Demonstration Case 1: wet tropics management plan
1.1 Introduction and purpose

This demonstration case shows how the Program identifies and protects the Wet Tropics of Queensland World Heritage Area (Wet Tropics WHA) including its Outstanding Universal Value (OUV) and its integrity. Program measures to avoid, mitigate and enhance the OUV of the Wet Tropics WHA are also described within the demonstration case.

The Wet Tropics WHA was inscribed on the World Heritage List on 9 December 1988 on the basis of all four natural heritage criteria. The Wet Tropics WHA is mostly tropical rainforest. This stunningly beautiful area is important for its rich and unique biodiversity and record of the ecological and evolutionary processes that shaped the flora and fauna of Australia. All of Australia’s unique marsupials and most of the other animals originated in rainforest ecosystems, and their closest surviving relatives occur in the Wet Tropics. The Wet Tropics WHA extends from just south of Cooktown to north of Townsville. It has a common boundary with the GBRWHHA along a considerable part of its length (Figure 1.1 1).

The two key components of the Program that have been established to protect and manage the Wet Tropics WHA are the Wet Tropics World Heritage Protection and Management Act 1993 (the Wet Tropics Act), and the Wet Tropics Management Plan 1998 (the Wet Tropics Plan). This demonstration case will focus on these specific Program components along with the Wet Tropics Conservation Strategy 2004.
The Wet Tropics Act establishes the Wet Tropics Management Authority (WTMA) to ensure that Australia’s obligation under the World Heritage Convention in relation to the Wet Tropics WHA is met. Under this Act, the WTMA has prepared the Wet Tropics Plan to protect the Wet Tropics WHA through regulation of activities that have the potential to impact on the Areas OUV and its integrity. WTMA’s Wet Tropics Conservation Strategy 2004 identifies priority actions for conserving and rehabilitating the Wet Tropics WHA, including actions to mitigate impacts of invasive species and climate change.

1.1.1 Wet Tropics of Queensland World Heritage Area and its Outstanding Universal Value

As part of their definition of World Heritage, the Operational Guidelines for Implementing World Heritage Convention 2005 define OUV as: ‘Outstanding Universal Value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole[1].’

1.1.1.1 Criterion

The Wet Tropics WHA was inscribed on the World Heritage List on 9 December 1988 on the basis of all four natural heritage criteria. The four natural heritage criteria (vii, viii, ix, x) relating to OUV that the Wet Tropics WHA meet are:

Criterion vii) The Wet Tropics exhibit exceptional natural beauty, with superlative scenic features highlighted by extensive sweeping forest vistas, wild rivers, waterfalls, rugged gorges and coastal scenery. This is particularly apparent between the Daintree River and Cedar Bay, where exceptional coastal scenery combines tropical rainforest and white sandy beaches with fringing offshore coral reefs. The winding channels of the Hinchinbrook Channel contain the most extensive mangroves in the region, providing a rich visual mosaic of rainforest and mangroves, and a terrestrial continuum with the Great Barrier Reef[2].

Criterion viii) The Wet Tropics contains one of the most complete and diverse living records of the major stages in the evolution of land plants, from the very first pteridophytes more than 200 million years ago to the evolution of seed-producing plants including the cone-bearing cycads and southern conifers (gymnosperms), followed by the flowering plants (angiosperms). As the Wet Tropics is the largest part of the entire Australasian region where rainforests have persisted continuously since Gondwanan times, its living flora, with the highest concentration of primitive, archaic and relict taxa known, is the closest modern-day counterpart for Gondwanan forests. In addition, all of Australia’s unique marsupials and most of its other animals originated in rainforest ecosystems, and the Wet Tropics still contains many of their closest surviving members. This makes it one of the most important living records of the history of marsupials as well as of songbirds.

Criterion ix) The Wet Tropics provides outstanding examples of significant ongoing ecological processes and biological evolution. As a centre of endemism for the region (second only to New Caledonia in the number of endemic genera per unit area), the Wet Tropics provides fundamental insights into evolutionary patterns both in isolation from and in interaction with other rainforests. Its tall, open forests on the drier western margins of the rainforest are also significant as part of an evolutionary continuum of rainforest and sclerophyll forests. Eucalypts, that now dominate the Australian landscape, are considered to have evolved from such rainforest stock and radiated into drier environments from the margins of closed forests.

