



**Comparative study of conservation challenges between  
Mount Field National Park in Tasmania and Komarindi  
Conservation Area, Solomon Islands**

by

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**A thesis submitted in partial fulfillment of the requirements for  
the degree of Master of Environmental Management.**

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### **Declaration of Authenticity**

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I, Exsley Jemuel Taloiburi declare that this thesis is my own work and that to the best of my knowledge, it contains no material previously published, or substantially overlapping with material submitted for the award of any other degree at any institution, except where due reference is made in the text.

Signed: 

Date: 20 March 2009

## **Abstract**

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*Limited natural resources in the Pacific region are experiencing increasing exploitation pressure from growing human populations, with technological advances and over capitalization. Many countries have designated protected areas to conserve crucial environmental, social and cultural values. Conservation efforts are generally successful in Australia, but unsatisfactory in Pacific Island countries. This study was aimed at comparing the conservation challenges between Mount Field National Park in Tasmania and Komarindi Conservation Area, Solomon Islands. Tasmania is subject to the Ramsar Convention on Wetlands treaty but not Solomon Islands. Biodiversity issues, management goals, actions undertaken with relative outcomes were determined for Tasmania and Solomon Islands. The study also identified the level of community participation, widely accepted approaches and principles, whilst drawing out crucial lessons for future conservation initiatives in Tasmania and Solomon Islands.*

## **Acknowledgement**

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## **Abbreviations**

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A\$	Australian Dollar
AusAID	Australian Government Aid
CI	Conservation International
CITES	Convention on International Trade in Endangered Species
ECD	Environment and Conservation Division
EPBC Act	Environment Protection and Biodiversity Conservation Act
FSPI	Foundation of the Peoples of the Pacific International
IUCN	World Conservation Union
km	kilometre
km <sup>2</sup>	square kilometre
LMMA	Locally Managed Marine Area Network
m	metre
MECM	Ministry of Environment, Conservation and Meteorology
mm	millimetre
Mt Field	Mount Field
NGOs	Non Government Organisations
PBIF	Pacific Biodiversity Information Forum
PICs	Pacific Island Countries
PNG	Papua New Guinea
SIDT	Solomon Islands Development Trust
SILMMA	Solomon Islands Locally Managed Marine Area Network
SPBCP	South Pacific Biodiversity Conservation Programme
SPREP	South Pacific Regional Environment Programme
TNC	The Nature Conservancy
UNCCD	United Nations Convention of Combating Desertification
UNDP	United Nations Development Programme
US\$	United States Dollar
WWF	World Wildlife Fund

<b>Table of Contents</b>	<b>Page</b>
<b>List of Figures</b>	<b>i</b>
<b>List of Tables</b>	<b>ii</b>
<b>Chapter 1 Introduction</b>	<b>1-15</b>
1.1. General context	1-7
1.2. Justification of the study	7-12
1.3. Case study site selection	12-14
1.4. Research objectives	14-15
1.5. Organisation of thesis	15
<b>Chapter 2 Background of Mt Field National Park</b>	<b>16-37</b>
2.1. General	16-17
2.2. Location and size	17-20
2.3. Geology	20-21
2.4. Geomorphology	21-22
2.5. Flora	22-25
2.6. Fauna	25-27
2.7. History and cultural heritage	27-30
2.8. Importance of the park and reserves	30-32
2.9. Threats to Mt Field National Park values	32
2.10. Guiding legislative framework	32-34
2.11. Management of Mt Field National Park	34-37
<b>Chapter 3 Background of Komarindi Protected Area</b>	<b>38-69</b>
2.1. General	38-41
2.2. Location and size	42-43
2.3. Geology	43-45
2.4. Geomorphology	45-46
2.5. Flora	46-48
2.6. Fauna	48-50
2.7. History and cultural heritage	50-53
2.8. Importance of Komarindi Conservation Area	53
2.9. Threats to conservation areas in Solomon Islands	54-56
2.10. Guiding legislative framework	56-63
2.11. Management of Komarindi Conservation Area	63-69

<b>Chapter 4 Methods</b>	<b>70-72</b>
4.1. Preliminary protocols	70
4.2. Information gathering techniques	70-71
4.3. Limitations	71-72
<b>Chapter 5 Results</b>	<b>73-91</b>
5.1. Key biodiversity conservation issues	73
5.2. Management objectives for conservation	74
5.3. Management actions and outcomes	75-76
5.4. Community engagement processes	77-81
5.5. Key informants' perception of management	82-83
5.6. Identified challenges to conservation	83-91
<b>Chapter 6 Discussion</b>	<b>92-121</b>
6.1. Conservation issues	92-94
6.2. Management objectives for conservation	95-96
6.3. Management actions and outcomes	96-98
6.4. Community engagement	98-100
6.5. Management perception of case studies	100-101
6.6. Challenges to conservation	101-103
6.7. Conservation approaches and principles	103-108
6.8. Lessons and way forward for conservation	109-121
<b>Chapter 7 Conclusions</b>	<b>122-125</b>
<b>References</b>	<b>126-140</b>
<b>Appendices</b>	<b>141-146</b>
Appendix A: Sample of Questionnaire	141
Appendix B: Information Sheet on Research Project	142-143
Appendix C: Consent Form	144

<b>List of Figures</b>	<b>Page</b>
Figure 1: Map of the Pacific Islands Region	2
Figure 2: Map of Solomon Islands relative to Tasmania	12
Figure 3: Location of Komarindi Conservation Area	13
Figure 4: Location of Mt Field National Park in Tasmania	14
Figure 5: Location and access to Mt Field National Park	18
Figure 6: Land tenure on Mt Field National Park	20
Figure 7: Solomon Islands archipelago	39
Figure 8: Map of Komarindi conservation area	43
Figure 9: Community engagement process for Tasmania	78
Figure 10: Community engagement for the Solomons	80
Figure 11: The ladder of community participation	99
Figure 12: Top-Down State-controlled management	103
Figure 13: Bottom-Up community-based management	104
Figure 14: Parks conservation approach used in Tasmania	105
Figure 15: Four-phase process for locally managed area	106
Figure 16: Five-phase process for CCA	107

<b>List of Tables</b>	<b>Page</b>
Table 1: Ramsar sites in the Pacific Islands region	10
Table 2: Relevant provincial environmental ordinances	62
Table 3: Issues for Tasmania and Solomon Islands	73
Table 4: Management goals for Tasmania and the Solomons	74
Table 5: Actions and outcomes for Mt Field National Park	75
Table 6: Actions and outcomes for Solomon Islands	76

**1.1. General context**

Pacific countries with limited land and coastal marine areas are under significant pressure from growing human populations, technological advances and over capitalisation. Increasing exploitation of limited natural resources around the world has led to growing concerns over possible impacts on terrestrial and marine ecosystems (Thrush *et al.*, 1995).

The human population in the Pacific Islands region (Figure 1) is in the order of six million, of which more than half is in Papua New Guinea. However, rates of population increase are relatively high and land areas are small. This results in considerable pressure on natural resources, especially in the coastal zone, which is where most people live. Most Pacific Island countries (PICs) have limited resources which limit opportunities for economic and social development and conservation programmes. Despite many local communities practicing sustainable use of wetland resources, the increasing demand for material wealth is often the cause for those practices to be unsustainable (SPREP, 1999a).

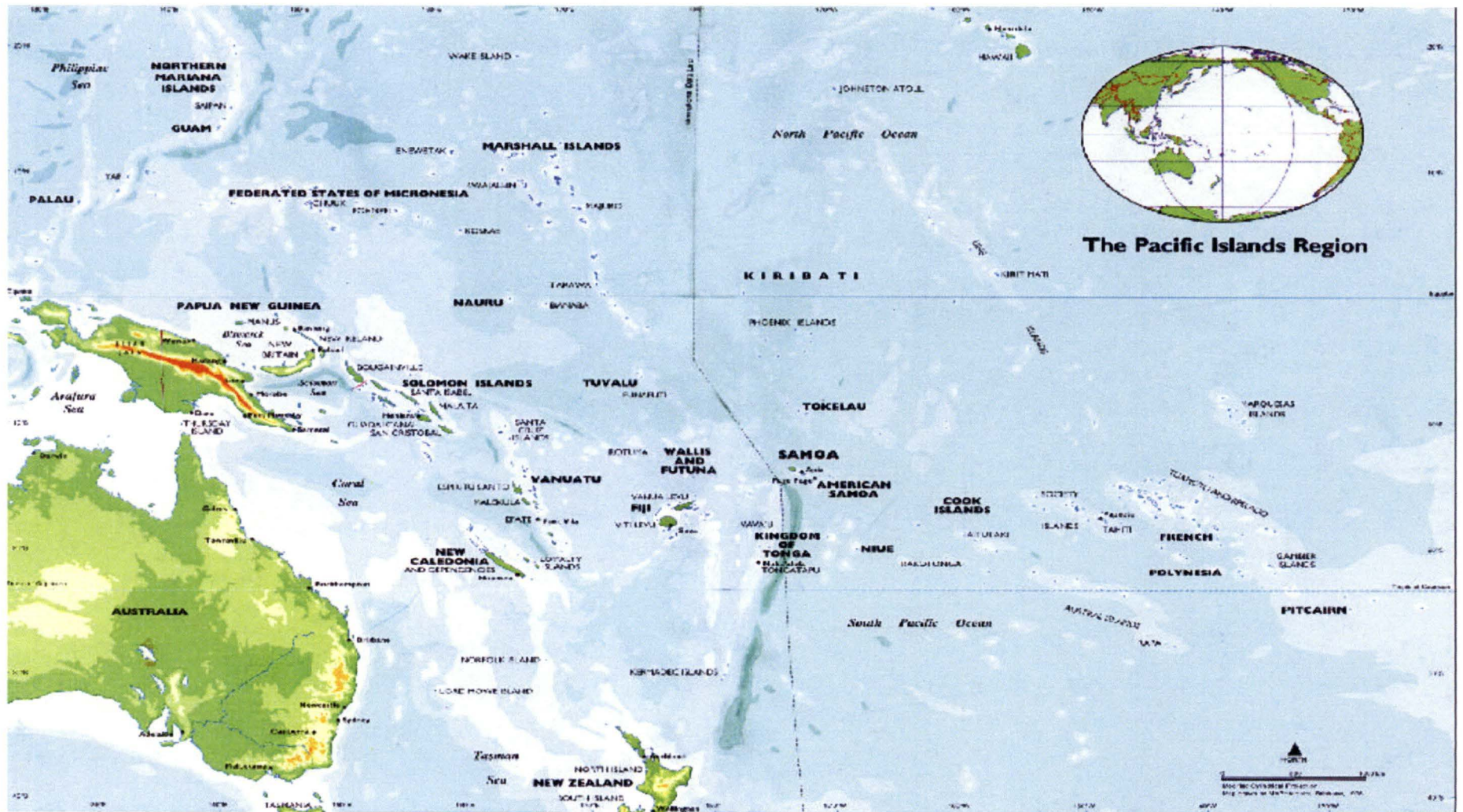


Figure 1: Map of the Pacific Islands Region (adapted from SPREP, 1999a)

In many countries throughout the Pacific region, natural resources are sensitive to ecological disturbance and are easily degraded. Poor natural resource management and inadequately planned or executed development are depleting the limited renewable natural resource base. While sustainable resource management is recognised by Pacific people as integral to their long term economic development with government roles being institutionalised in environmental planning and management, implementation of supporting legislation and regulations is often ineffective (Given, 1992; Holthus, 1992; SPBCP, 1993).

At the regional level there are plans, policies and partnerships that are mostly regionally accepted, having been voted on by the South Pacific Regional Environment Programme (SPREP) Council which represents all member countries. On a country scale, many except Fiji and Cook Islands are still in the process of getting legislation into place, or revising existing legislation to make it more relevant and enforceable (Ellison, 2008). In the Solomon Islands, for instance, existing environmental law is either inadequate and irrelevant or inconsistent and incoherent (WWF, 2005).

Due to the considerable anthropogenic influences on the natural environment in the twentieth century, many countries designated protected areas to conserve their crucial environmental, social and cultural values (WWF, 2008). While attempts to protect areas of



important biological diversity through nature reserves and parks may be successful in Australia, the observed trend in neighbouring Pacific Island countries has been relatively unsatisfactory. In the Pacific Islands, alienation of land and resources in protected areas without recognition of, or negotiation with, local land and resource owners has led to conflict with the people whose support is essential if such areas are to succeed. Where protected areas have been established, they often encompass a very small area that is unlikely to be ecologically viable over the long term. Similarly protected area management in Pacific Island countries is mostly dependent on continual donor aid, which if terminated and in the absence of local support, results in the unfortunate collapse of the protected area (SPBCP, 1993).

The World Conservation Union (IUCN) defines a protected area as “an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means” (IUCN, 2008). However existing protected areas vary in their level of protection, laws of each country or rules of international organisations.

Protected areas are categorised by the IUCN into six principal groups including: (I) *Strict nature reserve/wilderness area* - protected area managed mainly for science or wilderness protection; (II) *National Park* - protected area managed mainly for ecosystem protection and

recreation; (III) *Natural Monument* - protected area managed mainly for conservation of specific natural features; (IV) *Habitat/Species Management Area* - protected area managed mainly for conservation through management intervention; (V) *Protected Landscape/Seascape* - protected area managed mainly for landscape/seascape protection and recreation; and (VI) *Managed Resource Protected Area* - protected area managed mainly for the sustainable use of natural ecosystems (IUCN, 2008).

Protected areas are essential tools for biodiversity conservation where they play at least four vital roles: (i) maintaining species and ecosystems that cannot survive outside natural or near natural conditions; (ii) providing a safe haven for threatened species in those places where changes in land and sea use have been wide ranging, to allow wild species a breathing space until a combination of restoration and sustainable management creates more suitable habitat; (iii) supporting healthy populations of species to renew and to help maintain populations living in managed landscapes and seascapes; and (iv) creating 'living laboratories' where scientists and conservationists can learn more about how ecosystems work and therefore how to accommodate biodiversity in other areas (WWF, 2008). In addition, protected areas also aid in the contribution to food security and environmental services.

Historically, Pacific Island peoples through their 'Lapita' origins have survived from terrestrial and coastal wetland resources including the development of traditional management strategies (Mathews, 2004). Many Pacific Islanders rely heavily on the biological resources of the natural environment to supplement their subsistence or semi-subsistence lifestyles. Recently, growing populations with limited resources have altered wetland resources succumbing to intense unsustainable exploitation in some locations. Within a country, there tends to be internal migration to the capital island, where opportunities are the highest. This also leads to extensive pressure on the natural resources of the capital island and associated environmental pressures and degradation. For example, freshwater forested wetlands such as the *Terminalia* swamp forests of the Solomon Islands are managed for commercial logging. Other potential effects include declines in fisheries production, foreshore reclamation and developments, poor water quality, over logged rainforests and mangroves, impacts of inland activities and land use to the coastal zone, and vulnerability to the effects of invasive species resulting in higher rates of extinction (Ellison, 2008).

Most of the land, some nearshore marine areas and the rights to harvest certain types of resources in the PICs are held under customary ownership protected by the constitutional rights of indigenous people (Ellison, 2008). The land tenure situation is a major influence on wetland conservation in the Pacific Islands region. Most

land is in customary ownership, which implies that consultation between resource owners, government and other stake holders is needed for land use planning (SPREP, 1999a). In fact, government power over land allocation or alienation in the region is restricted in most except a few countries, which severely limits the ability of governments to establish areas for the conservation of biodiversity. Therefore close participation, commitment and cooperation of local communities and landowning groups are essential if biodiversity conservation objectives are to be achieved (SPBCP, 1993). Management has to work through the traditional systems, and also work within the needs of village to function socio-economically in a culturally acceptable manner (Ellison, 2008). There are recent examples where this has been successful such as the Fiji Locally Managed Marine Area Network (FLMMA) and the Solomon Islands Locally Managed Marine Area Network (SILMMA) (LMMA, 2006).

Some conservation areas have been established in PICs but overall they are few in number and small in area. More effective however, have been the collective efforts of governments, regional and local non government organisations (NGOs) in an integrated conservation and development approach (SPREP, 1999a).

## **1.2. Justification of the study**

It is crucial to understand that successful conservation requires wider strategic planning that exceeds preconceived and conventional approaches, particularly for diverse geographical protected areas that

are associated with different cultures, taboos, level of community participation, and political commitment (Hunnam, 2002). A comparative study between a typical protected area in Tasmania and Solomon Islands could uncover similarities and differences as well as the challenges and implications of successful conservation. This is likely to aid future conservation efforts in the Pacific.

Moreover, a comparison of protected area management in Tasmania with the Solomon Islands is useful because Tasmania, a State under the Federal Commonwealth of Australia, is subject to the Ramsar Convention on Wetlands treaty whilst Solomon Islands is not a Ramsar signatory. The Convention on Wetlands signed in Ramsar, Iran in 1971, is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Ramsar is voluntary and has no legal enforcement (Ramsar, 2008).

The Convention on Wetlands of International Importance (Ramsar Convention) is the global convention that focuses solely on wetlands. The Ramsar Convention brings international attention to sites that member countries designate to the List of Wetlands of International Importance ("Ramsar sites") and funds for enhanced management of these sites may be accessed through the Convention's Wetlands Conservation Fund (Davis, 1994). Nevertheless, uptake of the Ramsar Convention has been slow in the Pacific Islands region relative to other

areas of the world. Papua New Guinea (PNG) was the only signatory until the last few years, and now there are a total of five countries with Samoa, Palau, the Marshall Islands and Fiji joining. Kiribati is likely to join in 2007 with a Ramsar small grant to develop an information sheet, whilst the Cook Islands, Tonga and Nauru are considering joining (Ellison, 2008).

There are currently six Ramsar sites in the Pacific Islands region comprising two in PNG and one each in the other signatory nations (Table 1). The Ramsar sites represent the range of wetlands found in the region, from highland lakes and swamps, to coastal freshwater floodplains, and atoll and lagoon systems. A further three sites are in the process of being nominated in each of Samoa, the Marshall Islands and Fiji (Ellison, 2008).

Furthermore, there are other major differences between Tasmania and Solomon Islands' legislative frameworks with respect to conservation. Hence it would be interesting to expose the experiences and lessons learnt from conservation efforts in two comparative case studies.

**Table 1: Ramsar sites in the Pacific Islands region (adapted from Ellison, 2008)**

Country	Ramsar Site	Designation	Size (ha)	Wetland types
PNG	Tonda wildlife management area	16-03-1993	590,000	Swamp forest, mangroves
PNG	Lake Kutubu	25-09-1998	4,924	Lake, reed swamps
Samoa	Lake Lanoto'o	10-07-2004	470	3 crater lakes, herbaceous marsh, swamp forest
Marshall Islands	Jaluit Atoll	13-07-2004	69,000	Reefs, lagoons, seagrass, mangroves, sand cays
Palau	Ngardok	18-10-2002	493	Lake, herbaceous swamp
Fiji	Upper Navua	11-4-2006	615	River, highland rainforest
Vanuatu	Uri (Narong) Marine Park	pending	200	Mangrove, reefs, mudflat, seagrass, sand cays

A comparative study of protected area management between Tasmania and Solomon Islands is also worthwhile because of other associated factors. For instance, in Tasmania protected area management is a notion that may be well embraced widely in the community, while for the Solomon Islands, conservation is a new foreign paradigm at its infant stages. This is evident with the high coverage representation of protected areas in Tasmania, relative to the inadequacy of protected area management coverage in Solomon Islands (Beehler *et al.*, 2004).

In Tasmania communities do not reside in, or undertake exploitation activities within areas designated as conservation areas, reserves or national parks. However, in the Solomon Islands there is direct interaction between indigenous communities and conservation areas for gardening, firewood collection, medicinal purposes or hunting,

despite a few protected sites being totally isolated from human activities (Whyte, 2002).

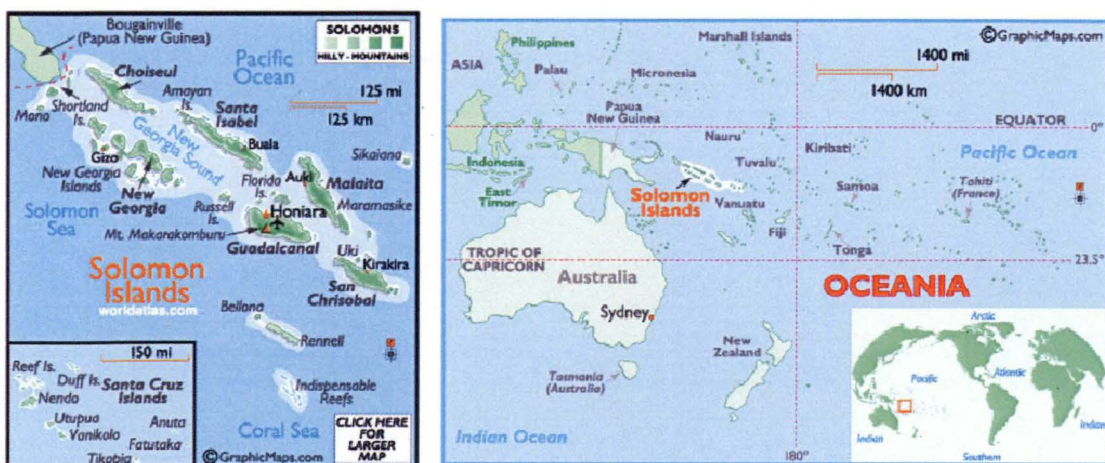
Conservation in Solomon Islands is complicated by the country's respect for local customary land tenure resulting in minimal alienation of land or coastal marine territory for creation of government managed parks and protected areas. Besides, there is little political will and commitment to achieve protected area management goals with the strained financial resources at hand (Beehler *et al.*, 2004). Most existing protected areas within Solomon Islands today are realised through leading intervention roles by non government organisations such as the World Wildlife Fund (WWF) Solomon Islands, The Nature Conservancy (TNC), Conservation International (CI) Solomon Islands, World Fish Centre, Foundation of the Peoples of the Pacific International (FSPI), Greenpeace, Solomon Islands Development Trust (SIDT), Environment and Conservation Action Network of Solomon Islands (ECANSI), World Vision, Oxfam, and many others which are based in the provinces. There is variation and duplication in conservation efforts within the Solomon Islands and considering other complexities, it is likely that certain protected area management best practice principles and approaches deemed successful in Australia may not work in the Solomon Islands.



Results of the study will provide information on the challenges and implications of successful conservation for protected area management in Tasmania and the Solomon Islands.

