protected Natural Areas Programme. *Wildland Consultants Ltd Contract Report No. 272*. Prepared for the Department of Conservation. 231 pp.
- Wildland Consultants Ltd (In prep): Natural heritage of the Taupo District. *Wildland Consultants Ltd Contract Report No. 308*. Prepared for Taupo District Council.

Summaries of information available on indigenous vegetation and habitats in the Waikato Region are provided in Beadel S.M. and Shaw W.B. 2000: Identification of significant natural areas in the Waikato Region using remote sensing and existing databases. *Wildland Consultants Ltd Contract Report No. 340*. Prepared for Environment Waikato. 103 pp. Selected extracts from this report are provided below for key regional information sources, but the report also contains summaries of many other reports and information sources which are locally applicable.

<b>Name:</b>	Geothermal Vegetation of the Waikato Region
<b>Brief Description:</b>	An inventory and assessment of 28 sites comprising 500 ha of geothermal vegetation in the Waikato Region. The vegetation of each site has been described, classified and mapped (digital maps). Condition, current threats, modifications and vulnerability were assessed and management requirements outlined. Each site was assigned a significance level using the criteria in the Environment Waikato Policy Statement 2000.
<b>References:</b>	Beadel & Bill 2000; Merrett & Clarkson 1999.

<b>Name:</b>	Natural Heritage of Rotorua District
<b>Brief Description:</b>	<ul style="list-style-type: none"> <li>• Hard copy report (text and maps) and digital maps.</li> <li>• Includes descriptions and maps of all natural areas in the Rotorua District (protected and unprotected). Descriptions include information on vegetation, flora, fauna, threat/modifications and justification for their selection as a natural heritage site.</li> </ul>
<b>References:</b>	Shaw and Beadel 1998.

<b>Name:</b>	Otanewainuku Ecological District PNAP
<b>Brief Description:</b>	A PNAP survey of Otanewainuku Ecological District. Hard copy report with descriptions and maps of recommended areas for protection (RAPs). A vegetation map and topographic location map is provided for each RAP. Each RAP is described in detail, including the following categories: vegetation type, landform, vegetation, flora, fauna, threats/modifications, evaluation, and discussion. This is not a complete inventory of sites likely to be significant under Section 6(c) RMA.
<b>References:</b>	Beadel in press.

<b>Name:</b>	Awhitu and Manukau Ecological Districts PNAP
<b>Brief Description:</b>	Hard copy report containing RAP descriptions and hard copy maps (c.1:91,000). GIS data layers of land system and vegetation class cover, and attribute data.
<b>References:</b>	Emmett <i>et al.</i> 2000

<b>Name:</b>	Coromandel Ecological Region PNAP Report
<b>Brief Description:</b>	PNAP survey of Coromandel, Colville, Thames, Tairua and Waihi Ecological Districts. Identifies, describes and maps recommended areas for protection. KES report (2000) updates this information.
<b>References:</b>	Humphries & Tyler 1990; Regnier 1987

<b>Name:</b>	Tainui Ecological Region Phase 1 PNAP Report
<b>Brief Description:</b>	A compilation of existing ecological information on Tainui Ecological Region. Does not identify recommended areas for protection.
<b>References:</b>	Regnier and Clarkson 1988

<b>Name:</b>	Hunua Ecological District
<b>Brief Description:</b>	A PNAP survey of Hunua Ecological District. Hard copy report with descriptions and maps of recommended areas for protection (RAPs). A line CAD map is provided for each RAP. This is not a complete inventory of sites likely to be significant under Section 6(c) RMA.
<b>References:</b>	Tyrell <i>et al.</i> 1999

<b>Name:</b>	Key Ecological Sites for pest control in private tenure in the Waikato Region - Waikato District and part Franklin District
<b>Brief Description:</b>	This report identifies, maps and describes natural areas in private ownership of regional/national/international significance (according to Environment Waikato Policy Statement Criteria (1999 draft) in the Waikato and Franklin Districts.
<b>References:</b>	Wildland Consultants Ltd and EPRO Ltd 1999

<b>Name:</b>	Key Ecological Sites in the Coromandel Ecological Region
<b>Brief Description:</b>	This report identifies, maps and describes natural areas in private ownership of regional/national/international significance (according to Environment Waikato Policy Statement Criteria (1999 draft) in the Waikato and Franklin Districts in the Coromandel Ecological Region.
<b>References:</b>	Ecofx and Kessels and Associates 2000

<b>Name:</b>	Conservation Management Strategy Volume II and Associated Databases - Bay of Plenty
<b>Brief Description:</b>	<p>Management tool used by the department to identify all parcels of land administered by the Department.</p> <p>Content of Data Set: The database is divided into two general descriptive areas; a DOC functions category and a site description category. The first lists the management issues, functions of DOC for this particular area. Essentially the CMS is a management tool for DOC, setting out objectives to be achieved for these areas.</p> <p>The second part contains site descriptions. Information includes map reference, name of field centre, territorial authority, lwi, ecological district, size of the area, general description of land use, topographic features etc, conservation values (habitat value, lists of rare species, unusual association), uses (recreational land etc), threats (conflicting uses, pests, weeds), historical information (pa sites), scenic value, listing as a RAP site.</p> <p>The database can be used to search for information on limited criteria, for example, name, map sheet, ecological district, field centre, lwi, but not by specific species or other specific request.</p>
<b>References:</b>	Department of Conservation, Rotorua