The area supports an exceptionally high level of diversity of both flora and fauna, with over 3000 vascular plant species in 224 families, of which 576 species and 44 genera are endemic, including two endemic plant families. Vertebrate diversity and endemism are also very high, with 107 mammal species including 11 endemic species and two monotypic endemic genera. In terms of avifauna, there are 368 bird species, of which 11 species are endemic. For reptiles, there are 113 species of which 24 species are endemic, including three monotypic endemic genera. The diversity of amphibians includes 51 species of which 22 are endemic.

Criterion x) The Wet Tropics holds a largely intact flora and fauna with hundreds of endemic species restricted to the property, of which many are classified as threatened. The majority of plant species have restricted distributions, and many monotypic plant genera and several species of marsupials, frogs and reptiles have very restricted distributions either as isolated or disjunct populations, reflecting the refugial nature of the rainforests found in several locations. The diversity of the plant communities and animal habitats of the Wet Tropics is recognised as being the most floristically and structurally diverse in Australia and is also outstanding on a global scale. Among many emblematic species occurring in the property is the flightless Australian cassowary, one of the largest birds in the world.
In an Australian context, the Wet Tropics covers less than 0.2 per cent of Australia, but contains 30 per cent of the marsupial species, 60 per cent of bat species, 25 per cent of rodent species, 40 per cent of bird species, 30 per cent of frog species, 20 per cent of reptile species, 60 per cent of butterfly species, 65 per cent of fern species, 21 per cent of cycad species, 37 per cent of conifer species, 30 per cent of orchid species and 18 per cent of Australia’s vascular plant species. It is therefore of great scientific interest and of fundamental importance to conservation. Although the Wet Tropics is predominantly wet tropical rainforest, it is fringed and in a few places dissected by sclerophyll forests, woodlands, swamps and mangrove forests, adding to its diversity.

1.1.1.2 Integrity

At the time of its inscription the Wet Tropics WHA was identified as being an essentially intact ecosystem with the level of human impact low, especially when compared to other tropical forest regions, with 80 per cent of the estimated cover originally present at the time of the first European settlement remaining. A substantial amount of lowland forest, however, had been cleared for agricultural purposes. A number of human disturbances that cumulatively detracted from the overall natural integrity were scattered throughout the property and included infrastructure such as transmission lines, access roads, abandoned mine sites and more extensive areas which had been selectively logged. However the evaluation also noted that these disturbances accounted for only a small proportion of the total area of the property. In addition other local management issues that needed attention included invasions of exotic plants, animals and forest diseases.

A number of threatening processes impact on the overall integrity of the property including invasive species, fragmentation, and altered hydrological and fire regimes. In addition, a key emerging threat to the integrity of the property is climate change, as with even a small increase in temperature, large declines in the range size for almost every endemic vertebrate species confined to the property are predicted.

In St Petersburg in 2012, the World Heritage Committee adopted a retrospective Statement of OUV for the Wet Tropics WHA (Appendix E) which includes the following brief synthesis:

‘The Area stretches along the northeast coast of Australia for some 450 kilometres. Encompassing some 894,420 hectares of mostly tropical rainforest, this stunningly beautiful area is extremely important for its rich and unique biodiversity. It also presents an unparalleled record of the ecological and evolutionary processes that shaped the flora and fauna of Australia, containing the relicts of the great Gondwanan forest that covered Australia and part of Antarctica 50 to 100 million years ago. All of Australia’s unique marsupials and most of its other animals originated in rainforest ecosystems, and their closest surviving relatives occur in the Wet Tropics. These living relicts of the Gondwanan era and their subsequent diversification provide unique insights to the process of evolution in general. They also provide important information for the interpretation of fossils of plants and animals found elsewhere in Australia, and about the evolution of Australia’s sclerophyll flora and marsupial fauna in particular.’

‘The property supports tropical rainforests at their latitudinal and climatic limits, and unlike most other seasonal tropical evergreen equatorial forests, is subject to a dry season and to frequent cyclonic events. Many of the distinct features of the Wet Tropics relate to its extremely high but seasonal rainfall, diverse terrain and steep environmental gradients. In addition to its complex array of species and life forms, the Wet Tropics is also recognised as an area possessing outstanding scenic features, natural beauty and magnificent sweeping landscapes.’