### 1.3. Case study site selection

In the Solomon Islands protected area management is poorly established as yet and less formal, whilst in Tasmania protected areas are well organised and formalised. Therefore it was challenging to identify suitable sites that are similar in nature to be adopted as comparative case studies for this present research. However, since Solomon Islands is not a signatory to the Ramsar Convention on Wetlands it could be interesting to identify a conservation area in Solomon Islands with a natural wetland or water catchment and compare with a similar site in Tasmania. As a result Komarindi Conservation Area in Solomon Islands (Figures 2 & 3) and Mount Field National Park in Tasmania (Figure 4) were selected, as both sites possess water catchments and rainforests.



**Figure 2: General Map of Solomon Islands relative to Tasmania (source: worldatlas.com)**



Figure 3: Location of Komarindi Conservation Area (shaded in red) on Guadalcanal Island (source: worldatlas.com)





**Figure 4: Location of Mt Field National Park in Tasmania (source: Parks & Wildlife Services)**

#### **1.4. Research objectives**

The central aim of the study was to compare the challenges and implications of successful conservation for Mount Field National Park in Tasmania and Komarindi Conservation Area in Solomon Islands. Such information is crucial for future conservation efforts in Tasmania and more importantly the Solomon Islands where there is inadequate coverage of protected areas. Government authorities or conservation oriented organisations can utilise such knowledge to chart future

protected area management approaches that embrace the identified challenges and implications. This was accomplished with the following processes:

(i) For each case study, identify:

- a) the biodiversity conservation issues;
- b) related management objectives;
- c) actions that have been undertaken to deal with the issue/meet the objectives; and
- d) the outcomes from such actions

(ii) Undertake interviews of managers and other key informants to determine their perceptions of

- a) the success or otherwise of management; and
- b) the factors that drive success or failure

(iii) Integrate lessons learnt from sections (i) and (ii) with insights from the literature

(iv) Initiate ideal principles or approaches for future successful conservation efforts in Tasmania and Solomon Islands.

### **1.5. Organisation of the thesis**

The thesis consists of seven chapters. Chapter 1 entails the Introduction and outline of study areas; Chapter 2 consists of the literature review of Mt Field National Park in relation to protected area management; Chapter 3 comprises the literature review of Komarindi Conservation Area; Chapter 4 describes the Methodology; Chapter 5 describes the Results; Chapter 6 outlines the Discussion; and Conclusions are drawn in Chapter 7.

## **Chapter 2      Background of Mt Field National Park**

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### **2.1. General**

Mount Field National Park is one of the two oldest and most loved national parks in Tasmania. Direct human involvement over a long period of time has lead to extensive recreational and educational use dating from the end of the nineteenth century (Parks and Wildlife Service Tasmania, 2003).

The park has a wide variety of scenic features and wildlife and offers a great range of facilities for tourists and visitors. Mt Field National Park comprises considerable diversity in vegetation which ranges from tall swamp gum forests and massive tree ferns at the base of the mountain, through rainforest along the Lake Dobson Road, to alpine vegetation at the higher elevations (Parks and Wildlife Service Tasmania, 2002).

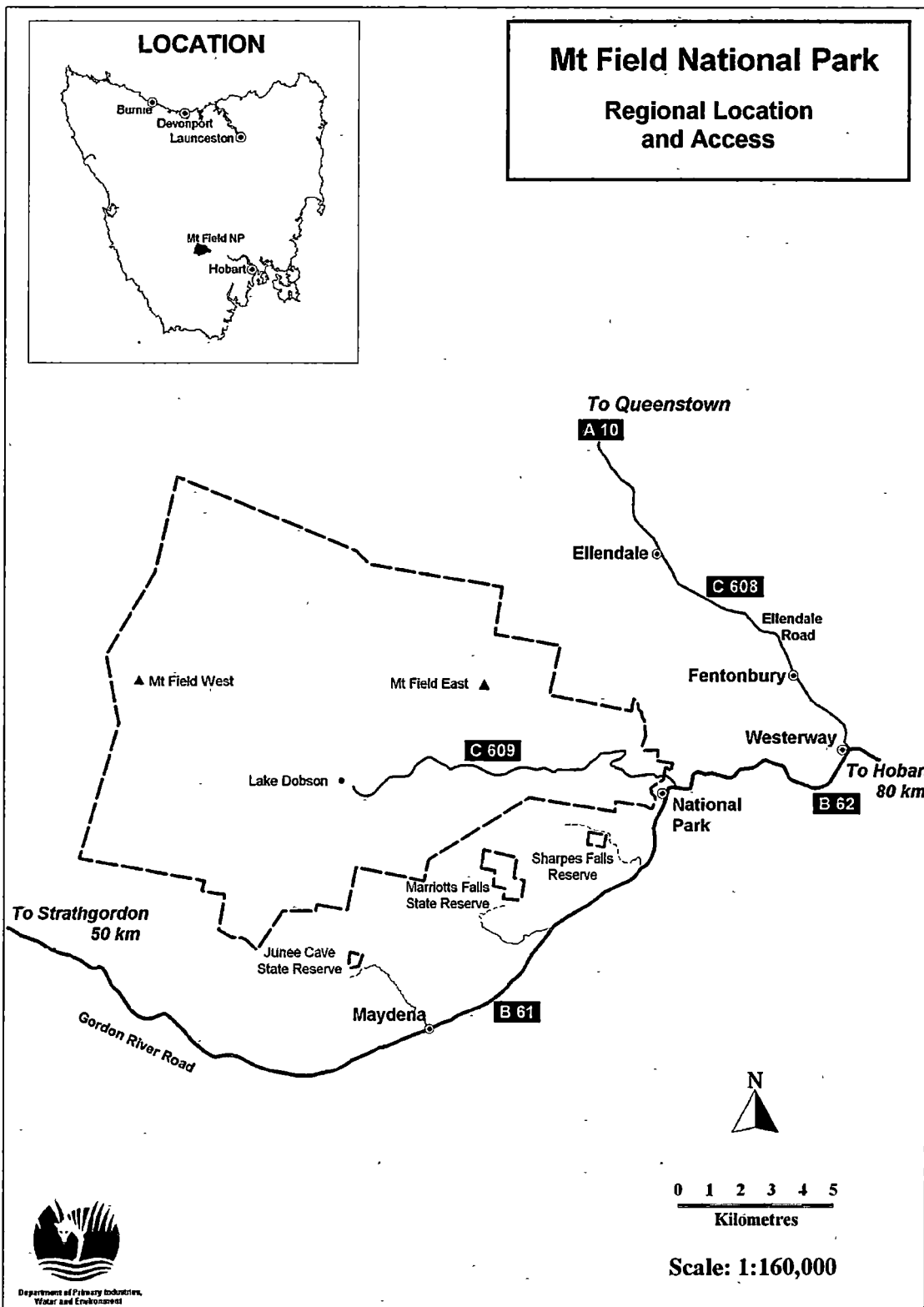
Generally the park has two visitor sections. The first, near the park entrance, includes picnic facilities and the famous Russell Falls. Stunning walks through enormous fern forests and some of the tallest trees in the world are available in this area. The second visitor section is centred at Lake Dobson and includes the long day walks and skiing areas. Dramatic mountain scenery and alpine plant communities are typical features of the higher parts of the park. The two areas are

linked by a 16 kilometre unsealed road (Parks and Wildlife Service Tasmania, 2008).

## **2.2. Location and size**

Mount Field National Park is one of the most popular protected areas in Tasmania, receiving more than 140,000 visitors each year. Mt Field National Park is located 75 kilometres west of Hobart and just over one hour's drive from Hobart via New Norfolk. The northern, more inaccessible reaches of the park lie in the Central Highlands Municipality, while the southern half of the park lies in the Derwent Valley Municipality. Figure 5 shows the regional location and access to the Mt Field National Park and reserves.

Mount Field National Park presently encompasses an area of approximately 15,881 hectares. Freycinet National Park and 'National Park', as Mount Field National Park was known, were both gazetted on 29 August 1916 under the *Scenery Preservation Act 1915*, becoming Tasmania's first national parks. Inaccuracies associated with early surveys and gazettal resulted in the park being thought until recently to cover a much larger area (17,330 hectares). However the production of a registered plan for the park in 1998 enabled the area of the park to be accurately calculated for the first time, resulting in the lower figure of 15,881 hectares (Parks and Wildlife Service Tasmania, 2002).



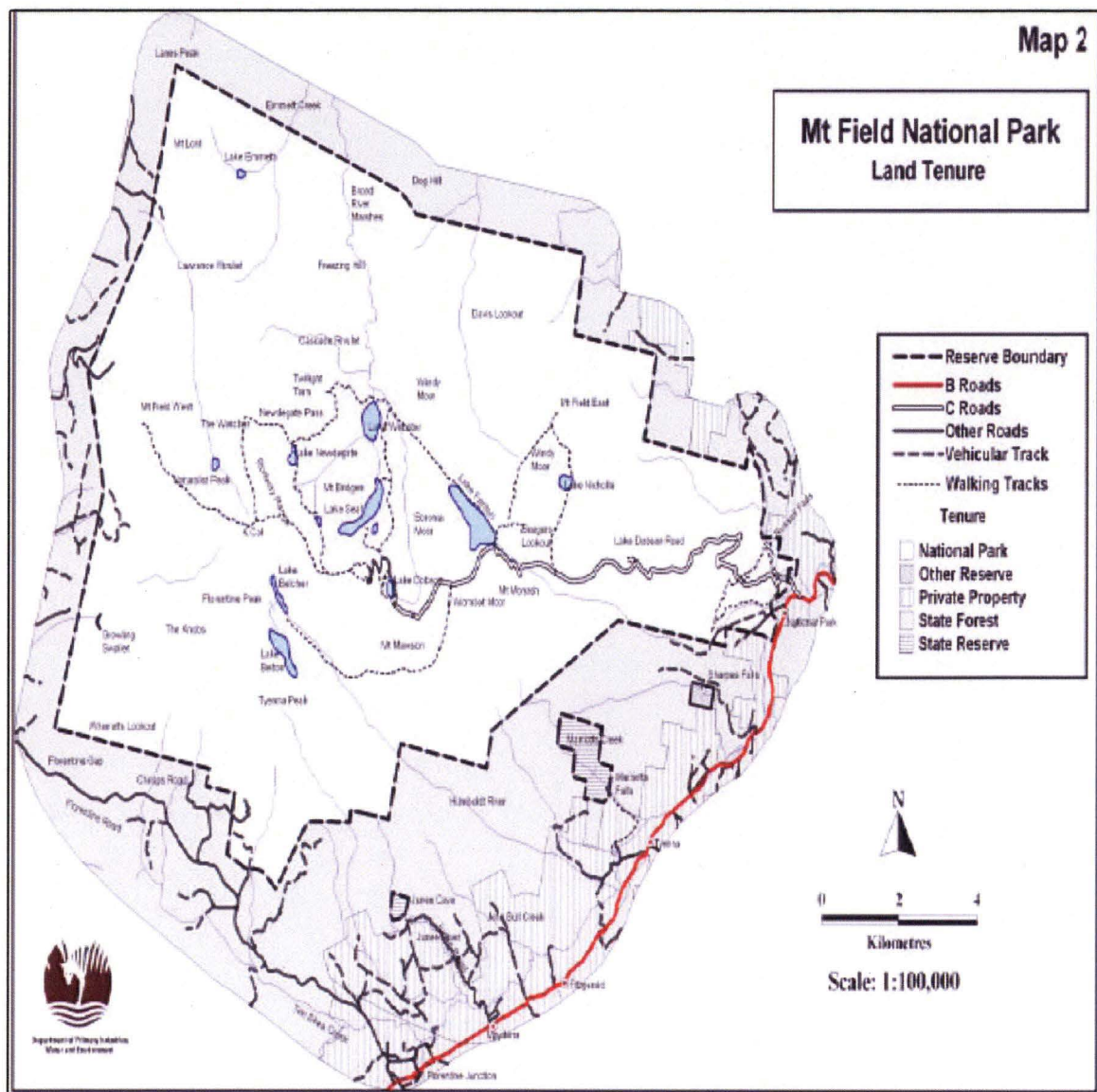
**Figure 5: Regional location and access points to Mt Field National Park (source: Parks & Wildlife Service)**

At its widest points, Mt Field National Park stretches about 15 kilometres from north to south and about 18 kilometres from east to

west. The national park is reserved under the *National Parks and Reserves Management Act 2002* formerly known as the *National Parks and Wildlife Act 1970*. The boundaries of the park are set out on Plan Number CPR 4835 in the Central Plan Register, Department of Primary Industries, and Water. The first Europeans known to have visited Marriotts Falls were the Marriott brothers in 1880. As a result the area around the falls was proclaimed as a scenery reserve in 1921. It is now a State reserve under the *National Parks and Reserves Management Act 2002* with an area of 121 hectares. The first European visit to Junee Cave is thought to have occurred around 1890, and the area around the cave was later set aside as a cave reserve. It was first proclaimed as a State reserve under then *National Parks and Wildlife Act 1970* in 1976, and has an area of 20 hectares (Parks and Wildlife Service Tasmania, 2002).

On a regional context, the park and reserves are almost surrounded by State forest and private land. A private forestry company also owns some adjoining land. The State forests to the south, west and northwest, and north of the park are managed for forestry purposes (Figure 6). Nearby, the cave systems of the Florentine Valley are extensive and include the deepest in Australia. The Tyenna River along the Gordon River Road and the lakes and impoundments of the Southwest are important destinations for anglers, boaters, day visitors and campers (Parks and Wildlife Service Tasmania, 2002).





### 2.3. Geology

Mt Field National Park lies to the west of the Derwent Graben, formed during the mid-Tertiary. Outcropping to the west of the park, and underlying it as basement rock, are strongly folded older successions of Ordovician and Siluro-Devonian sediments including the Gordon limestone and its equivalents. Jurassic dolerite is ubiquitous above about 760 metres, with Triassic and Permian sediments outcropping at lower altitudes (Derbyshire *et al.*, 1963; MacKintosh, 1993).

In addition, Triassic and Jurassic rocks of the park and reserves show strong Gondwanan links with those of the Transantarctic Mountains in Antarctica (MacKintosh, 1993). The Triassic sequence of sedimentary rocks is very uniform, non-marine in origin and contains evidence of lacustrine and fluvial conditions with basic intrusive material. The basalt dyke visible near Mt Bridges above Lake Seal is evidence of a recent intrusion in the faulted dolerite. The Jurassic dolerite (~170 million years old) provides a firm link with Antarctica being of identical age. Lady Barron Falls, Horseshoe Falls and Russell Falls composed mainly of horizontally bedded marine Permian siltstone benches whilst the vertical faces of the waterfalls are composed of the more resistant sandstone layers along vertical joint (Kiernan *et al.*, 2001; Australian National Parks, 2008).

#### **2.4. Geomorphology**

Mount Field displays excellent examples of landforms produced by various Pleistocene glaciations. For instance during the period of maximum Pleistocene glaciation, a permanent snowfield covered the top of the Mt Field plateau that fed surrounding valley glaciers. The higher peaks of the park were nunataks of rock exposed above the snowfields. The Broad River Valley is believed to be a formation of the largest glacier up to 12 kilometres long. This is evident with the visible ice remnants in the terminal moraines of the Broad River Valley and the huge cirque walls above Lake Seal. On the other hand, numerous tarns on Tarn Shelf are an excellent illustration of glacial scouring, which resulted in the 'Twisted Tarn' and 'Twilight Tarn' as evidence of

the glacier that flowed down from Lake Newdegate to Lake Webster (Snelgrove, 1992). Another glacier flowed south from the Rodway Range to later form Lakes Belcher and Belton, and north from the Rodways to eventually form the Hayes Valley and Lake Hayes (MacKintosh, 1993; Kiernan *et al.*, 2001).

To the east, another glacier (Lewis, 1922) flowed from the snowfields of Mt Field East, Kangaroo Moor and Wombat Moor, terminating just below the level of the present Lake Fenton, which was dammed by extensive blockstreams. The blockstream which dams Lake Fenton is considered an outstanding example of a periglacial blockstream. These blockstreams are a feature of the slopes of Mt Monash south of the lake. Two other glaciers further east produced Lake Nicholls, Lake Rayner and Beatties Tarn. The string bog at the northern end of the Rodway Range is probably the best example of this type of landform in Tasmania (Kiernan *et al.*, 2001). It is a series of small terraced ponds which appear to have been dammed by a combination of glacial debris, peat and vegetation, possibly on the steps of an underlying blockstream (Goede and Murray, 1977; MacKintosh, 1993).

## **2.5. Flora**

The park is recognised as an area with a high degree of floristic diversity relative to other Tasmanian mountains (Minchin, 1989). This was attributed to a variety of influences including the park's geographic location central to both the eastern and western floras of Tasmania, the range of geological substrates present including dolerite,

sandstone, and quartzite, and its altitudinal range which extends from lowland to alpine habitats (Ogden and Powell, 1979; Briggs and Leigh, 1988; Kirkpatrick *et al.*, 1991; Walsh, 1992). Research indicated more than 433 higher plant species in the park and reserves of which 261 are dicots, 125 are monocots, eight are conifers, and 39 are ferns or fern allies (Davies, 1978; Gibson and Kirkpatrick, 1985).

#### **2.5.1. Vegetation communities**

Studies (Davies, 1978; Gibson and Kirkpatrick, 1985; Ogden and Powell, 1979) reported that the lower zone from 158 to 670 metres, comprised tall open forest dominated by swamp gum *Eucalyptus regnans* and/or stringybark *E. obliqua*, with a wet understorey characterised by musk, *Olearia argophylla*. The middle zone (i.e. 670 to 940 metres) was regarded as closed rainforest or mixed forest with the rainforest element dominated by myrtle *Nothofagus cunninghamii* and sassafras, *Atherosperma moschatum* with an understory of celery-top pine, *Phyllocladus aspleniifolius*. The upper zone, from 880 m to 1220 m, was referred to as subalpine woodland dominated by the endemic Tasmanian snow gum *E. coccifera*. Apparently species richness in the park increases with altitude which is typical in other parts of Tasmania.

Alpine communities found on the tops of the mountains and plateaux of the park are characterised by a mosaic of heath, herb-field, bogs and bolster moor communities (Davies, 1978). The distribution of these communities (Gibson and Kirkpatrick, 1985) depends upon

drainage, wind protection and the depth and duration of snow lie. Cushion plants are interspersed with pineapple grass bogs and occur on the most exposed and wettest areas of the plateaux. *Sphagnum* bogs are found around alpine and sub-alpine lakes and tarns (Ogden and Powell, 1979; Australian National Parks, 2008).

Sub-alpine forests and woodlands of the park are characterised by several Tasmanian endemic conifers including the pencil pine, *Athrotaxis cupressoides* found around the higher lakes and tarns of the park; the King Billy pine, *Athrotaxis selaginoides*; and several dwarf pine species including mountain plum pine *Podocarpus lawrencii*, creeping pine *Microcachrys tetragona*; cheshunt pine *Diselma archeri*; and dwarf pine *Microstrobos niphophilus* (Davies, 1978; Australian National Parks, 2008).

#### **2.5.2. Species and communities of high conservation value**

The park's forest communities have been mapped as part of the comprehensive regional assessment for the Tasmania-Commonwealth Regional Forest Agreement. The obvious forest communities identified in the park are: *Eucalyptus coccifera* forest; both tall and medium *Eucalyptus delegatensis* forest; *Eucalyptus obliqua* wet forest; *Eucalyptus regnans* forest; and both callidendrous and thamnian rainforest (Commonwealth of Australia & the State of Tasmania, 1997).

Management consideration for the park was partially derived from the importance of the park for conservation of plant species. For example,

at least 13 of the vascular plant species recorded in the park are listed on the Tasmanian threatened species schedule because they are rare or threatened in Tasmania (Briggs and Leigh, 1988). A number of other species are listed by the Flora Advisory Committee (1994) as rare in Tasmania but have not been given status under the Threatened Species Protection Bill 1996.

Furthermore the park is particularly significant for the representation of a high diversity of wet sclerophyll forest communities, including at least eight different types (Kirkpatrick *et al.*, 1995). The *Eucalyptus regnans* - *E. obliqua* wet forest community that occurs along the Lady Barron Track between the Old Farm and the falls is considered to be poorly reserved. The park is also an important reserve for alpine communities which occupy about 14 percent of its area. Included amongst the alpine assemblages of significance are a series of string bogs at Newdegate pass that are extremely rare and unusual (Davies, 1978; Flora Advisory Committee, 1994).

## **2.6. Fauna**

Although the park and reserves have a legal status which offers a high level of protection, threats to the fauna of the park and reserves include fire in alpine areas and rainforest, human impact related to feeding of wildlife and disturbance, poisons used in adjacent eucalypt and pine plantations, disease, and predation by and competition with, exotic species for food and nesting sites (Tait and Briscoe, 1989; Phillips, 1992; Clarke, 1997; Australian National Parks, 2008).

### **2.6.1. Invertebrates**

Lake Fenton is an important type locality for a number of endemic moths (McQuillan, 1987). Invertebrates of particular interest include *Plesiothele fentoni*, a spider believed to be extinct until recently found around the edges of Lake Fenton, and the vulnerable carabid beetle, *Geodetechus parallelus*, an obligate cave dweller only known from the Junee-Florentine caves. Other rare invertebrates occurring in the alpine and subalpine communities of the Mt Field National Park include the vulnerable alpine day-flying moth *Dirce aesiodora* and the cushion plant moth *Nemotyla oribates* (Nielsen *et al.*, 1992). The mountain shrimp *Anaspides tasmaniae*, first described in 1893, is found in many alpine pools and tarns of the park. Ancient taxa of scale insects and mealy bugs that have not yet been described at the species level in Tasmania, and whose closest relatives are found in New Zealand was also discovered in the park. Therefore, it is evident that a wide range of habitats in the park provides for an exceptional range of species (Phillips, 1992; Invertebrate Advisory Committee, 1994).

### **2.6.2. Reptiles and amphibians**

Several species of amphibians and reptiles including the endemic Tasmanian froglet *Crinia tasmaniensis* are present in the Mt Field National Park. Skinks in the park include two endemics, the southern snow skink *Niveoscincus microlepidotus*, only found above 1000 metres, and the Tasmanian tree skink *N. pretiosus*, found in tall wet forest (Phillips, 1992; Australian National Parks, 2008).

### **2.6.3. Birds**

Birds have taken advantage of the range of altitudes and habitats available, and consequently many species are found within the Mt Field National Park and reserves. This includes 11 of the 12 Tasmanian endemic species such as the Tasmanian native hen *Gallinula mortierii*. The ecologically important, but not endemic, black currawong *Strepera versicolor*, a key disperser of fleshy fruited plants, is also present in the park and reserves (Vertebrate Advisory Committee, 1994).