<b>Name:</b>	Conservation Management Strategy Database Vol. II, Waikato Conservancy
<b>Brief Description:</b>	<p>Data Set Abstract: This is the electronic version of volume two of the DOC Conservation Management Strategy (CMS). It is a list of all areas managed by DOC within the Waikato DOC conservancy.</p> <p>Content of Data Set: The database is divided into two general descriptive areas; a DOC functions category and a site description category. The first lists the management issues, functions of DOC for this particular area. Essentially the CMS is a management tool for DOC, setting out objectives to be achieved for these areas.</p> <p>The second part is the site description. It contains information on: the map reference, name of field centre, territorial authority, Iwi, ecological district, size of the area, general description of land use, topographical features etc, conservation values (habitat value, lists of rare species, unusual association), uses (recreational land etc), threats (conflicting uses, pest, weeds), historical information (pa sites), scenic value, listing as a RAP site.</p> <p>The database can be used to search for information on limited criteria, for example, name, map sheet, ecological district, field centre, Iwi, but not by specific species or other specific request.</p>
<b>References:</b>	Department of Conservation, Hamilton

<b>Name:</b>	Conservation Management Strategy Database Vol. II, Auckland Conservancy
<b>Brief Description:</b>	<p>Data Set Abstract: This is the electronic version of volume two the DOC Conservation Management Strategy (CMS). It is a list of all areas managed by DOC within the Waikato DOC conservancy.</p> <p>Content of Data Set: The database is divided into two general descriptive areas; a DOC functions category and a site description category. The first lists the management issues, functions of DOC for this particular area. Essentially the CMS is a management tool for DOC, setting out objectives to be achieved for these areas.</p> <p>The second part is the site description. It contains information on: the map reference, name of field centre, territorial authority, Iwi, ecological district, size of the area, general description of land use, topographical features etc, conservation values (habitat value, lists of rare species, unusual association), uses (recreational land etc), threats (conflicting uses, pest, weeds), historical information (pa sites), scenic value, listing as a RAP site.</p> <p>The database can be used to search for information on limited criteria, for example, name, map sheet, ecological district, field centre, Iwi, but not by specific species or other specific request.</p>
<b>References:</b>	Department of Conservation, Auckland

<b>Name:</b>	Conservation Management Strategy Database Vol. II, Wanganui Conservancy
<b>Brief Description:</b>	<p>Data Set Abstract: This is the electronic version of volume two the DOC Conservation Management Strategy (CMS). It is a list of all areas managed by DOC within the Waikato DOC conservancy.</p> <p>Content of Data Set: The database is divided into two general descriptive areas; a DOC functions category and a site description category. The first lists the management issues, functions of DOC for this particular area. Essentially the CMS is a management tool for DOC, setting out objectives to be achieved for these areas.</p> <p>The second part is the site description. It contains information on: the map reference, name of field centre, territorial authority, lwi, ecological district, size of the area, general description of land use, topographical features etc, conservation values (habitat value, lists of rare species, unusual association), uses (recreational land etc), threats (conflicting uses, pest, weeds), historical information (pa sites), scenic value, listing as a RAP site.</p> <p>The database can be used to search for information on limited criteria, for example, name, map sheet, ecological district, field centre, lwi, but not by specific species or other specific request.</p>
<b>References:</b>	Department of Conservation, Wanganui

<b>Name:</b>	Conservation Management Strategy Database Vol. II, Tongariro-Taupo Conservancy
<b>Brief Description:</b>	<p>Data Set Abstract: This is the electronic version of volume two the DOC Conservation Management Strategy (CMS). It is a list of all areas managed by DOC within the Waikato DOC conservancy.</p> <p>Content of Data Set: The database is divided into two general descriptive areas; a DOC functions category and a site description category. The first lists the management issues, functions of DOC for this particular area. Essentially the CMS is a management tool for DOC, setting out objectives to be achieved for these areas.</p> <p>The second part is the site description. It contains information on: the map reference, name of field centre, territorial authority, lwi, ecological district, size of the area, general description of land use, topographical features etc, conservation values (habitat value, lists of rare species, unusual association), uses (recreational land etc), threats (conflicting uses, pest, weeds), historical information (pa sites), scenic value, listing as a RAP site.</p> <p>The database can be used to search for information on limited criteria, for example, name, map sheet, ecological district, field centre, lwi, but not by specific species or other specific request.</p>
<b>References:</b>	Department of Conservation, Turangi