1.1.2 Tenures and activities in the Wet Tropics World Heritage Area

World Heritage listing does not affect land ownership. The Area comprises a variety of land tenures including protected areas, state forest, unallocated state land, freehold and leasehold. There are also a number of reserves associated with community services infrastructure such as transport and energy supply corridors and water supply infrastructure. Following cessation of logging after World Heritage listing, nature-based tourism has become the main industry associated with the Wet Tropics WHA. Research in 2007 estimates tourism in the Wet Tropics WHA generates in the order of $430 million per annum. The significance and use of the Wet Tropics WHA as a World Heritage ‘learning landscape’, an initiative about creating, sharing and applying collective knowledge about the Wet Tropics WHA, is also becoming increasingly recognised internationally by research institutions and scientists.
1.1.3 Wet Tropics legislation

Under the Wet Tropics Act, the Queensland Parliament ‘recognises that Australia’s obligation under the World Heritage Convention is to ensure the protection, conservation, presentation, rehabilitation, and transmission to future generations, of the natural heritage values of the Area’. Under the Wet Tropics Act, it is also ‘the intention of the Parliament that the Area should be established and maintained as a World Heritage Area of the highest standard’. Four key elements under the Wet Tropics Act in relation to identification and protection of the OUV and integrity of the Area are:

- the establishment of the WTMA, its Board and its functions in relation to protection and management of the Wet Tropics WHA
- the requirement for the WTMA to perform its functions in a way that is consistent with the protection of the Wet Tropics WHA’s natural heritage values
- the requirement for the preparation and administration of a statutory management plan, the Wet Tropics Management Plan 1998 (the Wet Tropics Plan)
- the requirement to prepare an annual report on the state of the Wet Tropics WHA to both the Australian and the Queensland governments.

1.1.4 Supporting Program components

The Queensland Program includes the following instruments which are also relevant to the protection and management of the Wet Tropics WHA, especially with respect to activities outside the Wet Tropics WHA:

- Nature Conservation Act 1992
- Vegetation Management Act 1999
- Sustainable Planning Act 2009
- Far North Queensland Regional Plan 2009-2031
- Aboriginal Cultural Heritage Act 2003

1.2 Identification of Matters Of National Environmental Significance and important values that underpin the Wet Tropics WHAs OUV

One of the primary functions of the WTMA under the Wet Tropics Act is to ‘gather, research, analyse and disseminate information on the Area’. The WTMA plays a significant role in knowledge management and prepared the Retrospective Statement of OUV for the Wet Tropics WHA which was recently adopted by UNESCO. While the Statement of OUV describes the key natural heritage attributes that justify the Wet Tropics WHA’s listing under the four natural heritage criteria, the WTMA continues to collaborate with research institutions in identifying specific examples that demonstrate such World Heritage attributes. The WTMA’s Scientific Advisory Committee also provides advice to the WTMA in relation to matters associated with the Wet Tropics WHA’s OUV. In addition to the 2012 retrospective Statement of OUV for the Wet Tropics WHA that identifies the key values underpinning the OUV of the Bioregion, the WTMA’s Conservation Strategy 2004 identifies many of the other MNES within the Wet Tropics WHA. The WHA forms the core of the Wet Tropics Bioregion and consists of nine subregions based on differences in climate, geology and landform, all of which are represented in the WHA. The Bioregion (including coastal sections of the WHA) is directly adjacent to the GBRWHA.
The Wet Tropics Bioregion (0.26 per cent of Australia by area) contains a disproportionately rich variety of Australian animals and plants, many of which are endemic, rare or threatened (see Table 1.2.1). The Bioregion contains at least 685 vertebrate animal species. Invertebrate fauna is the richest in Australia and includes 230 butterfly species, 135 dung beetle species and 222 species of land snails. The ancient rainforests conserve an extraordinary diversity of plants including fern, cycad and conifer species which evolved over 200 million years ago. The Bioregion contains 13 of the 19 primitive flowering plant families, more than anywhere else in the world. The WHA itself (0.12 per cent of Australia by area) contains over 2,800 vascular plant species of which over 700 are restricted to the Area [6, 7].

Table 1.2.1 Wet Tropics Bioregion animals and plants as a percentage of Australian species

<table>
<thead>
<tr>
<th>Type</th>
<th>As percentage of Australian species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animals</td>
<td></td>
</tr>
<tr>
<td>Mammals</td>
<td>35</td>
</tr>
<tr>
<td>Birds</td>
<td>40</td>
</tr>
<tr>
<td>Reptiles</td>
<td>20</td>
</tr>
<tr>
<td>Frogs</td>
<td>29</td>
</tr>
<tr>
<td>Butterflies</td>
<td>58</td>
</tr>
<tr>
<td>Freshwater fish</td>
<td>42</td>
</tr>
<tr>
<td>Plants</td>
<td></td>
</tr>
<tr>
<td>Ferns</td>
<td>65</td>
</tr>
<tr>
<td>Orchids</td>
<td>30</td>
</tr>
<tr>
<td>Conifers</td>
<td>37</td>
</tr>
<tr>
<td>Cycads</td>
<td>21</td>
</tr>
<tr>
<td>Vascular plants</td>
<td>26</td>
</tr>
</tbody>
</table>