### **2.6.4. Mammals**

The majority of Tasmania's native terrestrial and arboreal mammals occur within the Mt Field National Park (Phillips, 1992). Such a diversity of species in the park's relatively small area was attributed to habitat diversity within the park. Various species that are either extinct or endangered on the mainland Australia are found in the park, such as the eastern quoll *Dasyurus viverrinus* and the eastern barred bandicoot *Perameles gunnii*. Also the last Tasmanian tiger, *Thylacinus cynocephalus* to be seen in the Hobart Zoo was trapped in the nearby Florentine Valley in 1933 (Tait and Briscoe, 1989; Rounsevell *et al.*, 1991; Clarke, 1997).

## **2.7. History and cultural heritage**

Limited archaeological surveys in the park have shown that Aborigines used the land and waters of the park (Goede and Murray, 1977) whilst more extensive surveys of the nearby Florentine Valley have shown Aboriginal occupation of over 30,000 years (Ryan, 1981;



Brown, 1986; Cosgrove, 1989; Noble, 1993). However, to date there have been no systematic archaeological surveys conducted in the park and reserves. Nevertheless two Aboriginal sites have been identified inside the park boundaries, located near Lake Fenton and Lake Dobson. These consist of an isolated artefact find and an artefact scatter (MacFie, 1992a&b; Noble, 1993; Parks and Wildlife Service Tasmania, 1994). Evidence of Aboriginal occupation has been found outside the park in several caves near the Florentine River, dating from the Pleistocene (Goede and Murray, 1977).

#### ***2.7.1. Historic heritage***

Historical sites in the park are associated with tourism, trout fishing, skiing, road and track building and water schemes. The major historical features in the park include the Lake Fenton Hut, Twilight Tarn Hut and associated artefacts, Lake Dobson Road historical sites, the Government Huts, waterworks at Lake Fenton, early access tracks, the 'Old Farm' area, some of the recreation facilities at the entrance area of the park and logging remains (MacFie, 1992a&b; Parks and Wildlife Service Tasmania, 1994; Australian National Parks, 2008).

#### ***2.7.2. Early tourism and recreational use***

In 1893 the Tasmanian Tourist Association was formed to promote Tasmania's scenic wonders of Mt Wellington, Russell Falls and the Hartz Mountains. The development of a railway network that extended to the Mt Field National Park in the early 1900s made it a popular destination. Marriott's Guesthouse was built in 1911 at the present day entrance to the park to accommodate visitors. Sightseeing,

walking and fishing were the most popular activities (Binks, 1980; MacFie, 1992a&b; Parks and Wildlife Service Tasmania, 1994).

Perhaps as early as 1870, and in 1893, introduced trout species were released into the parks lakes to develop the sport fishing potential of the area (French, 1994). Skiing and ice-skating became popular in the 1920s; leading to the formation of the Ski Club of Tasmania in 1926. This group built the hut at Twilight Tarn. In 1941 huts were also built at Lake Fenton for skiers. The opening of the Lake Dobson Road in 1937 made access much easier for winter sports, and ski-field development at Mt Mawson commenced after World War II (Parks and Wildlife Service Tasmania, 1994).

### **2.7.3. Historic cultural landscape**

The entrance area of the Mt Field National Park has a long and varied history of European use and has been identified as a historic cultural landscape. Similarly the Crommelin Botanic Gardens were constructed in 1967 in the area north of Russell Falls Creek by the park ranger. A bridge was constructed to allow a tractor to terrace the hillside, which was then planted with species from other areas of the park. At the same time a return link was constructed from Russell Falls along the Botanic Gardens side of the creek. Unfortunately many of the specimens planted did not survive due to the difficulty in maintaining such a garden. Similarly current conservation ideas do not advocate the use of national parks and reserves as botanic gardens but merely for retention and conservation of species in their

native habitat and communities (MacFie, 1992a; Parks and Wildlife Service Tasmania, 1994).

## **2.8. Importance of the Park and Reserves**

Mt Field National Park is relatively small in size compared to the Tasmanian Wilderness World Heritage Area national parks, but it protects an extensive and important range of natural and cultural values.

The natural heritage values protected comprises (a) eleven threatened plant species and over 30 species recorded as rare in Tasmania; (b) a swamp gum (*Eucalyptus regnans*) and stringybark (*E. obliqua*) wet forest community that is of outstanding display value; (c) the barred bandicoot (*Perameles gunnii*), a mammal listed nationally as vulnerable; (d) complex karst features of high geo-conservation value; (e) outstanding glacial features such as the Lake Fenton blockstream; (f) four invertebrates that are listed as either rare, threatened or vulnerable at the State level; (g) wet sclerophyll forest communities of high conservation value; (h) alpine and subalpine communities of high conservation value; and (i) the Lake Fenton/Lady Barron Creek drinking water catchment, which provides 20 percent of the domestic water supply for Hobart (Parks and Wildlife Service Tasmania, 2002).

Similarly, cultural heritage values embodied in the park and reserves include (i) one of the oldest reserves in Australia; (ii) known Aboriginal heritage values; (iii) an important part in the development of the

Derwent valley region; and (iv) sites and artefacts of historic cultural heritage significance such as Twilight Tarn Hut (Parks and Wildlife Service Tasmania, 2002).

Recreational, tourism and educational values protected encompass a large range of walking opportunities ranging from the wheelchair standard path to Russell Falls to the full day trip to Mount Field West; high scenic values coupled with an 'undeveloped' feel; an established and comfortable campground; a cross country and downhill skiing destination close to Hobart; a popular recreation area, close to Hobart, for family and group picnics; an easily accessible 'fagus spotting' destination; a popular angling destination; a high biodiversity within a relatively small and accessible area; possess infrastructure necessary to be an important educational resource, and a history of continuous use by Hobart schools and University; and an altitudinal range of vegetation ideal for ecological studies (Parks and Wildlife Service Tasmania, 2002).

Mount Field National Park was listed on the Register of the National Estate under the *Australian Heritage Commission Act 1975* on 21 March 1978. Although the park is not in the World Heritage Area, visitors to Southwest National Park often include the park in their visit; hence it is seen as a 'gateway' for some visitors to Southwest National Park. At Mount Field, visitors can experience World Heritage Area values that are well presented and interpreted (Parks and Wildlife

Service Tasmania, 2002). As a result the Mt Field National Park was identified in the Tasmanian Wilderness World Heritage Management Plan 1999 (Parks and Wildlife Service Tasmania, 1999) as an entry and contact point for visitors to the Southwest National Park.

## **2.9. Threats to Mt Field National Park and Reserve values**

There are a number of factors that detract from or have the potential to diminish park and reserve values and character. These include (i) wildfire, which may affect fire sensitive native vegetation and vulnerable animal species; (ii) stream siltation and volume fluctuations above Russell Falls resulting from upstream agricultural and forestry activities; (iii) effect on view fields from park lookouts of clearing, monoculture and burning on adjacent lands; (iv) damage to natural and cultural values from inappropriate visitor behaviour; (v) introduced plants, animals and diseases which invade the ecosystem and degrade or weaken the natural environment; (vi) pesticide programs conducted near park and reserve boundaries; and (vii) developments or activities which may damage natural and cultural values or degrade the tourism and recreational character of the park and reserves. Therefore these factors must be effectively dealt with if park values and character are to be sustained. Nevertheless, some of the park's major vegetation formations depend on fire (Parks and Wildlife Service Tasmania, 2002).

## **2.10. Guiding legislative frameworks**

In total the Tasmania Parks and Wildlife Service manages 423 reserves covering 2,508,297 hectares, or about 36.83 percent of the

area of the State. Australia's principal national legislation pertaining to the protection of the environment is the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. At the Tasmania State level, the *Nature Conservation Act 2002* and the *National Parks and Reserves Management Act 2002* are the guiding legislation which replaced the *National Parks and Wildlife Act 1970*. The *National Parks and Wildlife Act 1970* repealed the *Scenery Preservation Act 1915*.

#### **2.10.1. EPBC Act 1999**

The *EPBC Act 1999* is the focal Commonwealth environmental protection and biodiversity conservation legislation that aims to protect the environment, promote ecologically sustainable development, promote the conservation of biodiversity, cooperatively implement Australia's international environmental responsibilities, and to properly assess and address activities likely to have significant impacts on the environment.

#### **2.10.2. Nature Conservation Act 2002**

The *Nature Conservation Act 2002* is an act that intends to make provision with respect to the conservation and protection of the fauna, flora and geological diversity of the Tasmania State; to provide for the declaration of national parks and other reserved land and for related purposes. It was enacted by His Excellency the Governor of Tasmania on 19 December 2002 with advice and consent of the Legislative Council and House of Assembly in State Parliament.

### **2.10.3. National Parks and Reserves Management Act 2002**

Similarly the National Parks and Reserves Management Act 2002 gives authority to the Director of Parks and Wildlife to lead the management of national parks and other reserved land, thus repeal the National Parks and Wildlife Act 1970 and related Acts and for related purposes. It was also enacted on 19 December 2002.

### **2.10.4. National Parks and Wildlife Act 1970**

The National Parks and Wildlife Act 1970 repealed the Scenery Preservation Act 1915 and the Animals and Birds Protection Act 1928, to make fresh provision with respect to the establishment and management of National Parks and other reserves and with respect to the conservation and protection of the fauna and flora of the State of Tasmania, and to make provision for incidental and consequential matters. It was enacted on 8 December 1970.

### **2.11. Management of Mt Field National Park**

As defined by the World Conservation Union (IUCN, 1997), Mount Field National Park is similar to a 'Category II' protected area that is managed mainly for ecosystem protection and recreation (Parks and Wildlife Service Tasmania, 2002). Consequently, Mount Field National Park was officially designated on 30 April 1999 and managed under IUCN Category II. The correlating site code on the World Database on Protected Areas is 314062 (IUCN-WCPA, 2008).

Mount Field National Park, Marriotts Falls State Reserve and Junee Cave State Reserve are managed by Tasmania Parks and Wildlife

Services in accordance with the *National Parks and Reserves Management Act 2002*. Under the Act, the Director is responsible for the preparation of management plans. Since its creation in 1916, planning at Mount Field National Park has occurred on an ad-hoc basis. Park managers have used the best information available at the time to manage park and reserve values and to accommodate the recreational demands of the public without significantly impacting on these values. This resulted in the drafting of a 'management plan' that aims to provide management direction and to guide development based on a set of defined objectives (Parks and Wildlife Service Tasmania, 2002).

During preparation of the Mt Field National Park draft Management Plan, a public consultation program which called for written submissions (Ranson, 1992) and a survey of visitors (Department of Parks Wildlife and Heritage, 1993) undertaken. Another visitor survey was undertaken in early 1999.

The Management Plan for Mount Field National Park, Marriott's Falls State Reserve and Junee Cave State Reserve was prepared in accordance with the requirements of Part IV of the *National Parks and Wildlife Act 1970* which is now replaced by the *National Parks and Reserves Management Act 2002*. A draft of the plan was released for public comment in accordance with statutory requirements from 5 February to 5 May 2000. Over 1100 people or groups contributed to



its development through participation in the initial 1992/93 public submission program, 1993/94 visitor survey, 1999 visitor survey and the public representations to the Minister on the 2000 Draft Management Plan. Key stakeholders made representations and gave evidence at the Resource Planning and Development Commission hearings in February 2002. Advice and comment had also been provided by management staff of the park and reserves and others such as the local councils, Hobart Water, neighbouring land owners and managers, the Southern Tasmanian Ski Association, tourism associations, the Friends of Mt Field, volunteers and visitors. Additional information was gathered from historical surveys, specialist records and departmental files (Parks and Wildlife Service Tasmania, 2002).

Major management strategies for the Mt Field National Park include the protection of the natural and cultural heritage values against human impact, and the rediscovery of the park as a tourism icon for both locals and visitors to enjoy the opportunities it offer. As a result the park was divided into six management zones, each based on different types and degrees of use and management requirements. For instance the Russell Falls Visitor Zone provides day use facilities in the most heavily used part of the park. A water catchment management plan was also developed for the Lake Fenton/Lady Barron Creek Drinking Water Catchment Area to protect the water supply, thereby restricting certain recreational activities.

Mt Mawson ski-field is managed to minimise environmental degradation and to provide economically sustainable services and infrastructure. There is renewed emphasis on research, monitoring and evaluation to ensure that management of the park is consistent with the primary objectives of the park. Also most of the park except for the Russell Falls Visitor Services Zone is declared a 'Fuel Stove Only Area'. The management plan was eventually approved by His Excellency, the Governor-in-Council, on 28 October 2002 and took effect on 4 December 2002 (Parks and Wildlife Service Tasmania, 2002).

## **Chapter 3      Background of Komarindi Protected Area**

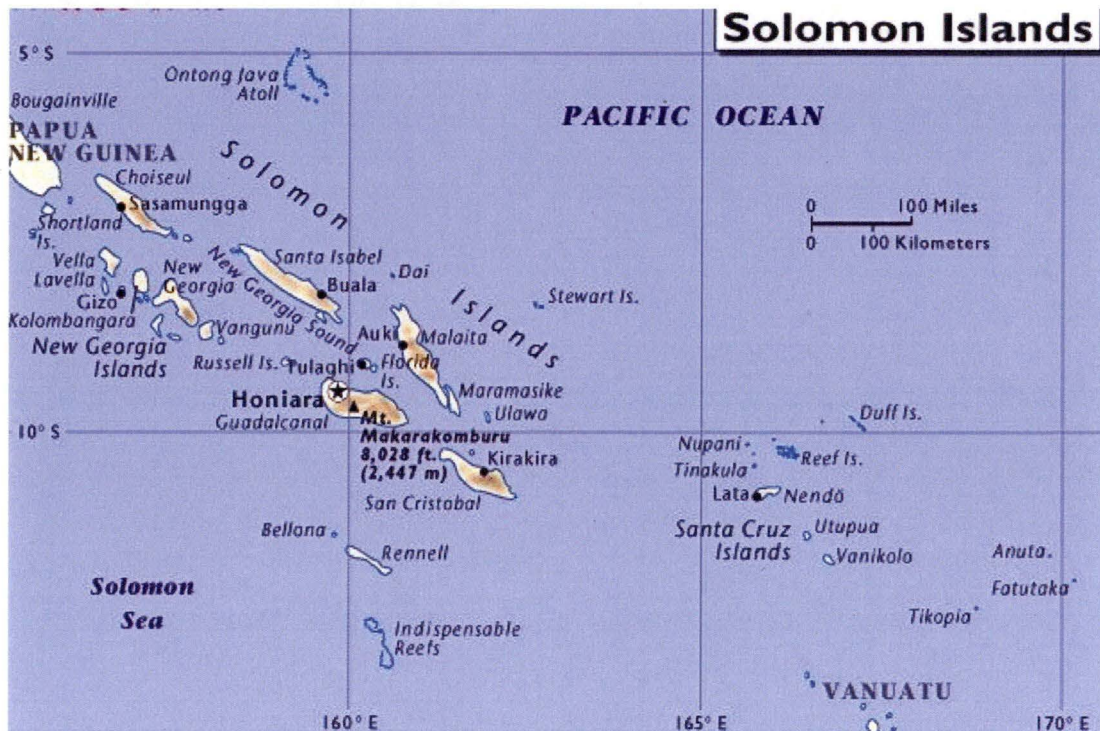
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### **3.1. General**

Solomon Islands is an independent archipelago situated east of Papua New Guinea and northeast of Australia in the northwest corner of the South Pacific. The island archipelago stretches over an 860 kilometre distance in a northwest southeast direction. To the east Solomon Islands shares a border with Vanuatu (Brookfield, 1969; Vigus and Prakash, 2007). To the west is the island of Bougainville which is a semi-autonomous province of Papua New Guinea (Figure 7). The Solomon Islands is ethnically Melanesian, though there are strong pockets of Polynesian, in the outlying outer islands (e.g. Rennell Bellona Province) and settlements of Micronesians, (e.g. Wagina in the Choiseul Province). The total land area is approximately 28,300 km<sup>2</sup>, while the marine territory size (Economic Exclusive Zone) is 1,630,000 km<sup>2</sup>, much of it rich in marine resources. Solomon Islands consists of 347 islands with a total population of around 487,237 from 2005-2006 (Ellison, 2008).

In addition, Solomon Islands is part of the 'East Melanesian Islands Hotspot' which encompasses the islands of the Bismarck Archipelago of Papua New Guinea, the Solomon chain, the Santa Cruz Islands (Temotu), and the islands of Vanuatu. Although it was not previously identified as a biodiversity hotspot, this region's accelerating habitat loss and additional research done there have led to the identification of the group of East Melanesian islands northeast and east of New

Guinea as requiring hotspot status. This assemblage of great tropical oceanic islands is without parallel in its combination of insular biodiversity, unique environment, and amazingly rich diversity of traditional cultures (Beehler *et al.*, 2004).



**Figure 7: the Solomon Islands archipelago relative to PNG and Vanuatu (source: Falkland and Abawi, 2006)**

Generally protected areas coverage in the Solomon Islands is poor, inadequate and less formal than in Australia. While Solomon Islands is a signatory to the United Nations Convention on Biological Diversity and has endorsed the target of establishing a representative system of protected areas on land by 2010 and in the seas by 2012, the current situation is far from this goal. Today, only about 0.28 percent of terrestrial ecosystems in Solomon Islands have formal legislative protected area designation. This coverage is one of the lowest of protected area ratios in the Pacific region, and in the world. Several of

these areas are now mostly degraded from logging, oil palm development and encroaching human settlement.

Given the tremendous pressure exerted on these forest ecosystems by the logging industry and the fact that government revenue is largely dependant on earnings from this sector (around 60 percent of government revenues), pressure on remaining intact forests will only increase in coming years. There are dire predictions for the Solomon Islands economy if the current rate of logging continues, with recent estimates that natural forests wood flows would start to decline in 2010 and be exhausted by 2015, at the current rate of logging which is 1.0 million cubic metres per year. In the first quarter of 2007 log export figures of 373,000 cubic metres have been recorded which indicates a potential for 1.6 million cubic metres harvest for 200. This brings forward the date by which all Solomon Islands natural forests will have been logged, generating an income gap for the government as currently 65-70 percent of foreign exchange earnings comes from log exports (Vigus and Prakash, 2007). This will have dramatic and negative impacts on both viability of these unique terrestrial systems, their associated marine ecosystems, and on the livelihoods and cultural identities of Solomon Islanders unless action is taken now to conserve biodiversity and protect ecological, socio-economic and cultural values of Solomon Islands forests (WWF, 2005).

One of the fundamental constraints on any conservation initiative in the Solomon Islands is the customary land tenure system. Unlike the neighbouring Melanesian nation of Fiji, where customary title is formally codified, Solomon Islands recognises customary tenure in broad terms, and it is generally left up to a system of land dispute hearings to settle conflicting claims to ownership or usage rights over land. The first basic step in undertaking any conservation initiative, be it protected-area establishment or species-specific actions, is in knowing at that point in time who or where the land-owning community is (Beehler *et al.*, 2004).

International and local non government organisations have been, and continue to be, major players in conservation in the Solomon Islands, either in formal or informal partnerships with the government's conservation efforts. The regional conservation and environmental body, South Pacific Regional Environment Programme (SPREP) works closely with member governments, including Solomon Islands. This resulted in the development of a community-based conservation project in Komarindi, under the South Pacific Biodiversity Conservation Programme (SPBCP, 1993). The Komarindi project has led to the creation of a local conservation area of lowland and montane rainforest as well as a water catchment in 1994 (Baines *et al.*, 2002).

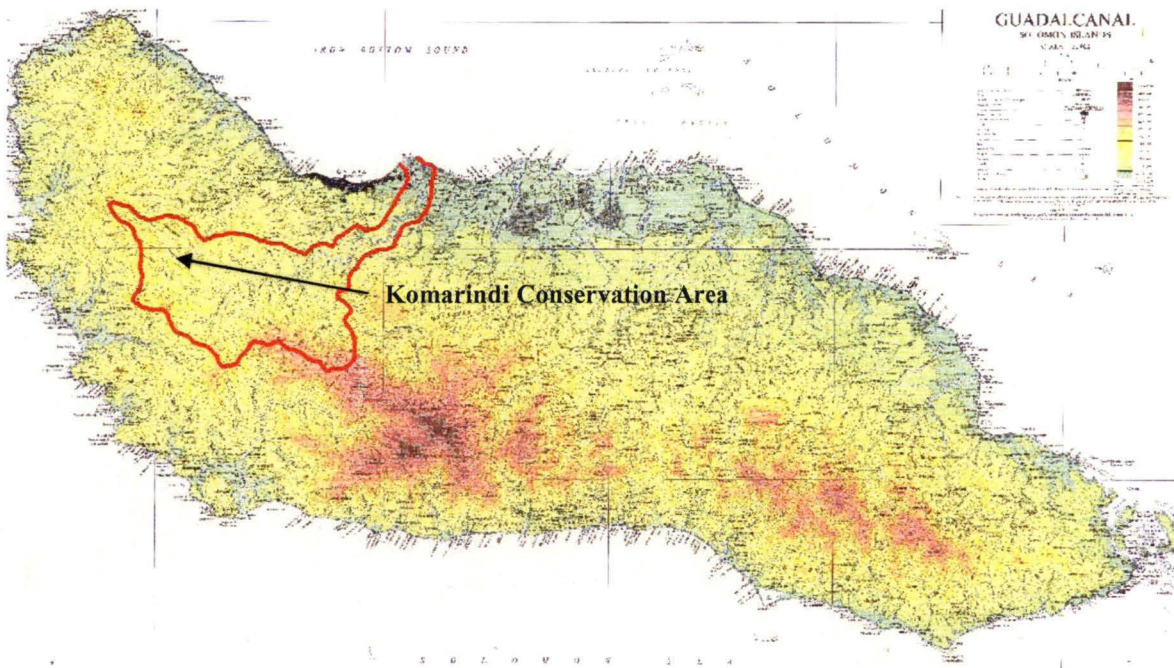
### **3.2. Location and size**

Komarindi Conservation Area is situated about 20 kilometres inland west of Honiara City (the capital of Solomon Islands), which is located on Guadalcanal Island (Figure 8). The designated size of protected area is 19,300 hectares and is managed under customary land tenure with no formal boundaries. According to the World Database on Protected Areas, there are 16 national designated protected areas and 1 international convention and programmes designation in the Solomon Islands. These comprise 5 bird sanctuaries, 1 conservation area, 1 controlled forest, 5 unconfirmed designations, 1 marine conservation area, 1 marine reserve, 1 national park, 1 reserve and 1 World Heritage Convention area. From that statistics, Komarindi is the only Conservation Area which is managed under IUCN Category V. It was designated on 1 January 1994 with a code number of 316913 (IUCN-WCPA, 2008).

The Conservation Area is uninhabited but collectively owned by four different landowning communities known as Veraboli, Kakabona, Konggulai and Kusumba. The area's resources are used mainly for subsistence purposes and it contains a large number of historically significant archaeological sites. The conservation area management was supported and facilitated by the Environment and Conservation Division of the then Ministry of Forests, Environment and Conservation, which was recently realigned in early 2008 by the current government and renamed as the Ministry of Environment,



Conservation and Meteorology. All management and ecotourism activities in the Conservation Area are currently on hold and the site status is relatively unknown and inactive.