<b>Name:</b>	Threatened Plant Database (for the Waikato Conservancy)
<b>Brief Description:</b>	<p>Data Set Abstract: This is a database which provides site records of threatened plant species within the Waikato Conservancy. It was created to fulfil a need for a user friendly system for storing and accessing information on threatened plants for field centres to use.</p> <p>Content of Data Set: This database differs from the Landcare Research threatened plant database as it is much more detailed. It can be used as a management tool rather than just a recording database. There are at present 1462 records. The standard Botanical Society Threatened Plants list is used as the authority with which to classify threatened plants. There are two parts to the database, a species record and a site record. The species records give information such as: name, taxon, habitat requirements, national and regional status, conservancy priority ranking, uses, threats, life cycle, management actions required, keystone status (indicator populations) etc. The site records give information on: its locality, grid reference, altitude, tenure of land, reference, site threats, management issues, soil type, the species found at the site, their abundance, growth form etc.</p>
<b>References:</b>	Department of Conservation, Hamilton

<b>Name:</b>	Inventory of Landforms, Cold Springs, Geothermal Fields, and Geothermal Features
<b>Brief Description:</b>	Descriptions and maps of geothermal features and fields in the Bay of Plenty Conservancy.
<b>References:</b>	Cody 1994.

<b>Name:</b>	Vegetation and Flora of Lands Administered by Bay of Plenty Conservancy
<b>Brief Description:</b>	An inventory of the vegetation and flora on all lands administered by DOC in the Bay of Plenty Conservancy.
<b>References:</b>	Beadel 1995

<b>Name:</b>	Sites of Special Wildlife Interest (SSWI)
<b>Brief Description:</b>	<p>Data Set Abstract: Site assessment of wetlands and other habitats throughout New Zealand. This information was gathered by one of DOC's parent organisations, the New Zealand Wildlife Service. It was an attempt to nationally rank all wildlife habitats, including wetlands.</p> <p>Content of Data Set: Information was compiled on habitat register cards. An attempt was made to list the habitat values of each site. Ranking was based mainly on the number and type of species present. Birds were the main species recorded. Information was not detailed enough to extend to invertebrates and more minor plant species. Ranking depended upon presence of species considered special/significant at the time of study, quality of the site as wildlife habitat, the degree of human impact.</p>
<b>References:</b>	Moynihan 1986; Rasch 1989

<b>Name:</b>	New Zealand Wetland Inventory (WERI)
<b>Brief Description:</b>	Data Set Abstract: An inventory of all wetlands within New Zealand on both public and private land. The information is at the ecosystem level. The primary function of the database is a management tool for DOC for prioritising protection.  Content of Data Set: The database contains set parameters which can be searched. All wetlands are included within this inventory including saline and estuarine ones. Information on the significance of the wetland, buffering, hydrological classes, community classes and species lists of plants and animals and their status within the wetland is given. The information is fairly broad, with little detail given.
<b>References:</b>	Department of Conservation, Hamilton, Wellington

<b>Name:</b>	A Directory of Wetlands in New Zealand
<b>Brief Description:</b>	This report identifies and describes wetlands of international significance.
<b>References:</b>	Cromarty & Scott 1995

<b>Name:</b>	NIWA New Zealand Freshwater Fish Database
<b>Brief Description:</b>	Site and time specific species presence and abundance data with varying amounts of habitat description. Used generally for freshwater fisheries management and research, and to ensure data from a variety of organisations are collected together and stored systematically.  Content of Data Set: location, name and NZMS 260 references, date, collector, method used, species present and abundance, area fished, water depth, habitat type, substrate composition, fish cover, catchment and riparian vegetation, elevation and inland distance.
<b>References:</b>	NIWA, Hamilton

<b>Name:</b>	National Vegetation Survey
<b>Brief Description:</b>	Collation of all indigenous vegetation survey data including permanent plot data, late 1960s to present day; National Forest Survey (1946-52); North Island Ecosurvey (1956-59); PNAP survey data.
<b>References:</b>	Landcare Research, Hamilton

<b>Name:</b>	NZFS Vegetation Type Maps
<b>Brief Description:</b>	Forest type maps.
<b>References:</b>	Forest Research, Rotorua; Landcare Research, Hamilton

<b>Name:</b>	Landcare Research Threatened Plants Database
<b>Brief Description:</b>	The officially recognised threatened plants lists is the one produced by the NZ Botanical Society. Landcare Research has made a few additions to this list. The database is held in the national herbarium in Lincoln. The threatened plants database is a subset of this.  Available information includes a general description of each species, e.g. the herbarium number, the habitat of a plant, host species etc. A list of sites where threatened species have been located is also provided.
<b>References:</b>	Some hard copy reports available, e.g. Beadel 1992 - see also threatened plant database for the Waikato Conservancy. Landcare Research, Hamilton.

<b>Name:</b>	Landforms of the Waikato Region
<b>Brief Description:</b>	Digital maps showing geology, hydrology, and landforms.
<b>References:</b>	McCleod <i>et al.</i> 1997.