**Figure 8: The red lines show the Lungga River tributaries with its catchment sourced from the Komarindi conservation area (adapted from Falkland and Abawi, 2006)**

### 3.3. Geology

The Pacific Islands region is situated to the west of the divergent plate boundary of the East Pacific Rise and is the formative source of the Pacific tectonic plate. The Pacific plate meets and mostly subducts beneath the Australian plate to the east of the main islands of Solomon Islands, Fiji, PNG, Vanuatu and Tonga. This margin is biogeographically important as to the east all islands protrude through the ocean, where as to the west some larger islands are migrated Gondwanan fragments. This has a significant influence on species biodiversity. For instance, true islands tend to possess lower



number of species that are adapted to long distance oceanic migration (Ellison, 2008).

Solomon Islands along with other islands in the region have been separate for much longer periods except New Guinea which was joined to Australia during the sea level lowstand until 12,000 years ago. New Guinea, New Caledonia and Viti Levu form three generally accepted biogeographic sub regions in the Pacific Islands, from which species migrated to other islands (Thorne, 1963). These mountainous islands are mainly of volcanic origin or eroding volcanic and raised limestone assemblages which are covered with dense rainforest (Aswani *et al.*, 2004).

The six major islands (Guadalcanal, Malaita, Makira, Choiseul, Isabel, and New Georgia) as well as other islands are mostly rugged and mountainous and were naturally covered with tropical moist rainforests, large areas of which having been logged or proposed for logging. The smallest islands range from coralline atolls to bare sandy islets. The major islands including Guadalcanal where Komarindi is situated are mostly of volcanic origin. The islands form part of the Pacific 'Ring of Fire'. Seismic activities including earthquakes commonly occur besides active volcanoes. As the islands are within the equatorial region, the climate is typically tropical with relatively high and uniform temperature all year round. There is high humidity and abundant rainfall of 3500-5000mm per annum. Most of the

country normally experiences dry conditions from May to around October when the southeast trade winds blow. The northwest trade wind blows from November to April and is associated with high rainfall, strong winds and cyclones (Vigus and Prakash, 2007).

### **3.4. Geomorphology**

Hansell & Wall (1976) and Wall *et al.*, (1979) had mapped the land systems in Solomon Islands. These efforts which mapped a total of 27 soil groups found that the soils in Solomon Islands are generally good in structure, well drained and are usually deep. In terms of essential elements, they are quite rich in nitrogen, phosphorus and organic carbon but are relative poor in potassium and magnesium. The most fertile and important of all the soil groups is the recent alluvial found only on North Guadalcanal most of which has now been planted with oil palm. Hansell and Wall (1976) also identified other agricultural opportunity areas through out the country.

Guadalcanal is the largest island and occupies a central position in the country. It is 160km long and 45km wide at the center. The island is of a northwest to southeast trend with a mountainous spine parallel and close to the southern coast. The interior has sheer and rugged peaks including Mt Makarakombura (2,447m) and Mt Popomanaseu (2,330m), the nation's tallest peaks. Northwestern volcanic area (540km<sup>2</sup>) including Savo Island consists of old, dormant volcanic cones up to 1,000m height. Southern mountain area (2,240km<sup>2</sup>) stretches from Makina in the east to Tangarare in the west. The

summit rises to almost 2,500m. The Central Hills (1,440km<sup>2</sup>) north of the southern mountains occupy an area of about 20km wide stretching from Kaoka in the east to the western coast of Tangarare. Northern foothills (620km<sup>2</sup>) range from 1-6 km in width including Honiara and Mount Austin and form a low fringe of the central hills. Northern plains (450km<sup>2</sup>), the only alluvial plains of this size in the country, extends from Lungga River in the west to nearly Kaoka Bay in the east (Vigus and Prakash, 2007).

Guadalcanal is rated 'High' in terms of its vulnerability to cyclones, coastal and river flooding, tsunami, earthquake and landslides. In terms of vulnerability to volcanic eruption, Guadalcanal is rated as 'Medium' and 'Low' to drought vulnerability. Specifically the Komarindi Conservation Area encompasses the Komarindi River and catchment area, lowland and montane forests, and endangered birds and butterflies (Read, 2002). It lies within a complex geographical area of faulted sedimentary beds dominated by siltstone and sandstone associated with steep terrain and heavily forested areas.

### **3.5. Flora**

Solomon Islands flora has limited families, genera and species as compared to other Pacific countries. The current information indicates that there is low endemism compared to the country's fauna (Vigus and Prakash, 2007). According to Mueller-Dombois and Fosberg (1998), the natural vegetation types in Solomon Islands include coastal strand vegetation; mangrove forest; freshwater swamp forest;

lowland rainforest; seasonally dry forest and grassland; and montane rainforest. Many “old growth” forests in the Solomon Islands are secondary and show the impacts of past human disturbance (Bayliss-Smith *et al.*, 2003). However, there is inadequate data on the flora distribution on Komarindi.

Apparently, there is a total of 108,800 hectares of freshwater swamp forest in the Solomon Islands (Scott, 1993) comprising 4.1 percent of the land area (Hancock and Henderson, 1988), of four types: mixed herbaceous, palm, pandanus and swamp forest. Swamp forest occurs on most of the islands in waterlogged locations, with *Inocarpus fagiferus* and *Eugenia tierneyana* commonly found in association with other tree species such as *Barringtonia spp.*, *Calophyllum vexans*, and *Pterocarpus indicus*, with common climbers and epiphytes. Some swamp forests are dominated by a single species, the most unusual of which are the *Campnosperma brevipetiolatum*, *Casuarina papuana* and *Terminalia brassii* swamp forests (Ellison, 2008).

Recent estimates established that 85 percent of the country is naturally covered by vegetation formations. The vegetation basically comprises grassland, swamps, lowland rainforest, montane forest and secondary vegetation. Forests are an integral part of the daily lives of rural Solomon Islanders. It provides them with most of the necessities of life and plays a significant part in their cultural identity (Vigus and Prakash, 2007).

Before the arrival of early colonisers, the forests were intact as Solomon Islanders lived a subsistence lifestyle through traditionally governed independent communities. The advent of early modernisation through the arrival of European traders, merchants, Christian missionaries and early colonisers introduced substantial changes. Early developments saw the conversion of large areas of coastal forests to coconut plantations. More forests clearance or deforestation occurred when early plantations diversified into cocoa plantations (Vigus and Prakash, 2007).

### **3.6. Fauna**

#### **3.6.1. Invertebrates**

Terrestrial invertebrate information of Solomon Islands is not adequate except for the butterflies which are believed to number about 130 species (Eldredge, 2000). Thirty five of these are endemic whilst 54 are shared with Papua New Guinea (Vigus and Prakash, 2007). Two of the rare endemic butterfly species protected within the Komarindi Catchment Conservation Area include the Sword-tail Butterfly (*Graphium spp.*) and the Swallow-tail Butterfly (*Papilio toboroi*) (PBIF, 2008).

#### **3.6.2. Reptiles and amphibians**

Reptiles are probably the next most studied group of fauna in the Solomon Islands apart from birds. There is greater diversity of reptiles in the Solomon Islands than elsewhere in the Pacific Islands. This may not be the case for endemic species though, which may be higher in New Caledonia. Three of the reptile genera in the country are endemic

as well as 25 other species. At least five species are thought to be endangered or extinct. There are seventeen native frogs, which indicate the greatest diversity of frogs of any Pacific Island group. The frogs include three endemic genera. Guadalcanal possess about 6 species of frogs and 12 species of geckos including the *Cyrtodactylus biordinis* (Gekkonidae) and *Lepidodactylus shebae* (Gekkonidae) both endemics. There are also 17 species of skinks including: *Tribolonotus schmidti* (Scincidae), endemic; *Sphenomorphus bignelli* (Scincidae), endemic; *Loveridgelaps elapoides*, endemic and very rare; and *Solomonelaps par* (Elapidae), endemic. The estuarine or saltwater crocodile (*Crocodylus porosus*) is also found on Guadalcanal, particularly in Laura Lagoon (Vigus and Prakash, 2007).

### **3.6.3. Birds**

The native avifauna (birds), are the most studied group of all faunal groups in the Solomon Islands. It is the most diverse and has the highest level of endemism of all avifauna of all the Pacific Islands with approximately 173 residential terrestrial species and 50 other species of sea birds, shore birds and occasional visitors. Almost half the birds are endemic at the species level. According to Birdlife International, Solomon Islands is the largest endemic bird area in the world (Satterfield *et al.*, 1998). This still excludes Rennell and Bellona, and Temotu which have separate endemic bird species.

Some of the endangered birds found on Guadalcanal and Komarindi comprised the Thicket Warbler (*Cichlomis whitneyi*), rare; *Collocalia*

*orientalis* (Guadalcanal Swiftlet), endemic and rare; Guadalcanal Honeyeater (*Meliphaga inexpectata*), endemic and rare; Woodford's or Solomon Islands Rail (*Nesoclopeus woodfordi*), endemic and rare; Yellow-bibbed Lorry (*Lorius chlorocerus*); and the Solomon Krait (*Lowridgelaps elapoides*) (Vigus and Prakash, 2007; PBIF, 2008). Apart from that, the Komarindi conservation area is also a habitat for the Chestnut-bellied imperial pigeon (*Ducula brenchleyi*), which is listed as an IUCN Red List Category 'Vulnerable' (Birdlife International, 2008).

#### **3.6.4. Mammals**

The Pacific's terrestrial mammal fauna is depauperate as compared to other regions due to island isolation and lack of geological landbridges, and dominated by bats derived from the western regions (Ellison, 2008). Solomon Islands is one of the World's richest in terms of bats and rats. There are over 52 species, 50 percent of which are endemic. However, there is limited inventory for Guadalcanal or the Komarindi Conservation Area (Vigus and Prakash, 2007).

#### **3.7. History and cultural heritage**

The Pacific region features coral reefs, deep ocean trenches, undersea mountain ranges, and many ecosystems that are rare and unique on Earth. Islands are either the volcanic peaks of underwater mountains, or coral atolls. Land-based Pacific ecosystems tend to be small and distinctive, a result of most of the islands' tiny size. Geographic isolation has led to the evolution of numerous endemic species (Read, 2002).

Due to small populations and limited natural resources, plant and animal species in the Pacific Island countries are vulnerable. The islands experience devastating natural disasters, including cyclones and volcanic eruptions. Climate change is also of major concern for the smaller islands, as sea levels will inevitably rise and engulf mangroves and flood forests and farmlands (Aswani *et al.*, 2004).

Most islands in the Pacific including Solomon Islands were settled by 200 B.C., by Asians, Austronesians, and Melanesians in the Lapita era (Mathews, 2004). Spanish and Dutch explorers came in the 16<sup>th</sup> and 17<sup>th</sup> centuries, followed by whalers, traders, and missionaries in the 1800s (Read, 2002). Solomon Islands was previously colonised by Great Britain but attained independence in July 1978.

Throughout the country, traditional spiritual beliefs and practices emphasise a close connection between people and their environment. Three distinct ethnic groups that inhabit the Solomon Islands include Melanesians, Polynesians, and Micronesians, but this simple division belies the country's diversity. There are as many cultures as there are languages, and the range of languages is extraordinary. Solomon Islands has around 86 native languages.

For thousands of years, Solomon Islanders have lived a relatively sustainable way of life. Species and habitat recovery are not new concepts to them. Many cultures traditionally applied restrictions on



the use of key resources as they became scarce, then lifted these restrictions when the resource replenished.

In relation to land ownership systems, local people own most land under centuries-old systems of customary tenure. Extended families hold title to the land, and entire communities are involved in making decisions regarding how land and resources are used. Marriages between people from different communities have been common for years. As a result land inheritance claims are very complex. This is further exacerbated when relatives working abroad come home to look for a place to settle down. Local land disputes are a typical feature of life in Solomon Islands.

Until the 1970s, Solomon Islands supported relatively intact lowland forests in abundance just like elsewhere in the East Melanesian Islands region. The clearance and degradation of these over the past decades is one of the reasons why the region is now being classified as a hotspot apart from high biodiversity. Today, less than 25 percent of the Solomon Islands lowland forests remain as old growth, these primarily in the least accessible areas. Upland humid forests remain in better condition, but with population growth even these are being reduced, primarily by clearance for subsistence gardens (Beehler *et al.*, 2004).

The Komarindi Catchment Conservation Area is culturally important as it contains various cultural ‘tambu’ sites of archaeological significance as well as a long history of livelihood to the resource owners.

### **3.8. Importance of the Komarindi Conservation Area**

Komarindi Conservation Area is crucial because it protects an extensive and important range of natural and cultural values including: (i) a range of rare endemic and threatened species such as the Woodford’s Rail (*Nesoclopeus woodfordi*), Yellow-bibbed Lorry (*Lorius chlorocerus*), Solomon Krait (*Lowridgelaps elapoides*), Sword-tail Butterflies (*Graphium spp.*), Swallow-tail Butterfly (*Papilio toboroi*), and the Chestnut-bellied imperial pigeon (*Ducula brenchleyi*); (ii) extensive tropical rainforests that define cultural ties and values for landowning communities. Solomon Island forests are one of the 200 most important “eco-regions” in the world and one of the 10 most threatened forest eco-regions; (iii) source of subsistence use for medicine, food, firewood and building materials; (iv) large number of historically significant archaeological sites; (v) source of income through ecotourism undertakings and sale of forest related products such as ‘nali-nut’, coconuts, mats, traditional costumes and baskets; (vi) rivers and water catchment areas which are important for people’s survival, farming, aesthetic uses, and for potential hydro-power generation; (vii) importance for research and educational purposes; and (viii) bushwalking values closer to Honiara with high scenic feelings.

### **3.9. Threats to Conservation Areas in Solomon Islands**

In the Solomon Islands logging has had a devastating effect on lowland forests, and coconut plantations are also widespread. In fact the area under cultivation doubled between 1972 and 1992 (Thistlethwait and Votaw, 1992). Another broad-scale and diffuse threat is poor governance and government instability which usually resulted in inadequate management of resources; poor deals and poorly managed deals with international resource development companies, mining and logging in particular; and social and cultural disruptions (Beehler *et al.*, 2004). A classic example of this was the recent Solomon Islands ethnic crises which halted conservation and ecotourism efforts on the Komarindi protected area indefinitely, resulting in its current status as being inactive.

The Queen Elizabeth II National Park near the capital Honiara in Solomon Islands, the nation's only National Park, has been completely degraded in the 50 years since it was established in 1954, from primary forest to secondary forest and grassland. This was attributed to logging activities and the flow-on effects of illegal settlements outside the boundaries of Honiara City.

Unfortunately the desperate search by government for export earnings often favours unsustainable short term industries at the expense of long term production and threatens the natural resource base necessary to sustain the subsistence economy. For instance, logging is

the major threat to Solomon Islands forests as it targets all commercial lowland and low montane forests. Current operations are proceeding at four times higher than sustainable yield levels and are in no way ecologically sustainable. A recent AusAID inventory predicts the depletion of natural forests by 2015 or earlier, a situation which will collapse the forests sector and have dramatic and negative impacts on the Solomon Islands economy (WWF, 2005).

The cultivation of oil palm requires the clearance of large areas of lowland forest and the processing of the fruit causes severe pollution of receiving rivers and coastal areas. Currently several large oil palm operations are underway and more are proposed.

Similarly while impacts from mining are often localised, poorly regulated mining practices often lead to serious problems in groundwater contamination, negative impacts on aquatic ecosystems and negative socio-economic impacts on local populations.

Invasive species such as weeds and feral animals are becoming more widespread in Solomon Islands. Remaining patches of coastal lowland forest are under pressure from further forest clearance with the expansion of shifting cultivation leading to reduction in soil fertility, lower crop yields and loss of biodiversity (WWF, 2005).

For Komarindi, the pertinent threats to conservation efforts included ethnic crises on Guadalcanal Island, scattered nature of the communities, lack of community support and cooperation, lack of active management, financial support and high inflation (Read, 2002).

There is also an urgent need to reform legislation and institutions in Solomon Islands to support new models of sustainable forest management. Current legislation lacks consistency and coherence due to frequent amendments and gives very poor coverage to environmental issues. Appropriate and effective national legislation that promotes biodiversity conservation through establishment of protected areas, sustainable forest management and that meets the needs of customary landowners is desperately needed.

Successful stewardship of Solomon Islands forests must provide viable alternatives to landowners to meet basic economic needs, while promoting the conservation of biodiversity and the protection of the range of forest values (WWF, 2005).

### **3.10. Guiding legislative frameworks**

The principal legislative frameworks for conservation management in Solomon Islands include the *Forestry Bill 2004*, *Environment Act 1998*, *Fisheries Act 1998* and the *Wildlife Protection and Management Act 1998*. Current forestry legislation lacks consistency and coherence and gives very poor coverage to environmental issues. The current legislation that oversees forestry operations in Solomon Islands is the

Forest Resources and Timber Utilisation Act originally enacted in 1969. Frequent amendments have been made over the years to reflect changing forest policies resulting in a current act which is unwieldy and difficult to interpret. This legislation requires licensing for all felling of trees and milling to be granted by the Commissioner for Forests. There is provision for the Minister to declare "Forest Reserves" under this act for the purposes of conserving water resources, although this has never been used. The Act also empowers the Minister to impose levies (WWF, 2005).

#### **3.10.1. Forestry Bill 2004**

The *Forestry Bill 2004* is a draft bill that aims to put in place a new law to replace the outdated Forest and Timber Utilisation Act 1969 and all its inconsistent amendments which is considered by many as the main source of all the problems currently experienced in the forestry industry. The *Forestry Bill 2004* "provides for the conservation of forests and the improved management of forest resources, control of timber harvesting, encouragement and facilitation of sustainable forestry activities, establishment of plantations, and, domestic processing of timber. The most relevant United Nations Convention of Combating Desertification (UNCCD) requirements of the Bill, *inter alia*, are the requirement for the establishment of national forests and forest reserves. The Bill was tabled by Parliament in late 2004 and sets out to improve sectoral planning procedures, revises the system of timber felling licenses to put the onus for performance on the loggers instead of the license holder (usually customary landowners),

introduces logging controls (such as the Logging Code of Practice), and requires performance bonds” (Vigus and Prakash, 2007). However, the Bill was shelved after calls for improved consultation.

There are also Forest Regulations that have been prepared due to the reluctance of Parliament to pass a Forestry Bill. These were gazetted in 2005 and require loggers to comply with a range of specified practices which aim to reduce logging damage and thus protect the productivity of the forest. These regulations legalised the Code of Logging Practice and increased licensing fees. There are penalties for non-compliance and they specify the requirements for the application for a felling license and the content of such license. These also introduce the requirement for a performance bond (WWF, 2005). However, the enforcement component is very weak due to lack of resources and forestry manpower.

### **3.10.2. *Environment Act 1998***

Whilst legally establishing the Environment and Conservation division with defined functions, the *Environment Act 1998* “focuses on development control through an established Environment Impact Assessment process, and the control of pollution. The Act also establishes an Environmental Advisory Committee whose function is to advise the Division on environment and conservation matters referred to it by the Director or the Minister. It also requires that a State of the country’s Environment report be produced every three

years to be submitted for parliamentary debate” (Vigus and Prakash, 2007).

In considering the controls in development activities and for purposes of pursuing sustainable development, the Act incorporates four basic sustainable development principles: the precautionary principle; fairness to future generations; conservation of biological diversity and ecological integrity; and improved valuation and pricing of environmental resources (Vigus and Prakash, 2007).

A provision of the *Environment Act 1998*, section 4 (1) states that “In the event of any conflict between the provisions of this Act and the provisions of any other Act, the provisions of this Act shall, to the extent of any inconsistency, prevail. This appears to give the Act considerable power but as with any legislation it is also dependent on the provision of adequate finances to the department and officers that are tasked with its implementation. The Act is administered under the Ministry of Environment, Conservation and Meteorology (MECM) by the Environment and Conservation Division (ECD). The regulations to the Act are yet to be completed and there is little evidence of enforcement, partly due to the very low capacity within the ECD. Draft regulations are now being processed for Parliamentary approval, to enhance policy implementation and will cover current weaknesses or significant gaps (Hurutarau, 2008: pers. com).



One of the major shortcomings in the *Environment Act 1998* is the absence of details dealing with biodiversity conservation and especially on protected areas development. Despite these current weaknesses, the Act potentially remains one of the key pieces of legislation that can effectively address environmental and development issues.

### **3.10.3. *Wildlife Management and Protection Act 1998***

The *Wildlife Management and Protection Act 1998* “provides for the protection, conservation and management of wildlife in Solomon Islands by regulating the export and import of certain animals and plants. It also enables Solomon Islands to comply with the obligations under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). One of the features of the Act is that it also provides the opportunity for the development of species management plans which can include the protection of a species habitat” (Vigus and Prakash, 2007).

The required regulations of the Act are yet to be developed and therefore the Act is yet to be effectively implemented. Otherwise, capacity issues within the Environment and Conservation Division add understandable difficulties in terms of its implementation. Whilst the Act’s main aim is to enable Solomon Islands comply with CITES, the country is yet to become a party to the convention.

#### **3.10.4. Fisheries Act 1998**

The *Fisheries Act 1998* provides the legal framework for fisheries management and development in Solomon Islands. Its main objective is to ensure the long term conservation and the sustainable utilisation of the fishery resources of Solomon Islands for the benefit of Solomon Islanders. The Act is one of the new legislations that were developed in the late nineties and integrates sustainable development principles.

The required regulations have been drafted and are undergoing vetting but are still to be finalised. Some of the requirements of the Act include the opportunity to develop Marine Protected Areas (MPAs) and Coastal Management Plans. The Act however faces major implementation constraints which are not only administrative but also legal.

Apart from these various Acts, there is no appropriate national legislation for the establishment of protected areas other than the inadequate provisions with the Forests Act to declare reserves for protection of water catchments. A 1954 *National Parks Act* exists but it is archaic and irrelevant. This Act created Queen Elizabeth National Park in the Mount Austen area near Honiara in the same year, which today is a 'paper' park that is highly degraded from encroaching human settlement. Similarly no provisions exist within this Act to empower customary landowners to make decisions about their

resources; instead it follows an out-dated colonial model of national park creation by annexing land by government decree.

At the provincial level of governance, the *Provincial Government Act 1997* gives power to provinces through devolution orders, to formulate relevant legislation covering environment and conservation. Many provinces have enacted their own legislation covering some of the relevant environmental issues such as in protected area development. Some of the provincial ordinances enacted by the respective provinces are summarised in Table 2:

**Table 2: A summary of relevant provincial environmental ordinances (adapted from Vigus and Prakash, 2007)**

Province	Relevant Provincial Ordinances
Choiseul	Choiseul Province Resources Management Ordinance 1997
Malaita	Malaita Province Wildlife Management and Licensing Ordinance 1995
Temotu	Temotu Province Environmental Protection Ordinance 1994
Guadalcanal	Guadalcanal Province Wildlife Management Areas Ordinance 1990
Western Province	Western province Resources Management Ordinance 1994, Western Province Coastal and Lagoon Shipping Ordinance 1991
Isabel	Isabel Province Conservation Areas Ordinance 1993, Isabel Province Wildlife Sanctuary Ordinance 1995

The provincial legislations have been effective in that they have allowed concrete action to be taken at the community level, especially on site, where there are gaps and weaknesses in the national legislation in certain areas such as in the development of conservation or protected areas. Implementation and management of the provincial

ordinances share the same problems as the national legislation. One notable fact about the provincial legislation is that most of them have been drafted by volunteer legal advisors from outside the country. The current absence of such assistance is slowing community actions as they have come back to depend on the government lawyers from the Attorney General Chambers in Honiara.

Appropriate and effective national legislation that promotes biodiversity conservation through the establishment of protected areas, sustainable forest management and that meets the needs of customary landowners is desperately needed. Also relevant and enforceable legislation for protected area management that enhances both conservation goals and the needs of customary landowners is long overdue for Solomon Islands.

### **3.11. Management of Komarindi Conservation Area**

Over the past years, attempts to establish protected areas to conserve biodiversity have failed in a lot of areas. Most conservation area models granted recreational access, but denied local people the right to use the resources. In Solomon Islands, landowners still depend on natural resources for their livelihood, and strict protective rules denying resource use tend not to work. Local communities own land under customary systems and government legislation recognises and legally protects customary tenure. Therefore both the national and provincial governments have to cooperate with local land-owning communities to conserve biodiversity. Communities must drive

decision-making about resource use, and they have to learn to balance use with conservation (Hunnam, 2002).

Much of the Solomon Islands is not under any formal legal protection and most of the country is under customary ownership. With the current unprecedented level of logging activity which has seen the production of round logs reaching one million cubic metres per annum in the last few years, hopes of formally protecting the many unique forested areas of the country are fast disappearing. During consultations many individuals clearly stated that if they could earn more cash from their agricultural crops they would not need the royalties from logging operations. The common problems of resources scarcity (human resources and funding), low capacity levels and institutional weaknesses are reasons given for the lack of establishment of protected areas. Efforts regarding establishment of protected areas are ongoing with the assistance of donors and international and national NGOs. Current efforts in protected areas development in Solomon Islands are not so much based on what types of protected areas need to be developed regionally but are more community based, the community managed conservation area approach (Vigus and Prakash, 2007).

By the time of the 1992 Earth Summit (United Nations Conference on Environment and Development) in Rio de Janeiro, there were effectively no protected areas in the Pacific Islands (Read, 2002). The

Rio Summit had a significant impact on Pacific region governments and conservation groups, in terms of raising awareness about conservation and development issues as well as instigating the convention on biodiversity. Inspired by Rio and recognising the shortcomings of earlier approaches, Pacific Island countries decided to try a different strategy. They combined to develop the South Pacific Biodiversity Conservation Programme (SPBCP) commencing in 1992 to experiment with community-based conservation strategies as an alternative to the inflexible national park model (SPBCP, 1993).

The SPBCP was a multi-country conservation initiative primarily funded by the UNDP Global Environment Facility with an initial grant of US\$10 million plus A\$5 million of AusAID co-financing. The initiative was aimed at conserving biodiversity while encouraging sustainable resource use (SPBCP, 1993). Eligible countries proposed candidate conservation areas to the South Pacific Regional Environment Programme (SPREP), which managed SPBCP. An inter-governmental body based in Samoa, SPREP represents 22 nations and territories of the Pacific coupled with Australia, New Zealand, France, and the United States. The SPREP administers many regional environmental initiatives. Once a project was approved, the community involved appointed a conservation area committee that was supposed to represent the viewpoints and interests of people with a stake in the resources. The programme funded a qualified national representative of the host country to live in the village and assist its

residents as conservation area support officer. The intent was that the conservation area projects be financially self-sustaining by the end of the funding period in 2001 (Baines *et al.*, 2002; Read, 2002; Ellison, 2008).

By late 1997, twelve Pacific Island countries had proposed 17 community-based conservation areas with the dual aims of conserving biodiversity and encouraging sustainable use of natural resources, with the local community landowners well engaged. As the programme progressed, experience on the ground suggested that communities needed alternative income-generating activities to help decrease their reliance on their natural resources. As a result training in sustainable, resource-based businesses became part of the programme. After two extensions, SPBCP ended in 2001.

Komarindi Conservation Area on Guadalcanal Island is one of the two SPBCP sites in Solomon Islands along with Arnarvon Islands Conservation Area in Isabel. These were implemented in partnership with the Environment and Conservation Division of the then Ministry of Forests, Environment and Conservation. This is now realigned as the Ministry of Environment, Conservation and Meteorology. Unfortunately, the project was terminated in 2000 due to unrest and ethnic tension in the Solomon Islands and is currently inactive (Beehler *et al.*, 2004).

Komarindi is a community-based project designed to facilitate the long-term sustainable management of resources of the conservation area. Its overall aim was to work with local land-owning communities to develop appropriate plans and approaches for long-term management of their resources, which integrate their objectives for social and economic development with the conservation of biodiversity. An income generation component of the conservation initiative was the Komarindi Ecotourism Project (SPREP, 1998).

From 1994 to 1998, the Environment and Conservation Division had been working very closely with the land-owning communities to establish the Komarindi Catchment Conservation Area Project. The principal landowners of Komarindi Catchment are the Kakau and Lakuili tribes. These communities recognised the importance of their resources and the increasing threat from large scale commercial exploitation, and agreed to protect them for future generations (SPREP, 1998).

Ecotourism was identified at the outset as a potential alternative enterprise to provide a source of income for the communities. This was based on the 'under-developed' nature and diversity of the rainforest and its close proximity to Honiara, the gateway to tourism in the Solomon Islands. This resulted in a number of convened discussions, meetings, and workshops with people in the communities to raise their awareness and gather their feedback to the ecotourism.



plan. A theatre performing group of Vanuatu known as 'Wan Smolbag' visited communities in 1996 and 1997 to perform dramas, which featured tourism, environment and development issues. The group's renowned video 'Pacific Star' was also used as an awareness tool. From those activities, communities agreed to pursue ecotourism and asked the project to facilitate its development (SPREP, 1998).

Some of the activities being undertaken between 1994 and 1998 under the Komarindi Conservation Area project which focused on planning for ecotourism included: (i) an ecotourism planning and development consultancy, including a series of community meetings; (ii) community agreement on the running of four tours: a half-day nature and culture tour, a full day walk, a weekend hike and a cross-Guadalcanal hike; and (iii) agreement by two Solomon Islands travel agents to prepare a brochure of the Komarindi Conservation Area ecotourism activities in 1998.

Other activities pursued from 1994 to 1998 comprised (a) presentation of dramas and plays on environmental themes in the Conservation Area by Vanuatu's Wan Smolbag Theatre; (b) a preliminary avifauna survey by the Avian Ark Foundation; (c) letting of a contract for the construction of the project house in Kusumba village, on the Weather Coast of Guadalcanal; (d) purchase and installation of two High Frequency radios for Kusumba and Veraboli, creating for the first time a dedicated communication network linking the lead agency and both

of the communities involved in the Komarindi Conservation Area project; (e) introductory tour guide trainings; and (f) showcasing the project during an Open Day at the Solomon Islands Trade and Cultural Show, 1<sup>st</sup> Melanesian Arts and Cultural Festival and 20<sup>th</sup> Anniversary of Independence celebrations in July 1998 (SPREP, 1998).

However, the ethnic unrest in Solomon Islands between Guadalcanal and Malaita islanders which erupted in late 1998 brought significant uncertainties to the progress of the Komarindi Catchment Conservation Area project. At the height of the tension it was difficult to do any work with the communities because of the high risk involved, so work was suspended indefinitely. The communities were badly affected as they lived in constant fear from both sides, thus, their movements were restricted. Income for the local communities was lost due to cancellation of cross-Guadalcanal eco-trek tours (SPREP, 1999b). Currently the conservation project is still on hold and its status is inactive and unknown.

**4.1. Preliminary protocols**

Prior to undertaking information gathering from key informants in Tasmania and Solomon Islands through face-to-face interviews and questionnaires, a Social Sciences Human Research Ethics Minimal Risk Application Form was submitted to the Human Research Committee (Tasmania) Network based at the University of Tasmania. Information on the study methodology and ethics approaches and procedures were specified in the application.

Informants were identified by using public office phone directories and lists, email contacts and websites; referrals from the Tasmanian Parks and Wildlife office, Ministry of Environment, Conservation and Meteorology; and through non government conservation oriented organisations both in Tasmania and Solomon Islands. Ethics approval was granted in mid May 2008. After that, arrangements were made for potential interviews and submission of questionnaire to identified informants.

**4.2. Information gathering techniques**

Qualitative interview and questionnaire responses from key informants in the Solomon Islands regarding Komarindi and general conservation challenges were obtained between June and July 2008. Responses from Tasmanian key informants regarding Mount Field National Park were collected from July to September 2008. Informants were selected discretely on the criterion that they had some conservation involvement or experience

with either of the two pursued case studies or other protected areas in Tasmania and Solomon Islands. The justification of this criterion is that for the Mt Field National Park, there were less than five Rangers that would contribute primary responses. In the case of Komarindi, there was only one Environment Ministry personnel that was obligated to coordinate the conservation area project between 1994 and 1998. Therefore, in order to get a wide range of response and information other appropriate conservation stakeholders had to be involved in the information collection. Feedback was attained from ten informants per case study. Techniques adopted to collect information towards this study included: (i) Face-to-face and telephone interviews with park rangers, respective government conservation officers, non government organisation representatives, other community parks care groups, and community members; (ii) A questionnaire was also utilised through email and postage, where telephone or face-to-face interviews were not possible; and (iii) Background studies and literature were reviewed from appropriate published papers, books, journals and newspapers both from library collections or the Internet, and from a public presentation facilitated by the Tasmanian National Parks Association on the challenges that face national parks in Tasmania and Australia.

#### **4.3. Limitations**

Prior to the interview process, it was initially anticipated that a minimum of 15 key informants per case study could be undertaken. However due to time constraint and lack of adequate funds for telephone and transportation costs, only ten informants per case

study were contacted. Also due to the current inactivity of the Komarindi Conservation Area as a result of the ethnic unrest in Solomon Islands, there was no direct feedback from a Conservation Area Support Officer (CASO). As a result information collected from the Solomon Islands was solely sourced from the Environment and Conservation Division office which was a managing agency of the SPBCP initiative for Komarindi Catchment Conservation Area project; conservation oriented non government organisation representatives; and landowning community representatives. Similar difficulties were also encountered for Mount Field as the number of Park Rangers assigned to the park was less than five.

Another limitation was that selection of respondents was entirely intuitive and information collected was qualitative and subjective. Furthermore the Ministry of Environment, Conservation and Meteorology in Solomon Islands has just undergone realignment early this year from the former Ministry of Forests, Environment and Conservation. This occurred after the Coalition for National Unity and Rural Advancement (CNURA) regime formed government in December 2007 through a motion of no confidence. As a result there were no publicly available reports or documents on Komarindi to be reviewed.

**5.1. Key biodiversity conservation issues**

The pertinent biodiversity conservation issues identified qualitatively from this study for protected areas in Tasmania and Solomon Islands are summarised in Table 3.

**Table 3: Key conservation issues identified for Mt Field National Park (Tasmania) and Komarindi Conservation Area (Solomon Islands)**

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- (1) Climate change factors and human impacts are placing pressure on protected areas.
  - (2) Introduction and presence of invasive species of plants and feral animals that subtly or at times radically alter natural process within parks or conservation areas.
  - (3) Getting the right balance between conservation, recreation, social and cultural intrinsic values.
  - (4) Impacts by access into sensitive wilderness or natural areas even with intent to protect the environment. However without access, support for conservation is difficult to foster.
  - (5) Implications of track works and interpretation of the history and cultural importance of national parks or protected areas.
  - (6) Potential threat from agriculture (e.g. palm oil development which requires clearance of substantial forested areas and farming), and forestry exploitation practices including unsustainable logging, milling or mining.
  - (7) Loss of biodiversity due to natural (e.g. cyclones or tsunami) and human impacts as a result of direct human interaction and reliance on natural resources for food, traditional medicine, firewood, building materials, gardening, and income yielded from natural resource products.
  - (8) Confusion between ecotourism activities including bushwalking, five star accommodation projects, and air walks; and the primary goal of conservation.
  - (9) Ongoing Community, stakeholder and government support for conservation projects and sustainability issues.
  - (10) Threat from bush or man-made fires and its management in protected parks.
  - (11) Overfishing and destructive fishing practices such as fish poisoning, use of explosives and harvesting of undersized species.
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## 5.2. Management objectives for conservation

Despite differing approaches to conservation between Tasmania and Solomon Islands, qualitative responses collected indicate that both case studies seek to achieve similar management goals and objectives which are displayed in Table 4.

**Table 4: Identified management goals and objectives for conservation in Tasmania and Solomon Islands**

- 
- |    |   |
|----|---|
| a) | To preserve the natural and cultural values of national parks or protected areas in the long term interest of conservation. This may encompass both terrestrial and marine reserves.  |
| b) | To yield 'conservation' as the primary vision for protected areas including supervising agencies (e.g. Tasmania Parks & Wildlife Service, Solomon Islands Environment and Conservation Division, leading non government organisations, community care groups, and resource owners) above tourism activities. For Solomon Islands, conservation must attempt to understand the direct reliance on natural resources for sustainable livelihood by rural resource owners. |
| c) | To enhance community engagement in national park or protected area management including promotion of community initiated and managed conservation initiatives (e.g. Solomon Islands).   |
| d) | To promote effective legislation for environmental conservation and parks that is consistent, coherent and adequately enforceable.  |
| e) | To increase community awareness of the value and importance national parks and conservation areas whereby achieving well informed rural area resource owners.   |
| f) | To link the public and rural resource owners with Provincial, State, National or Federal environmental conservation policy makers and to provide an avenue where people can voice their concerns and ideas on issues that affect national parks or reserves.  |
| g) | To voluntarily help with parks and protected area works as much as possible in areas such as track or hut maintenance and repairs with a vision for positive and sustainable outcome (e.g. resource owner associations and committees, and community care groups or "friends of" volunteers).   |
-

### 5.3. Management actions pursued and outcomes

Actions that had been undertaken to deal with the issues and meet the objectives varied between Tasmania and Solomon Islands. Identified management actions and outcomes for Mt Field National Park in Tasmania are outlined in Table 5, whilst Table 6 represents Solomon Islands conservation actions and outcomes.

**Table 5: Identified management actions and outcomes for Mt Field National Park in Tasmania**

Actions	Outcomes
<i>Fuel reduction burning</i> - This was a conservation program undertaken by Parks & Wildlife Service, and in part designed to protect fire sensitive plant communities from hotter wildfires, or conversely, promote some plant communities that require fire to propagate.	Achievement at Mt Field was limited due to inadequate resources, knowledge, and other factors such as politics. Apparently the Tasmania Parks and Wildlife Service, is an administrative arm of the State Government, thus only undertakes what it can with available resources and political commitment.
<i>Track work improvements</i> - A great deal of track work had been put in place at Mt Field to protect the fragile environment from the impacts of bushwalking.	This has lead to improved walker experience and an enhanced reputation for Mt Field as a walking destination. This leads to more walkers and more impacts.
<i>Submissions on management plans and issues</i> - Community groups such as the Tasmania National Parks Association and Friends of Mt Field National Park usually put in submissions on most issues that affect national parks and areas directly adjacent to national parks.	Over 4 decades of foresight and hard work by concerned citizens had resulted in more than 20% of the State being secured in parks and reserves. Similar submission was also presented prior to the Mt Field Management Plan.
<i>Raising public awareness</i> - Public awareness on conservation and the importance of Mt Field was achieved through public lectures, film nights, slide shows, stall at Salamanca Market, and bushwalking trips.	This resulted in the wider community being informed of the importance of the Mt Field National Park and Reserves. Goodwill donations and community membership subscriptions aided in conservation efforts whilst volunteers are attracted for Mt Field Park repairs and maintenance work.



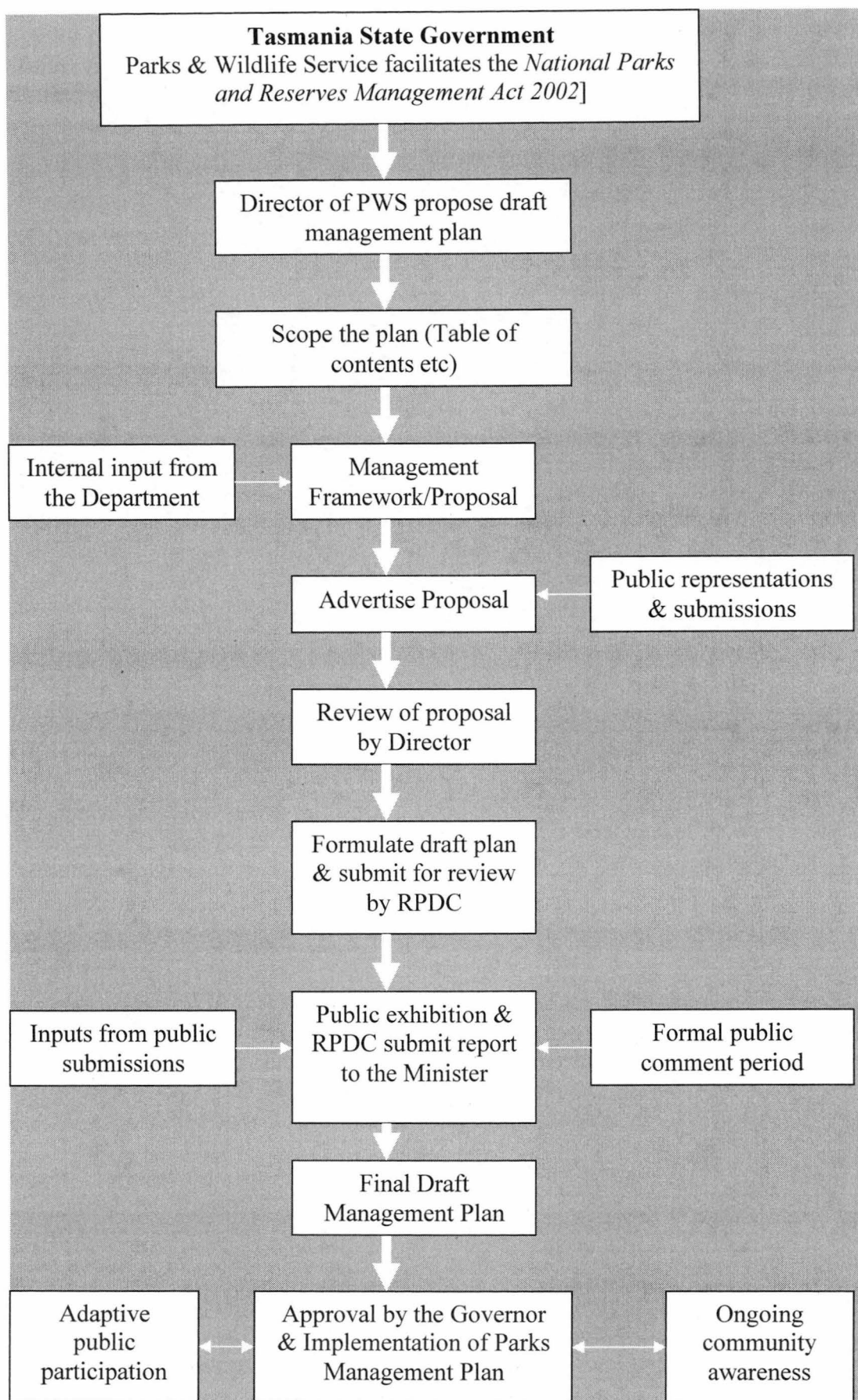
**Table 6: Management actions and conservation outcomes for Komarindi (Solomon Islands)**

Actions	Outcomes
<i>Partnerships</i> - Recent successful conservation approaches and initiatives in the Solomon Islands have been achieved through partnerships between non government organisations, resource owners, and the government.	Partnerships in conservation efforts tend to work well in Solomon Islands, particularly between non government organisations, resource owners and the governments. This is useful in pooling of limited resources and expertise, sharing of background information and lessons learnt, and advancing a collective vision to conservation.
<i>Research coordination and community awareness</i> - ongoing assessment and project site surveys and continuous engagement of resource owners in conservation work through adaptive management tools.	Conservation is a new paradigm for Solomon Islands in its western meaning. Therefore a lot of research is needed to achieve a clear understanding of conservation goals and reliance on resources for livelihood. Ongoing community awareness over the past few years has led to well informed rural landowners and increasing passion for conservation of natural resources.
<i>Community management plans and conservation agreements</i> - In a shift from a 'top-down' conservation approach, which tends not to work in Solomon Islands; conservation groups are adopting a 'bottom-up' approach which gives ownership and management to the community.	This action has resulted in extensive enthusiasm in community-based managed areas either terrestrial or marine. Communities initiate management resulting in 'community management plans' and 'conservation agreements'.
<i>Strengthening legislation</i> - With the progress of positive results for community based managed areas in project sites along with influence from conservation organisations the government is now undertaking efforts to strengthen relevant conservation legislation and national planning guiding frameworks.	The recent formation of the Ministry of Environment, Conservation and Meteorology acts as a catalyst to achieving consistent and coherent environmental legislations, which resulted in the drafting of "Regulations" (still in Draft) for the <i>Environment Act 1998</i> with plans for an up-to-date Parks and Reserves Act and other legislation reviews.
<i>Sustainability</i> - To ensure the long term sustainability of conservation projects, organisations have initiated alternative livelihood activities to divert attention from resource exploitation by landowners.	This has proven to be successful in almost all community based managed areas throughout the country. Activities include coconut oil press, ecotourism, health and educational support. This is one of the core factors that drive community support towards success or failure of conservation.

#### **5.4. Community engagement processes**

Community input and engagement was acknowledged as vital to successful conservation in both Tasmania and Solomon Islands. Community participation and ownership are sought at many levels of management and administration for conservation. The general process of community engagement towards conservation differs considerably between Tasmania and Solomon Islands. Figure 9 highlights the community engagement process in Tasmania while Figure 10 displays the process of community participation in Solomon Islands.

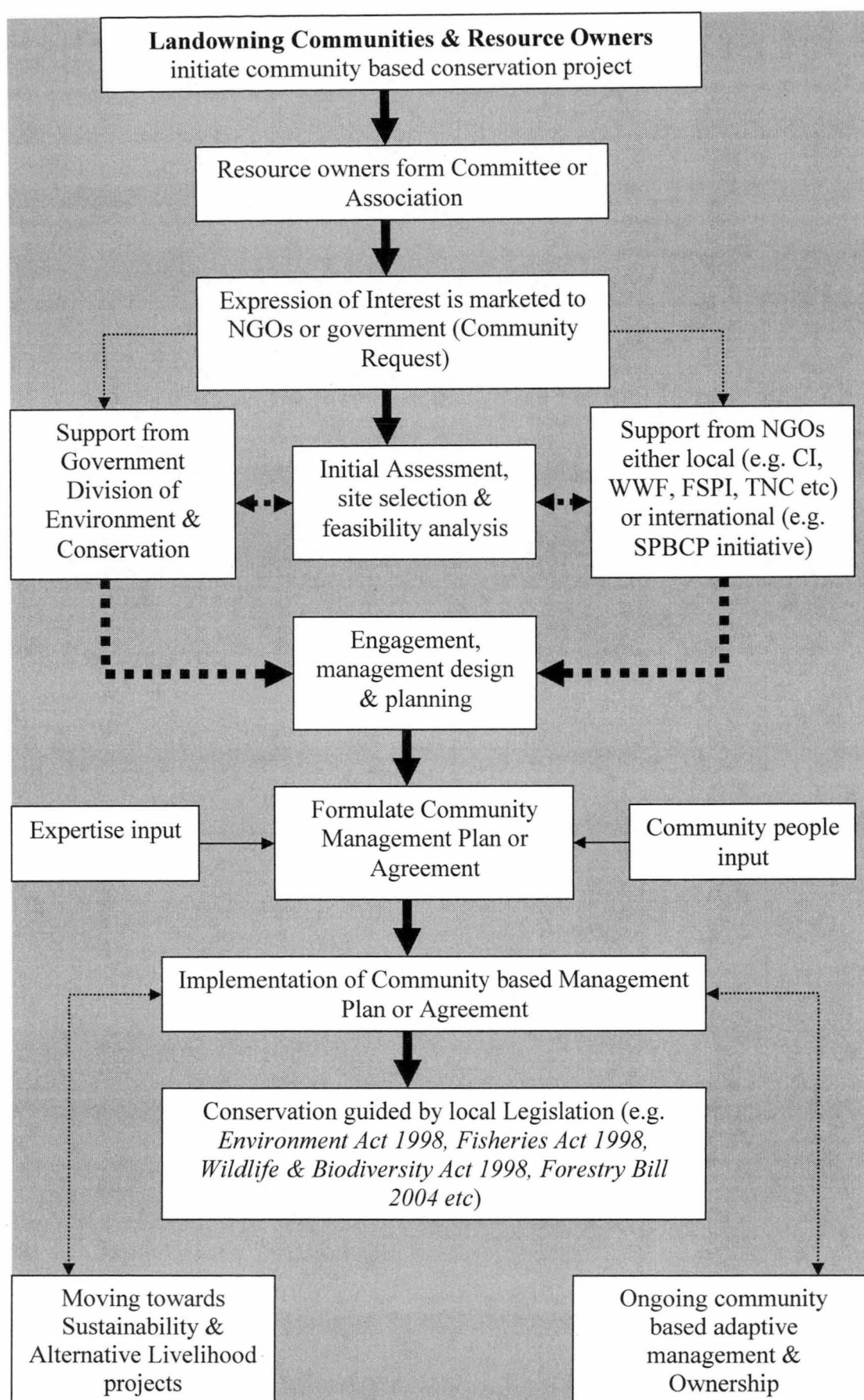
Modes of public participation and community awareness identified from Tasmania and the Solomon Islands vary for different situations and project sites, but composed mainly of public and community meetings; training workshops; surveys to determine high biodiversity sites; practical monitoring trainings; public awareness stalls in locations such as the Salamanca Market; slide shows and film nights; brochures and newsletter bulletins; public lectures and symposiums; and the Great Australian Bushwalk.



**Figure 9: Community engagement process for parks management in Tasmania**

Explanatory notes on Figure 9 – In Tasmania, community participation is required as a core of any management planning under the National Parks and Reserves Management Act 2002. As represented in Figure 10, the Act gives authority to the Director of the Tasmania Parks and Wildlife Service to propose a draft management plan. The proposal is normally composed with internal assistance from an authorised officer within the respective State Government Department. The proposal is then advertised in at least three different media sources offering the opportunity for at least 30 days of community engagement through submissions and written representations on the proposal.

Next, the proposal and submissions are reviewed by the Parks and Wildlife Service Director to formulate a Draft Management Plan which is then forwarded to the Resource Planning and Development Commission (RPDC) for review. Later the Draft Plan is required by statutory regulations to be publicly exhibited at an accessible location for at least 60-90 days whereby further public participation process is undertaken. The public can view the draft plan and make further submissions and representations on the draft before a Final Management Plan can be formulated and forwarded to the State Governor for approval by the respective Minister. Upon approval the plan is then gazetted and implemented. After implementation, community engagement is encouraged and maintained through ongoing community awareness and adaptive management.



**Figure 10: Community engagement process for conservation in the Solomons**

Explanatory notes on Figure 10 – In the Solomon Islands, environmental conservation legislation is less formal and enforcement is weak as compared to Tasmania. Therefore, there is no standard or regulated community engagement process for protected area management. However, since almost all resource owning communities are directly dependent on their land and sea for daily livelihood, community involvement in conservation initiatives is greatly valued.

The general engagement process identified from this study (Figures 9 & 10) indicates that initiation of community based conservation projects are agreed upon by landowning communities and resource owners through an established committee or association. A community request or proposal is then presented to an identified NGO and the government. This is then followed by initial assessment, site selection and feasibility analysis through either a government-NGO partnership or sole NGO support. Next, actual community engagement through training workshops and meetings is facilitated whereby the public is given an opportunity to design and plan a management agreement or strategy. The outcome of such a public participation process is the formulation of a Community Management Plan or Agreement which is achieved through collective inputs from both community people and expertise input from support organisations. Upon implementation, community involvement is encouraged through more sustainable resource use and ongoing adaptive management and project ownership.

## **5.5. Key informants' perception of case study management**

### **5.5.1. Mt Field National Park**

The Mt Field National Park is identified by Tasmanian key informants from this study as a success story for conservation management despite numerous challenges and limited resources. Key informants are defined from Mt Field Parks Rangers, conservation organisation representatives, and Friends of the Mt Field National Park.

### **5.5.2. Komarindi Conservation Area**

The Komarindi Conservation Area which was facilitated under the SPBCP is identified as a failed initiative by the Solomon Islands key informants in this study.

### **5.5.3. Factors that drive success or failure**

This study has determined from key informants that success or failure of conservation initiatives stem out of the following factors:

- a) *Social unrest and political instability* – Social unrest and political instability are key hindrances to conservation efforts. For example, the ethnic unrest and political instability in Solomon Islands from 1998 to 2003 had halted conservation efforts on the Komarindi Catchment Conservation Area.
- b) *Sustainability to projects* – The state or national government and other relevant authorities must support conservation initiatives or landowning communities with ongoing funding and expertise resources to guarantee the continuance of management in the long term. Conservation projects that are managed at a community level, which is prevalent in the Solomon Islands,

often failed due to lack of resources to maintain continuity after the end of conservation programmes or when government or NGOs withdrew their support.

- c) *Partnerships* – Good partnership between governments, NGOs, stakeholders and the communities is crucial to share costs and resources. Without proper partnership, conservation groups may duplicate the work of others in similar sites which would be detrimental considering funding limitations and ensuring a community's commitment to conservation.
- d) *Community dependence on natural resources* – In the case of Solomon Islands nearly all the rural communities which make up 85 percent of the country's total population are dependent on their natural resources for livelihood. In Tasmania, this may be of insignificance as peoples' survival is not entirely dependent on natural resources.
- e) *Preaching the right message* – Conservation efforts generate and use quantities of new information across diverse technical and administrative fields. There is great need for agencies to convey the right message to the public and not to raise false expectations.

## **5.6. Identified challenges to successful conservation**

Despite the significant enthusiasm amongst governments and conservation oriented organisations to advance the goals of environmental management, identified challenges that hinder conservation efforts are also enormous. In the case of Tasmania and



Solomon Islands there are similarities and differences in obstacles to successful conservation. These are outlined below:

**5.6.1. Similarities in challenges to conservation**

- a) *Inadequate funding* - Funding seems to be a real issue for conservation organisations and the governments in both Tasmania and the Solomon Islands. Tasmanian parks are better funded than conservation areas in the Solomon Islands, but this is still inadequate to maintain the facilities within parks and protected areas as well as achieving anticipated conservation outcomes. In the Solomon Islands, funding for conservation efforts is a significant challenge for the government and communities. As a result most of the existing initiatives throughout the country are spearheaded by local NGOs with international connections and networks, mostly with funding support from donors and conservation grants.
- b) *Under staffing* - In reality, staffing for conservation areas and parks in Tasmania and Solomon Islands is declining and inadequate to successfully fulfil the primary objectives of reserves and managed areas in the long term interests of conservation. For instance, the Mt Field National Park has less than five Park Rangers to manage activities within the park and associated reserves. In the Solomon Islands, most of the local NGO offices (e.g. CI and FSPI) that lead conservation efforts in several sites in the country consist of only 1-3 staff. Furthermore, the Environment and Conservation Division of the

national government lack enough personnel to review and draft legislation and undertake field visits. Staff development and training commitments are uncertain in the long term and recurrent funding to maintain staff expertise is limited.

- c) *Balancing conservation and recreation* – There is considerable challenge in both Tasmania and Solomon Islands to get an ideal balance between conservation and recreational activities including ecotourism. For example, in Tasmania the government is promoting the State as a tourism and bushwalking destination and exploring five star accommodation proposals in parks and reserves. Access into sensitive wilderness or natural fragile areas creates an inevitable impact, often even through efforts to protect the environment. However, without access support for conservation is difficult to foster, considering the rejuvenating effects of a wilderness experience in such an increasingly urbanised world.
- d) *Changes in management priorities and aims* - Much of the current conservation efforts are to manage the “status quo” as currently understood. This is regardless of the fact that there is more scientific background in Tasmania relative to the Solomon Islands.
- e) *Climate change* – Climate change is undeniably a huge challenge for conservation efforts in both Tasmania and the Solomon Islands. Unwanted variations in temperature, rainfall, carbon dioxide concentration, weather patterns, and sea level rise will

impede detrimental implications on protected areas. For example, climate change remnants in the last recent Ice Age is visible on the Mt Field landform.

#### **5.6.2. Differences in challenges to conservation**

##### **Tasmania:**

- a) *Accessing community project grants* – Difficulties were expressed in gaining access to community project grants for community landcare groups such as the Tasmania National Parks Association (TNPA), which actively seeks to preserve and expand Tasmania's national parks, and to ensure appropriate management of their natural and cultural values in the long term interests of conservation. Many community grants in Australia require projects with measurable outcomes while conservation efforts are ongoing and not a specific project (e.g. raising awareness and responding to management plans), so the results cannot be easily measured. Therefore, it cannot meet the criteria for most funding opportunities. The TNPA mostly relies on membership fees and goodwill donations to undertake its activities, thus their conservation vision is compromised.
- b) *Community volunteers* – Community landcare groups such as the TNPA and the "Friends of Mt Field" rely mainly on volunteers to support conservation activities such as awareness, or maintenance and repair of park facilities (e.g. huts and walking tracks). However, it is challenging to attract volunteers with needed skills and experience as people are often busy.

- c) *Becoming proactive* – Most of the conservation efforts in Tasmania, particularly by community landcare groups tend to be “reactive” rather than “proactive”. The acknowledged challenge is to acquire enough space (e.g. permanent office and staff resources) for bigger community input and public presentations.
- d) *Delivering maintenance materials into parks* – Most of the wilderness portions of the parks in Tasmania including Mt Field are not accessible by vehicles. While this favours the protection of natural areas, getting materials for facility repairs and maintenance into the park without damage to the environment is difficult unless through a hired helicopter, which could increase the cost of maintaining facilities.
- e) *Parks management obligations* – For most parks in Tasmania and Australia as a whole, other pressing challenges include how to manage visitors and tourists’ access to unique reserved sites (e.g. walkways) and World Heritage Areas; ecological life after bushfires; and changes in vegetation (e.g. invasive weeds) facilitated by feral animals.

**Solomon Islands:**

- a) *Customary land tenure system* – Land ownership tenure in Solomon Islands is bestowed on customary rights. This empowers landowning communities to make decisions on their natural resources. As a result, development operators such as logging or tourism capitalise on this loophole by dealing directly

and offering “quick cash” incentives to resource owners for environmental exploitation purposes. The competing issues and conflicting interests are observed to be a great challenge to successful conservation within the country often resulting in a split in community thinking and declined support for managed areas. However, frequent land disputes arising from the land tenure system can also favour conservation by prohibiting development activities in a region.

- b) *Lack of qualified personnel* – Solomon Islands do not have adequate qualified taxonomists, ecologists and environmental scientists to undertake baseline survey fieldwork on project sites. This is particularly challenging considering the paradigm shift to convey ownership and monitoring skills and information to rural communities, most of which are illiterate and primary school dropouts.
- c) *Cash flow implications* – Community people have a mindset that conservation NGOs and other stakeholders possess a lot of money to invest so they have very high expectations. Most communities in Solomon Islands do not entertain mere conservation ‘talks’ but need alternative livelihood ‘actions’ before their support for conservation can be guaranteed and their natural resources allocated for management. As a result conservation efforts often succeed in communities whose cash flow or economy base is ‘low’ because even little alternative livelihood support can be fully appreciated. High economy base

areas always have very high expectations for cash benefits and incentives.

- d) *Non-enforcement of legislation* – The guiding Environment Act 1998 has insufficient regulations to be fully enforceable. Hence it is difficult to punish individuals or companies that breach environmental management objectives. Also due to understaffing and inadequate funds the Environment and Conservation Division is unable to undertake regular checks on logging and mining operations throughout the country to determine legislation compliancy and adherence levels.
- e) *Duplication of conservation efforts* – Currently many non government organisations (NGOs) both locally and internationally are keen to advance conservation efforts in Solomon Islands with new agendas and approaches. However, this trend is likely to result in duplication of conservation at the same project site unless strong partnerships are forged amongst respective NGOs. For example, the Foundation of the Peoples of the South Pacific International (FSPI) through its network of the Solomon Islands Locally Managed Marine Area (SILMMA) has a project site with the communities on Marau Island, Guadalcanal. Recently, the Oxfam office in Honiara also showed conservation interests on Marau. This can also be seen for Bauro Highlands in Makira where the Conservation International Solomon Islands has an existing conservation project with the resource owners. Similarly, the WWF Solomon Islands program is

aspiring to undertake a forestry conservation project on that same island. Despite variations in conservation approaches, duplication can be dangerous particularly with the existing community mindset and high expectations for conservation incentives.

- f) *Sharing of information* – Conservation is a relatively new notion at its infant stage in the Solomon Islands thus sharing of information is crucial. Most successful conserved sites in the country are coordinated by local NGO offices that thrive mainly on grants and aid. With a rise in the number of conservation oriented groups in a small country like Solomon Islands there is increasing competition for available grants and aid. As a result, NGOs are reluctant to share vital background information and lessons learnt for respective projects sites whereby other groups can use in their proposals to acquire funding.
- g) *Linking communities to policy makers* – In the Solomon Islands there is disjointedness between the communities, provincial and national policy makers. Rural people who make up more than 85 percent of the country's population are ill-informed of how to press complaints or proceed to the right authorities, for example, when a logging company breaches the legislation. There is lack of capacity building and networking at all levels of society limiting the effective implementation of conservation frameworks by organisations.

- h) *Political influence* – While most provincial and national politicians are supportive of conservation efforts within the communities, there are a few that capitalise on conservation projects for their self political gain or use their influence to discourage community support for conservation initiatives.
- i) *Identifying true land/resource owners* – With the land tenure system in Solomon Islands enabling a piece of land to be owned by different community clans, it is very challenging to identify the true landowners for a conservation project. This process consumes a lot of valuable time that could be vested on proper planning for management plans or agreements. The common observation is that settlers tend to regard themselves as leaders of a community overriding and displacing the voice and identity of true landowners.
- j) *Timely support from other government ministries* – Officers from the Ministry of Environment, Conservation and Meteorology are keen to undertake field trips for either community awareness or development operations' checks. However, such enthusiasm is often inhibited by non-coherent and untimely support from other government ministries including the Ministry of Finance and the Ministry of Infrastructure Development. The process of raising funds for provincial field trips is very slow coupled with transportation constraints.



**6.1. Conservation issues**

As demonstrated by the general observations, some of the principal biodiversity conservation issues identified from this study for protected areas in Tasmania and Solomon Islands comprise climate change; invasive species; implications of access into wilderness and natural fragile areas; potential effects of interpretation of the history and cultural importance of national parks or protected areas; threat from agriculture, logging and mining developments; and loss of biodiversity due to natural and anthropogenic impacts as a result of direct human interaction and reliance on natural resources for food, traditional medicine, firewood, building materials, gardening, and income derived from natural resource products.

Most of the identified issues highlighted are to be expected as other research has reported similar findings. For instance, the Natural Resource Management Strategy for Southern Tasmania (NRM South, 2005) indicated that some of the key issues and threats to natural resource management in southern Tasmania include: (a) loss of native vegetation and habitat through land clearing, land and vegetation conversion, rural tree decline and dieback, and lack of regeneration; (b) climate change or sea level rise with associated impacts on native flora and fauna, coastal landforms and processes; (c) unsustainable land and water use practices, mismatch of land and water use, and land and water capability; (d) introduced flora species and diseases,

particularly weeds, introduced pest competitors, plant diseases (e.g. *Phytophthora cinnamomi*), and coastal and marine biodiversity decline as a result of introduced species; and (e) pest fauna species and diseases.

Other reported issues involved inadequate information to make ideal resource management decisions; land development including urban, tourism, and infrastructure; inappropriate fire frequency and/or intensity; and alteration of natural water flow or unsustainable water use (NRM South, 2005). The Tasmania Parks and Wildlife Service (2002) alluded that land managers face many issues including poaching native birds and animals for trading (e.g. snakes, birds, Tasmanian devils, and shearwaters); arson (illegally lighting bushfires); stealing timber for firewood; stealing specialty craft wood (e.g. Huon pine); stealing plants to sell; dumping kittens in bushland; harming wildlife; walking dogs in 'no dog' protected areas; and driving four-wheel vehicles off the roads and tracks.

In the Pacific Islands region, pressures described by Falkland (2002) are water quality degradation in surface water and groundwater catchments; poor legislation, policy and planning limitations; inadequate community education, awareness and participation; catchment management problems involving customary land ownership; and insufficient knowledge of island natural resources as pertinent conservation issues for freshwater and watershed resources.

Moreover, the desperate search by the Solomon Islands Government for export earnings often favours unsustainable short-term industries at the expense of long term production and threatens the natural resource base necessary to sustain the subsistence economy. For example, the need for income to participate in cash economy and the desire for economic development and basic social services coupled with a high population growth rate (about 2.8% per annum) has been driving much of the change in attitude to exploitation of natural resources. Large-scale commercial development projects with potential deleterious impacts on natural resources, such as mining, oil palm and logging, are favoured by the central government because they offer high rates of return with almost all of the investment and economic risk being borne by trans-national corporations. Other issues range from invasive species such as cane toads (*Bufo marinus*), weeds (e.g. *Meremia pelata*) and feral animals like rats and cats, to lowland forest clearing for shifting cultivation leading to reduction in soil fertility, lower crop yields and loss of biodiversity (WWF, 2005).

In the Solomon Islands, Lam and McDonald (2006) identified limited guidelines on management, and non-systematic approach to protected area planning; no regime for threatened species protection; gaps in coverage of legislation; lack of integrated land use planning; forestry activities incompatible with conservation use; and lack of research and information as pressing biodiversity issues.

## **6.2. Management objectives for conservation**

The general observations showed that despite differing approaches to conservation between Tasmania and Solomon Islands, both conservation area case studies seek to achieve similar management goals and objectives. The notable objectives were to preserve the natural and cultural values of national parks or protected areas in the long term interest of conservation; to enhance community awareness and public participation in national park or protected area planning and management; and to strengthen legislation for environmental conservation and parks.

These findings fall within management objectives embodied in the South Pacific Biodiversity Conservation Programme (SPBCP) for the Komarindi Conservation Area in Solomon Islands (Baines *et al.*, 2002), and the Mt Field National Park Management Plan (Tasmania Parks and Wildlife Service, 2002).

For instance, the underlying rationale for the SPBCP was to support community management of natural resources as a basis for sustainable livelihoods and economic development; and to avoid the costly environmental and economic mistakes that have occurred in other tropical islands elsewhere. Specifically the overall goal of the SPBCP was to develop strategies for the conservation of biodiversity by means of sustainable use of biological resources. This was anticipated to be achieved through the establishment of the Komarindi

Conservation Area demonstrating protection of biodiversity, ecological sustainable use of natural resources and community economic development; protecting terrestrial species that are threatened or endangered; improved awareness of the importance and means of conserving biological diversity; and improved capacity of and cooperation between different implementing agencies (SPBCP, 1993; Baines *et al.*, 2002).

Similarly, the purposes of reservation of national parks in Tasmania, as set out in the National Parks and Reserve Management Act 2002, are the protection and maintenance of the natural and cultural values of the area of land while providing for ecologically sustainable recreation consistent with conserving those values. Mount Field National Park is reserved for these purposes.

### **6.3. Management actions and outcomes**

Actions that had been undertaken to deal with the issues and meet the objectives varied between Tasmania and Solomon Islands. In the case of Mt Field National Park, identified management actions comprised fuel burning reduction, track work improvements, submissions on management plans, and raising public awareness on the importance of protected area planning and management.

Outcomes yielded include protection of fire sensitive plant communities from wildfires, improved bushwalker experience and an enhanced reputation for Tasmania as a bushwalking destination, more than 20 percent of the State being secured in parks and reserves,

and a wider community acceptance and appreciation of the importance of parks and reserves.

Identified actions pursued in the Solomon Islands consist of partnerships between different conservation oriented organisations, research coordination and community awareness, formulation of community management plans and agreements, strengthening of legislation and encouraging sustainability of conservation projects. These has resulted in the identification and management of new conservation sites, improved transfer of information to rural landowners thus increasing passion for conservation, community ownership of management plans for conservation areas, improved political will and commitment to strengthen relevant legislation, and establishment of alternative livelihood options.


The variance in management actions undertaken between Tasmania and Solomon Islands can be attributed to the different situation and experiences faced in the two case studies. For example, fuel burning reduction is crucial for Tasmania due to the considerable threat from wildfires to the State's parks and reserves (Hood, pers. com., 2008), which may affect fire sensitive native vegetation and vulnerable animal species (Tasmania Parks and Wildlife Service, 2002). Nevertheless fires aid various vegetation propagation and regeneration. Also track work improvement is critical to avoid damage to natural and cultural values from inappropriate visitor behaviour and access to wilderness areas.

Public submissions on management plans and raising public awareness are regulatory requirements under the State legislation for national parks.

On the other hand, partnership between different conservation groups and the government is needed in the Solomon Islands due to lack of expertise and financial resources (Govan *et al.*, 2006). As conservation is a relatively new notion, more research and community awareness is required to enable people to accept the norms of conservation (Aswani *et al.*, 2004). Formulation of community management plans and agreements by the resource owners themselves promote local ownership over a conservation initiative which is a driving factor to either success or failure in the Pacific Islands region (Govan *et al.*, 2008).

#### **6.4. Community engagement**

Observations from this study indicated that community input and engagement was useful to successful conservation in both Tasmania and Solomon Islands. Public participation was sought at many levels of management and administration for conservation. The general levels of participation, which can be adopted for Tasmania and Solomon Islands is summarised in Figure 11 by Govan *et al.*, (2008) based on earlier work by the NSW Government Planners.

Level of participation		Description
1. Fully active (highest)		Community members make decisions in partnership with implementing agency or groups and are committed to acting together.
2. Deciding together (higher)		Community members are empowered and facilitated in order to determine options and make decisions.
3. Consultation (moderate)		Community members are given a restricted choice and role in decision making.
4. Information collection (lower)		Community members are surveyed and results are analysed externally.
5. Passively informing (lowest)		Community members are informed of the situation or process.

**Figure 11: The ladder of general community participation (adapted from Govan *et al.*, 2008)**

Despite variances in the general process of community engagement as well as differences in the level of planning and management decision making, both case studies value public engagement as the core of best practice conservation. This is in line with other studies that advocated for enhanced community involvement. For instance, Barrow and Fabricius (2002) stated that protected areas cannot be viewed in isolation from the community and other stakeholders. This was attributed to the fact that protected areas are affected by human presence and activities.

The observations also showed that in Tasmania national parks are usually proposed and managed by the State Government while in the Solomon Islands conservation areas are initiated and co-managed by resource owning communities. Nevertheless both case studies embrace sustainable and recreational use with increasing interest in community involvement, which range from autonomous management by the community to some form of shared responsibility with state



agencies (Barber *et al.*, 2004; Borrini-Feyerabend, 2004). Unless protected areas address human concerns and gain the support of local people, they will not survive and continue to thrive for biodiversity conservation (Barrow and Fabricius, 2002; Govan *et al.*, 2008).

In Australia indigenous people hold land tenure over approximately 15 percent of the land mass (Thackway *et al.*, 1996) whilst for the Solomon Islands, rural resource owners and communities hold tenure over 85-90 percent of area (Vigus and Prakash, 2007). Therefore, indigenous knowledge is integral to natural resource management in protected areas (Worboys *et al.*, 2005). A best practice direction in protected area management is to view community engagement as a continuum, extending from full government control to full community control (PWCNT, 2002; Wells and McShane, 2004; DSE, 2005).

#### **6.5. Management perception of case studies**

The Mt Field National Park is perceived by this study as a success story of conservation management despite numerous challenges identified in the results. This can be attributed to the State's formalised legislation on national parks and reserves management along with other related guiding frameworks. Compared with Solomon Islands, the goals of management are more readily achieved in Tasmania.

On the contrary, the Komarindi Conservation Area is regarded by other studies as a failed initiative (Baines *et al.*, 2002; Hunnam, 2002).

The conservation project along with associated ecotourism activities were halted in 2000 during the ethnic unrest in Solomon Islands. Although the law and order situation in Solomon Islands is now back to normal the conservation project is still on hold indefinitely and the status is inactive. The failure may be attributed to several factors including little political commitment to continue the project, lack of funding to maintain the project after the end of the SPBCP, insufficient capacity building and transfer of information at the local community level, and unsatisfactory cooperation among respective landowning communities (Baines *et al.*, 2002).

#### **6.6. Challenges to conservation**

Qualitative information obtained from key informants in Tasmania and Solomon Islands which are outlined in the results showed that the common challenges to conservation in the two case studies include inadequate funding, under-staffing, how to balance conservation and recreation, climate change and management priorities. These findings are in line with other literature for Tasmania (Tasmania Parks and Wildlife Service, 2002; NRM South, 2005) and Solomon Islands (WWF, 2005; Lam and McDonald, 2006).

Specifically for Tasmania, identified challenges consist mainly of difficulties in accessing grants by community landcare groups, attracting community volunteers, becoming proactive rather than being reactive, and delivering maintenance materials into parks. These were slightly different from challenges that were outlined in the Mt

Field National Park Management Plan (Parks and Wildlife Service, 2002) which comprised bushfire management; pests, weeds and diseases; soil erosion; and visitor and management impacts including tourist activities, firewood, public convenience, and wastewater disposal.

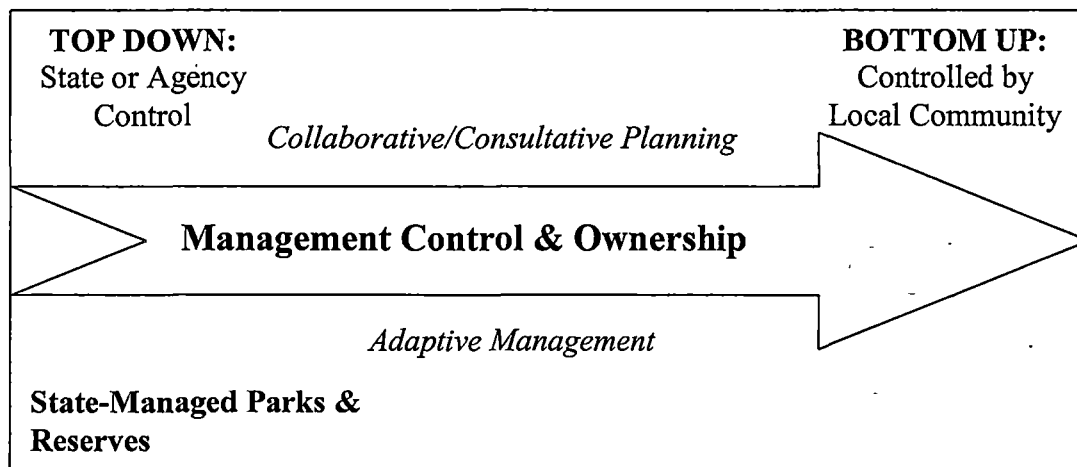
Jones (2007) contends that the key management challenges for the protection of north-west Tasmanian Aboriginal cultural heritage included conflicts in Aboriginal and Eurocentric conservation preferences; problematic role expectations and decision-making capacities of the community management body; and severe governance deficits in regulation and enforcement practices. For instance, campers, walkers, horse riders, hunters, fishers, sailors, off-road vehicle enthusiasts, and increasing numbers of inter-State and international visitors value established national parks and reserves as recreational sites (DPIWE, 2002; Jones, 2005) and opportunities for fishing, cattle agistment, marine vegetation harvesting and increasing ecotourism (Jones, 2007). This poses a challenge as indigenous resource owners value such landscape as a culturally significant place.

For the Solomon Islands, challenges include customary land ownership, lack of qualified personnel, cash flow implications, non enforcement of legislation, duplication of conservation efforts, reluctance to sharing information, political influence, determining true landowners, and timely support from other government departments.

Similar results were also reported by Lam and McDonald (2006) and Govan *et al.*, (2006).

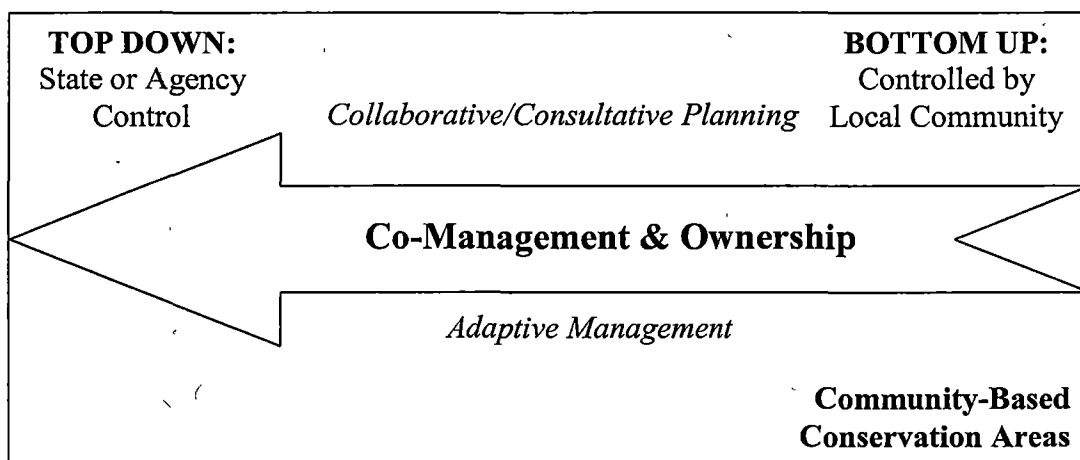
### 6.7. Conservation approaches and principles

There is no single approach that is ideal for conservation either in Tasmania or Solomon Islands. For Tasmania, the approach utilised was evolved with focus on participatory, collaborative and communicative planning. Nevertheless the approach is “top down” with overall management and decision making achieved at the State Government level, as displayed by Figure 12.



**Figure 12: Illustration of a “Top Down” State-controlled management**

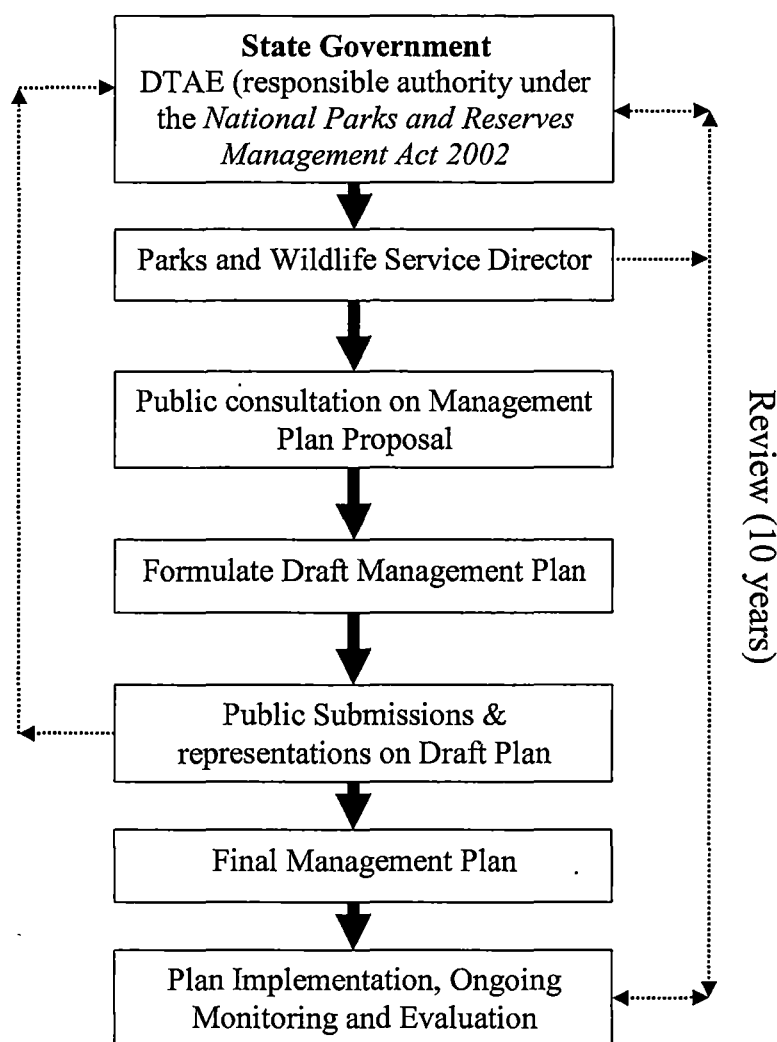
In the case of Solomon Islands, the way forward approach to ensure successful conservation is a “bottom up” co-managed paradigm shift that is collaborative and adaptive, empowering resource owning communities to take ownership and control over managed areas, as represented by Figure 13.



**Figure 13: Illustration of a “Bottom Up” community-based management**

### **6.7.1. Tasmania**

Figure 14 displays the general approach process used for parks and reserves management in Tasmania under the *National Parks and Reserves Management Act 2002* and the *Nature Conservation Act 2002*.



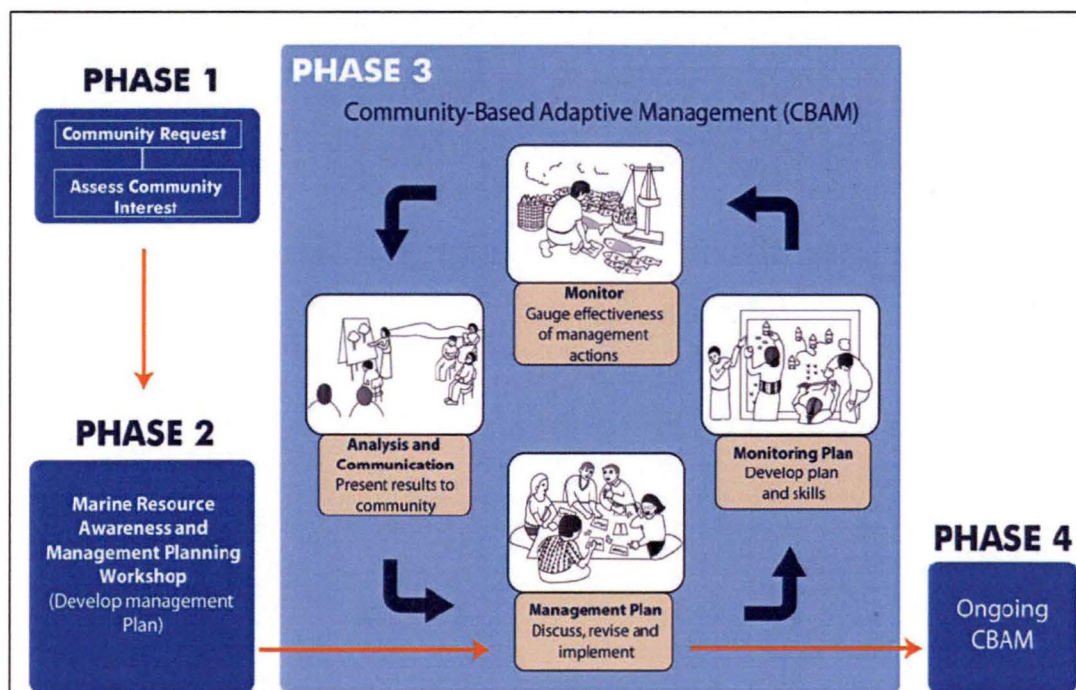
**Figure 14: The parks conservation approach used in Tasmania**

Explanatory notes on Figure 14 – The Tasmanian Department of Tourism, Arts and the Environment (DTAE) is the responsible authority under the *National Parks and Reserves Management Act 2002*. It gives power to the Parks and Wildlife Service Director to propose a management plan. The proposal is then advertised for submissions and representations from the public. From that a draft management plan is formulated and placed in a public exhibition for further comments and submissions. Upon satisfaction a final plan is produced which is then implemented after being gazetted. Ongoing

monitoring and evaluation is encouraged with a review period of 10 years.

### 6.7.2. Solomon Islands

For Solomon Islands, the most widely used models for conservation efforts comprise either or a mixture of the Locally Managed Marine Areas (LMMAs) approach (Figure 15) and the Community Conservation Agreement model widely advocated by the Conservation International (CI) for terrestrial conservation (Figure 16).

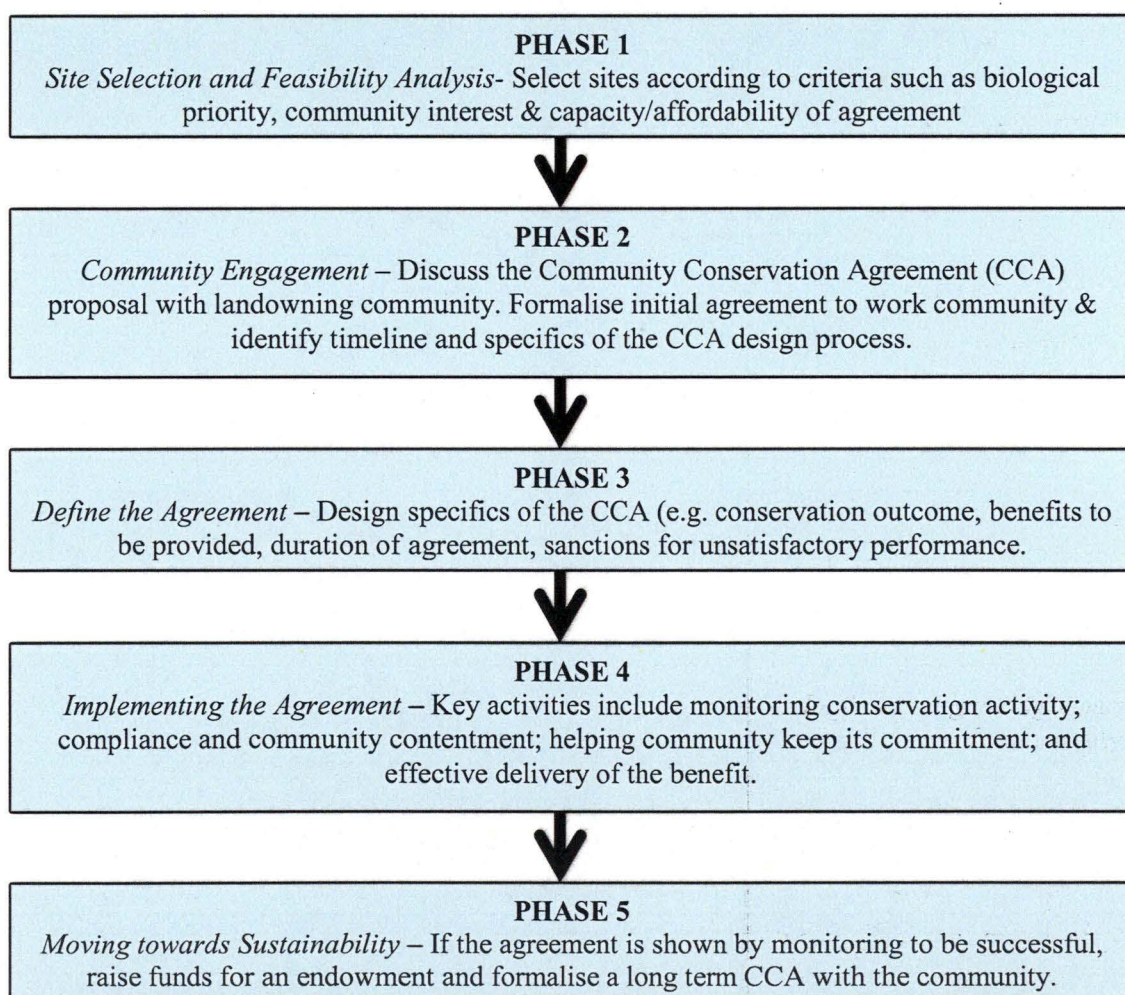


**Figure 15: The four-phase process for planning, designing and maintaining a locally managed area (adapted from Govan *et al.*, 2008)**

Figure 15 depicts a typical process for engaging communities in the assessment, planning, implementation, and monitoring of an LMMA model, mostly utilised for marine protected area management. Phase one entails initial assessment of community request; phase two involves the LMMA design and planning; phase three contains the implementation of the community-based adaptive management plan;



and phase four comprised ongoing community based adaptive management (CBAM). However, this four-phase path is not the only way LMMAs are designed and established; for example, some LMMAs are established without much emphasis given to phase one (initial assessment) or four (ongoing adaptive management). Phases three and four, which include ongoing community monitoring and analysis followed by discussion of what changes need to be made to the management plan based on the results are key aspects of the LMMA approach (Govan *et al.*, 2008). The most utilised tool for the LMMA model is the Participatory Learning and Action (PLA).



**Figure 16: The five-phase process for planning, designing and maintaining a Community Conservation Agreement (source: Pikacha, pers com: 2008)**



Figure 16 outlines the five phase planning, designing and implementing a Community Conservation Agreement for terrestrial conservation, a model promoted by the Conservation International office in Solomon Islands. Phase 1 comprises site selection and feasibility analysis according to criteria such as biological priority, community interest & capacity/affordability of agreement; phase 2 is the community engagement involving discussions of the Community Conservation Agreement (CCA) proposal with the landowning community and formalisation of an initial agreement to work with the community. Phase 3 includes designing the specifics of the CCA such as the conservation outcome, benefits to be provided, duration of agreement, and sanctions for unsatisfactory performance (Pikacha, pers. com., 2008).

Implementation of the agreement is represented by phase 4 with key activities including monitoring of conservation activity, compliance and community contentment, helping community keep its commitment, and effective delivery of the benefit. Phase 5 is moving towards sustainability whereby if the agreement is shown by monitoring to be successful, funds would be raised for an endowment and formalising a long term CCA with the community (Pikacha, pers. com., 2008).

## **6.8. Lessons and way forward for future conservation**

### **6.8.1. Lessons for Mt Field National Park (Tasmania)**

- 1) *Promote protected area benefits* – Despite the notion of conservation being widely embraced and formalised within the Tasmanian community as highlighted in the results of this study, the real benefits of protected area management need to be clearly seen by community leaders. For example, there is more community involvement and ownership of recent conservation initiatives in the Solomon Islands relative to Tasmania in the absence of strong legislation. There are ample studies that demonstrate the economic, climate, and health benefits of retained and well managed wilderness areas (Minchin, 1989; Kirkpatrick *et al.*, 1995; Tasmania Parks and Wildlife Service, 2002 & 2003; NRM South, 2005). It is no coincidence that these benefits are interconnected. However, this poses a difficult challenge for the society to come to grips with, because many institutions both cultural and economic, are compartmentalised and do not operate in a holistic manner. So the ideal action is to pursue an integrated and holistic approach to conservation at a more proactive level.
- 2) *Community participation* – Public participation should be treated by all sectors of the society as the core and central theme of any conservation proposal. Inherent to management of national parks and reserves in Tasmania is the concept of “active and meaningful participation” from the community and other

stakeholders in resource management and conservation decision making. The levels at which public participation is sought for management plans under the *National Parks and Reserves Management Act 2002* are sufficient due to strong guiding legislative frameworks but it lacks direct community ownership and decision making powers. A possible way forward is to enhance the statutory levels of community engagement and explore power sharing between the State and the community stakeholders in terms of decision making and for co-management purposes. It is generally agreed that through a participatory process, the people and groups involved will participate at varying levels and/or at different stages in the process. The importance of community engagement must be treasured and promoted extensively to the wider community even to the extent of empowering community landcare groups through government support and recognition (Worboys *et al.*, 2005).

- 3) *Political commitment* – Political leaders and governing authorities throughout Tasmania must be fully committed to the primary goal of protected area management in the long term interest of conservation. It was acknowledged in the results that despite advancing efforts to manage increasing parks and reserves throughout the State, funding and staffing were identified as limitations to conservation. Therefore funding must be increased to support facility maintenance and repairs in

national parks and reserves; to promote community awareness and participation; to enhance staff development and capacity building within parks; to support bushfire and weed management; and to strengthen the sustainability of existing and new parks and reserves with the intent of maintaining wilderness experiences.

- 4) *Redirecting management priorities* – Key informants for Mt Field National Park have stressed that most of the current conservation priorities and objectives in Tasmania are to manage the status quo. For example, most management priorities are aimed at protecting identified flora and fauna of high community value and others that are being threatened, whilst maintaining cultural heritage and allowing for recreational usage. There is great need for conservation to go beyond managing the status quo, considering the potential threats from climate change, pollution, and invasive species. The ideal goal is to conserve as diverse a range of plant and animal communities as possible without regard to selective management.
- 5) *Conservation and tourism* – Community landcare groups such as the Tasmania National Parks Association are increasingly concerned with the potential effects of tourism on conservation efforts. With an influx of inter-state and international visitors to the State, the government is promoting parks and reserves as a mechanism to attract tourists and local recreational users. This

transpired through increased State funding for the tourism sector and promoting the State as a bushwalking, skiing and camping destination. Recently, the State explored a proposal from a renowned entrepreneur for a five star accommodation in a reserved area as a means of encouraging tourism and conservation, simultaneously. Tourism contributes significantly to the State Government's revenue. However, access into sensitive wilderness areas may create a deleterious impact, often even through efforts to protect the environment or in ways that are perceived as safe. Therefore, the government must be cautious of the potential effects from ecotourism and five star accommodation projects within protected areas, and must strive to maintain 'conservation' as the primary objective of national parks and reserves.

- 6) *Community grants and landcare groups* – Accessibility to community project grants within the State and even Australia as a whole was identified by the Tasmania National Parks Association as a huge challenge to fulfilling their advocacy and awareness responsibilities. Advocacy activities undertaken by community landcare groups (e.g. Tasmania National Parks Association etc) such as raising awareness and responding to management plans are ongoing and cannot be easily measured. This makes it difficult to be eligible for most funding grants that require projects with a measurable outcome. As a result such groups only operate on membership fees and donations which

are insufficient for continuous conservation oriented activities and programs. This needs to be taken seriously by respective governing authorities if the public voice and opinions on issues affecting Tasmania's national parks and reserves are to be encouraged and respected. The government or other grant donors may need to explore options whereby community conservation grants with relaxed criteria, which suits ongoing conservation activities, are made available to charitable and community landcare organisations.

#### **6.8.2. Lessons for Solomon Islands**

The results indicated that rural communities in the Solomon Islands are inter-twined and connected to their natural resources (e.g. land and sea) for survival and cultural sustenance. Thus, assisting communities in meeting their aspirations ensures their engagement and provides the best opportunity for attaining livelihood, natural resource management and conservation goals. Support agencies must be flexible in their work with communities, sensitive to their needs and aspirations and willing to support the process with patience. The government should capitalise on the particular strengths of communities in terms of local governance and knowledge of their resources (Govan *et al.*, 2006). Some of the key lessons and way forward for conservation efforts in Solomon Islands are as follows:

- a) *Capacity building at the community level* - One of identified reasons why the Komarindi Conservation Area project failed was attributed to insufficient capacity building and transfer of

information at the local community level resulting in unsatisfactory cooperation among respective landowning communities (Baines *et al.*, 2002). Therefore, priority needs to be given to building skills at the community level and of the extension staff who work directly with them. Individuals in local resource owning and resource using communities should be the primary targets for training and skills building in the facilitation process towards sustainable resource use and management (Govan *et al.*, 2006). Even though it is challenging for conservation agencies to bridge donor requirements and procedures with rural community priorities and needs, it is of uttermost importance to consider the issues of ownership and enhanced participation.

A way forward is to put as much effort as required into enabling local communities to develop and run the project activities for themselves, as completely as possible. The benefit is in the learning and capacity building, which come from the experience of doing and must accrue to the local community, not urban-based agents (Hunnam, 2002). Similarly, the roles and responsibilities and possible commitments to the community management plan must be clearly delineated to achieve successful conservation.

- b) *Change people's perception of 'conservation'* – Conservation Coordinators interviewed in the Solomon Islands agreed that

“conservation” is a western term introduced recently in the Solomon Islands, which is yet to be widely embraced by the society. For instance, options to conserving biodiversity are to stop its use, or to use it in ways that do not degrade its natural values (Hunnam, 2002). Solomon Islanders live within the environment and depend on their natural resources for survival. Therefore, community needs and conservation must be balanced by options such as protecting specific species or forest types; or limiting the types of exploitation, their timing, intensity, and techniques used; whilst allowing the resource owners a right to usage but at a sustainable level that is ecologically viable (Aswani *et al.*, 2004; Govan *et al.*, 2006). There is need to integrate a local term for the notion of ‘conservation’ that people can easily accept and relate to as well as witnessing its value on the environment in terms of achieving conservation outcomes.

- c) *Creation of conservation trust fund* – Lack of funding to sustain and expand community based conservation areas throughout Solomon Islands was highlighted in the results as a major challenge that often results in the failure of management efforts. A possible approach to address this is to identify areas of high biodiversity values and explore the establishment of a ‘trust fund’ to assist cover operating costs for conservation expenses including Rangers, protected area facilities and management costs. Such trust fund can be invested offshore under the resource owners’ association or the leading NGO. Annual



maturity benefits of the investment can be utilised to meet overhead operating costs whilst ensuring finance availability for life. This will alleviate the efforts conservation managers expend to fundraise annually thus divert attention to raising funds for livelihood projects or extending conservation to other islands or sites in the country. A conservation trust fund is likely to keep peoples' hands off from exploiting their natural resources.

- d) *Partnerships* – The threat of duplicating conservation efforts at similar project sites where other NGOs are already working has been identified in the results as a key challenge, particularly when there is increasing interest on Solomon Islands from new conservation groups with new ideas and approaches. If this is overlooked, it is likely that there would be unwanted competition between conservation NGOs thus; communities could be driven out of conservation goals and intentions. Hence, innovative partnerships between the government, NGOs and communities are vital in terms of sharing resources and expertise, and to avoid duplication of conservation efforts. The government must be fully committed to support conservation NGOs with their initiatives. The majority of promising initiatives in the country are based on partnerships between government staff, NGOs and communities. These partnerships need to be sensitive to the needs and constraints of respective parties and play on their respective strengths (Hunnam, 2002; Govan *et al.*, 2006).

e) *Establish a conservation NGO secretariat* – Key informants from the Solomon Islands have stated that a local Conservation NGO Advocacy Group has been established on an informal and voluntary basis and meets at least once a month in Honiara. This needs to be strengthened and empowered in order for the government to create a coordinated working relationship with conservation NGOs. It was also acknowledged in the findings that many conservation efforts in Solomon Islands are not well coordinated and formalised. An ideal approach to resolve this challenge is for the national government to sanction the establishment of a “secretariat” office for all registered conservation NGOs within the country either within the Ministry of Environment, Conservation and Meteorology or the Ministry of Fisheries in order to enhance coherency, consistency, and cooperation with the government; and a strong bloc of voice for conservation issues as well as future initiatives in the country. The government’s action to produce corporate plans for the respective ministries is a positive starting point. However, it is important for the government, NGOs and communities to work towards defining a shared national vision of the objectives and strategy for achieving these. These shared visions provide a useful tool for countering models or visions that have been imposed by external agencies without much success (Govan *et al.*, 2006).

- f) *National networking* – It was expressed in the results that there is disjointedness between the communities, provincial and national policy makers. Rural people who make up more than 85 percent of the country's population are ill-informed of how to press complaints or proceed to the right authorities. Therefore, proper national networking is important for conservation efforts. Supporting networks at the national level is an effective tool for building in-country capacity and tailoring national approaches. This sort of networking requires investments from all parties, and support from the highest levels. (Hunnam, 2002; Aswani *et al.*, 2004; Govan *et al.*, 2006). This could also imply that increased funding commitment by the government and donors is required to support staff development and capacity building; community awareness on the roles of the respective government ministries; timely delivery of funds and transportation needs for provincial field trips and development operation checks. In addition, regional peer to peer exchanges and opportunities for sharing experiences should also be encouraged in creating support networks and sharing lessons learned.
- g) *Alternative livelihood options* – Conservation officers interviewed in the Solomon Islands for this study (Hurutarau, Pikacha, Wale, Manioli, pers com., 2008) agreed that communities possess strong intrinsic connectivity and dependency on the natural environment for survival. Hence, if local communities are to forfeit exploiting their resources, some form of alternative

livelihood has to be furnished. Similarly, it is unrealistic to expect a community-based conservation project in Solomon Islands to succeed with only short-term expert guidance and financial support. Solomon Islanders have developmental aspirations that cannot be ignored. The ideal approach must be to ensure that conservation is shaped and recognised as the cornerstone of sustainable development and is therefore an important valid business for government and private agencies concerned with economic and social development and the use of natural resources (Hunnam, 2002). Income generating initiatives (e.g. coconut oil press and ecotourism) and infrastructural assistance to communities (e.g. clinics and schools) must be pursued while the community contributes free labour and local materials. However, continued environmental education is vital in order to move beyond the capital dependency created by financial incentives as components of conservation projects (Aswani *et al.*, 2004).

- h) *Sustainability beyond a 'programme' timeline* – Lack of programme continuity after the end of a 'programme' timeline was perceived in the results as a principal contributing factor to failed conservation sites (e.g. Komarindi) throughout Solomon Islands. By definition, a 'programme' is not intended to be perpetual. A typical programme is an intensive and relatively short term intervention aimed at a particular problem situation, supported by an out of the ordinary level of resources. Therefore,

the best way to ensure sustainability of a conservation project is to back it up with a realistic long term overall strategy. As a result, the solutions or changes introduced by a programme must be appropriate and desirable to sustain. Programmes must not use their substantial financial and human resources to introduce measures that are too expensive or sophisticated to be maintained beyond the programme life, given the limited resources available locally (Hunnam, 2002). In addition, a programme should consider not only key biological and ecological parameters but also, as noted by Christie *et al.* (2003), the characteristics and behaviours of all the stakeholders involved, the desires of different stakeholders, and the stakeholders' knowledge.

- i) *Skills and curricula* – Lack of qualified personnel mainly in the fields of conservation biology and environmental management was stressed as an eminent challenge. Therefore, it is important to increase the country's qualified manpower in the fields of conservation and environmental management, particularly with field officers so that the knowledge can be passed to resource owning communities. Sufficient postgraduate scholarships and training opportunities must be made available to capable conservation and environmental personnel. Nevertheless, the appropriate skills required to facilitate and support community-based management processes are not necessarily developed through formal training available to the country, but can also be

built through other processes such as informal training, networking, exchanges, and pilot projects (Govan *et al.*, 2006).

- j) *Strengthen legislation* – Inconsistent and weak environmental management legislation was identified as the cornerstone of alarming exploitation rates of forest harvesting and slow progress of conservation efforts in the Solomon Islands. Hence, the national government must be fully committed and supportive of conservation efforts in the country by catalysing the establishment of relevant legislation and regulations to ensure enforcement of the Environment Act 1998 as well as other related Acts and Strategies. Appropriate use of provincial and national legislation should be strengthened (Govan *et al.*, 2006). In addition, priority attention is required to the development of effective policies, laws and programs that support and strengthen the rights of customary resource owners and the role as custodians of local natural resources. Customary land and sea tenure should be perceived as a foundation on which to build conservation and sustainable development in the Solomon Islands, rather than an obstacle.

The general observations of this study indicated that the key biodiversity conservation issues facing protected area management at the Mt Field National Park in Tasmania and Komarindi Conservation Area in Solomon Islands included climate change; invasive species; implications of access into wilderness and natural fragile areas; potential effects of interpretation of the history and cultural importance of national parks or protected areas; threat from agriculture, logging and mining developments; and loss of biodiversity due to natural and anthropogenic impacts as a result of direct human interaction and reliance on natural resources for food, traditional medicine, firewood, building materials, gardening, and income derived from natural resource products.

Despite differing approaches to conservation between Tasmania and Solomon Islands, it was observed that both Mt Field National Park and Komarindi Conservation Area seek to achieve similar management goals and objectives. The notable objectives were to preserve the natural and cultural values of national parks or protected areas in the long term interest of conservation; to enhance community awareness and public participation in national park or protected area planning and management; and to strengthen legislation for environmental conservation and parks.

Results also showed that identified management actions pursued for Mt Field National Park comprised fuel burning reduction, track work improvements, submissions on management plans, and raising public awareness on the importance of protected area planning and management. Outcomes yielded included protection of fire sensitive plant communities from wildfires, improved bushwalker experience and an enhanced reputation for Tasmania as a bushwalking destination, more than 20 percent of the State being secured in parks and reserves, and a wider community acceptance and appreciation of the importance of parks and reserves.

In the Solomon Islands, identified management actions consisted of partnerships between different conservation oriented organisations, research coordination and community awareness, formulation of community management plans and agreements, strengthening of legislation and encouraging sustainability of conservation projects. Outcomes ranged from the identification and management of new conservation sites, improved transfer of information to rural landowners thus increasing passion for conservation, community ownership of management plans for conservation areas, improved political will and commitment to strengthen relevant legislation, to the establishment of alternative livelihood options.

Community engagement was acknowledged in this study as the core of successful conservation in both Tasmania and Solomon Islands



although at different levels of participation. Modes of public participation and community awareness vary for different situations and project sites but composed mainly of public meetings, training workshops, surveys, practical monitoring trainings, public awareness stalls, slide shows and film nights, brochures and newsletter bulletins, public lectures and symposiums, and facilitated bushwalks.

In terms of key informants' perception of management for the two selected case studies, the Mt Field National Park was perceived as a success story of conservation management despite numerous challenges. This was attributed to the State's formalised legislation on national parks and reserves management and little direct dependence on local natural resources for survival, except for recreational uses. The Komarindi Conservation Area was regarded as a failed initiative. The failure was attributed to several factors including little political commitment to continue the project, lack of funding to maintain the project after the end of the SPBCP, insufficient capacity building and transfer of information at the local community level, and unsatisfactory cooperation among respective landowning communities.

This study also identified pertinent challenges that hinder conservation efforts in Tasmania and Solomon Islands comprising inadequate funding, under staffing, changes in management priorities and aims, climate change, accessibility to grants, attracting community volunteers, becoming proactive, delivering maintenance

materials into parks, and management obligations. Specific challenges for Solomon Islands included customary land ownership tenure system, lack of qualified personnel, cash flow implications, non enforcement of legislation, duplication of conservation efforts, sharing of information and experience, political influence, and timely support from other government ministries.

Finally principal lessons that can be explored for future conservation initiatives are subdivided under Tasmania and Solomon Islands. For Tasmania; lessons included promoting protected area benefits, enhancing community participation, political commitment, redirecting management priorities, and supporting community landcare groups. Lessons for Solomon Islands comprised capacity building at the community level, changing people's perception of conservation, creation of conservation trust funds, partnerships, need for conservation NGO secretariat, enhanced networking, alternative livelihood options, project sustainability, improving skills and curricular, and strengthening the role of legislation. However, there is need for further detailed research, particularly in Solomon Islands to yield sufficient scientific background relative to Tasmania that can enable a useful comparative study.

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## **Appendix A: Sample of Questionnaire**

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### *Comparative study of successful conservation for Mt Field National Park (Tasmania) and Komarindi Conservation Area (Solomon Islands)*

- a) Can you tell me about yourself in terms of your position and relevant responsibilities that may relate to this topic?
- b) Were you involved in any way, either directly or indirectly, in the conservation efforts at the Mt Field National Park (Tasmania), and/or, Komarindi Conservation Area (Solomon Islands)?
- c) In your view what are some of the biodiversity conservation issues that face us today?
- d) What are the management objectives or goals of conservation efforts?
- e) What actions have been undertaken to deal with the issue/meet the objectives?
- f) What are the outcomes from such actions?
- g) What is your understanding of the role of relevant national/state legislation, if any, in relation to conservation in Tasmania, and/or, Solomon Islands?
- h) How do you value community participation/engagement in conservation? What methods are used to engage the community? At what levels/stages of conservation projects is community input required?
- i) What are the major challenges to successful conservation in Tasmania (Mt Field National Park), and/or, Solomon Islands (Komarindi Conservation Area)?
- j) In your opinion, what are the factors that drive success or failure in regard to conservation?
- k) What are your recommendations or proposed ideal approach or a mixture of approaches to future conservation efforts?

***Thank you very much for your time in answering this questionnaire***

## **Appendix B: Information Sheet on Research Project**

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UNIVERSITY OF TASMANIA  
School of Geography and Environmental Studies  
May 2008

### **INFORMATION ON THE RESEARCH PROJECT:**

#### **Comparative study of successful conservation for Mt Field National Park (Tasmania) and Komarindi Conservation Area (Solomon Islands)**

You are being invited to participate in this study, either as a Parks manager, ranger, officer, conservationist, community representative or appropriate stakeholder involved in the conservation work at Mt Field National Park (Tasmania) or Komarindi Conservation Area (Solomon Islands). This project is being undertaken as part of the requirements of **Exsley Taloiburi's** Master of Environmental Management at the University of Tasmania.

This Information Sheet gives you the details of the research and persons to contact for further information and or any concerns you may have about the conduct of the research.

#### ***What this project is about***

The main focus of this project is to compare the pertinent challenges and implications of successful conservation for the Mt Field National Park in Tasmania and Komarindi Conservation Area, Solomon Islands.

It is crucial to understand that successful conservation requires wider strategic planning that exceeds pre-conceived and conventional approaches, particularly in varying geographical protected areas that are associated with different cultures, taboos, level of community participation, and political commitment. A comparative study between a typical protected area in Tasmania and Solomon Islands could uncover similarities and differences as well as challenges and implications of successful conservation. This could future conservation efforts in the Pacific. The intention of this proposed research project is to enhance our understanding of the challenges and implications of successful conservation for the Mount Field National Park in Tasmania and the Komarindi Conservation Area in Solomon Islands.

#### ***What your participation involves***

Participation in this research will involve an interview comprising 10 questions about protected area conservation, with a focus on Mt Field National Park and Komarindi Conservation Area. The interview will take approximately 30-45 minutes. With your permission the interview will be tape-recorded. If you would rather the interview was not recorded please tell the interviewer and he will take written notes instead. If you wish, you will have the opportunity to review the notes or transcription of the tape recording. You can also ask the researcher to provide you with a copy of these documents.

#### ***Consent to participate***

We have already contacted you by phone and/or email to see if you are willing to participate in the research, and have made an appointment for an interview at your office. Participation in this study is entirely voluntary, and

is evidenced by signing a consent form. In any case, however, you may decline to answer any question, or withdraw at any time from the study. If you decide to withdraw, you may also ask for any information so far supplied to be returned to you.

### ***Confidentiality and anonymity***

The researchers will treat the information you provide to us as confidential. Also, they will ensure that you are not identifiable in any documents reporting the results of interviews. Although your comments may appear in the final report, to ensure anonymity they will not be linked with your name. If after the interview you have concerns about your comments, you are encouraged to contact the interviewer should you wish them edited or removed from the interview notes.

The information you supply via the interview process will be retained and stored securely on University of Tasmania premises for a period of five years, after which it will be destroyed.

### ***Contact Persons***

The research team consists of Dr Joanna Ellison (Chief Investigator), Deputy Chair of NRM North, Senior Lecturer in Environmental Science, School of Geography and Environmental Studies, University of Tasmania, and Exsley Taloiburi (Researcher), Master of Environmental Management candidate. If you have any queries regarding this letter or the project, please contact Joanna Ellison (ph. +61 3 6324 3834; [Joanna.Ellison@utas.edu.au](mailto:Joanna.Ellison@utas.edu.au)) or Exsley Taloiburi (ph. +61 437642032, +677 84186; [exsleyt@utas.edu.au](mailto:exsleyt@utas.edu.au)).

The result of this research should be available sometime after October 2008. If you would like a copy of the result of this research project please contact Exsley Taloiburi (by phone or by email).

### ***Ethics Approval and Contacts***

This project has received approval from the Human Research Ethics Committee (Tasmania) Network. If you have any concerns about the conduct of the research or any concerns of an ethical nature, you may contact Dr Frances Martin (Chair of the Social Sciences Human Research Ethics Committee) or Marilyn Knott (Ethics Officer, Social Science Research Services) on phone +61 3 6226 2764; [Marilyn.Knott@utas.edu.au](mailto:Marilyn.Knott@utas.edu.au).

Thank you for your interest in this project.

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**Dr Joanna Ellison**  
*Chief Investigator*

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**Exsley Taloiburi**  
*Researcher*

## **Appendix C: Consent Form**

### **Comparative study of successful conservation for Mt Field National Park (Tasmania) and Komarindi Conservation Area (Solomon Islands)**

1. I have read and understood the 'Information Sheet' for this study.
2. The nature and possible effects of the study have been explained to me.
3. I understand that the study involves the following procedure: a face-to-face interview of about 30-45 minutes duration, to be tape-recorded for transcription. The questions will concern the challenges and implications of successful conservation for Mt Field National Park (Tasmania), and/or, Komarindi Conservation Area (Solomon Islands), as well as my experience in this area.
4. I understand that there will be no risk above the everyday type by participating in this research, as any information I provide will be treated as confidential and my anonymity will be protected.
5. I understand that all research data will be securely stored on the University of Tasmania premises for a period of 5 years. The data will be destroyed after 5 years.
6. Any questions that I have asked have been answered to my satisfaction.
7. I agree the research data gathered for the study may be published provided that I cannot be identified as a participant.
8. I understand that my identity will be kept confidential and that any information I supply to the researcher(s) will be used only for the purposes of the research.
9. I agree to participate in this investigation and understand that I may withdraw at any time without any effect, and if I so wish may request that any information I have supplied be withdrawn from the research.  
Name of participant.....  
Signature of participant.....Date.....
10. I have explained this project and the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation.

Name of researcher.....

Signature of researcher.....Date.....