Source: WTMA, 2003

1.3 Pressures and potential impacts

1.3.1 Pressures

The WTMA’s Wet Tropics Conservation Strategy 2004 [8] (The Strategy) identifies a wide range of pressures which may threaten the biodiversity and scenic landscape values of the Wet Tropics WHA. Direct impacts to the Wet Tropics WHA are the cause of environmental impacts which directly reduce the capacity of ecosystems and species to survive. Indirect impacts create demands for resources or act as vectors for more direct threats to the Wet Tropics WHA’s OUV.

1.3.2 Direct impacts

As part of UNESCO’s World Heritage 2011 Asia–Pacific Periodic Reporting process, the WTMA identified and reported on the key pressures affecting the property [8]. The five key negative pressures identified with respect to protecting and conserving the OUV of the Wet Tropics WHA were:

- climate change
- invasive terrestrial species such as weeds, feral animals and pathogens
- invasive freshwater species such as water weeds and pest fish
- ground transport and linear infrastructure such as roads and powerline corridors
- effects arising from use of transportation such as motor vehicles.

1.3.2.1 Climate change

Climate change is a major emerging threat to the survival of a large proportion of the Wet Tropics WHA’s unique biota [9]. Temperature increases resulting from climate change have the potential to dramatically limit the distribution of species presently confined to cooler higher altitude parts of the region. Climate change could also alter rainfall patterns, fire regimes and the frequency of extreme events such as cyclones and droughts and will interact with most other pressures, exacerbating the risks posed by weeds, pests and diseases, fire and fragmentation.

1.3.2.2 Invasive pest species

The number of known weed species in the Wet Tropics region has grown rapidly over the past 50 years to over 500 species and their spread is increasingly alarming (about 200 new weed species have been identified in the past decade). The majority of plant species which have become weeds have been intentionally introduced into the region for agricultural, horticultural or domestic purposes. Weeds are generally associated with disturbed areas of ecosystems, although some may invade intact ecosystems. Many are highly invasive and can reproduce and spread rapidly in the absence of any natural controls. Weeds may disrupt ecosystems, compete with and replace native plants, reduce food and shelter for native species, change fire regimes and create soil erosion. Those weeds that can invade or transform pristine habitat are particularly threatening to the biodiversity of the Wet Tropics WHA.

The impacts of feral animals on the Wet Tropics WHA include predation on native species, competition for food and habitat, degradation of habitat, soil erosion, and disease and weed transmission. Some pest animals such as feral pigs have already become well established in the Wet Tropics WHA.
In the last decade, the Wet Tropics has had numerous incursions of high risk environmental pests including diseases such as myrtle rust, feral animals such as tramp ants and Asian honey bees, and a range of weeds that have the potential to invade tropical ecosystems.

1.3.2.3 Infrastructure corridors and fragmentation

The Wet Tropics WHA suffers from fragmentation due to infrastructure corridors (e.g. roads and powerlines) and clearings. Fragmentation of habitats can act as barriers to wildlife movement, sever ecosystem connectivity, provide a conduit for weed and feral animal invasion and result in a range of edge effects.

The demand for electricity supplies to service northern Queensland communities and industry is increasing with a growing population and continued development. Electricity supply infrastructure in the Wet Tropics WHA includes:

- three hydro-electric schemes (Barron Gorge Power Station, Kareeya Power Station, and Koombooloomba Dam)
- 222 kilometres of power transmission lines
- 98 kilometres of power distribution lines.

WTMA mapping data indicates that there are 3777 kilometres of highways, roads and tracks that currently crisscross the Wet Tropics WHA. There are certainly more which remain unmapped. Of these, 1217 kilometres of roads are maintained for public, private or management access. Some roads are part of a regional network linking urban areas and major highway systems.

1.3.3 Indirect impacts

Regional population growth and changing land uses outside the Wet Tropics WHA are increasing demand for water supplies, road upgrades, electricity supplies and waste disposal. Meeting the increasing demand for community services, while maintaining ecological systems, is a growing challenge.

The Wet Tropics WHA is fragmented in nature, being long and thin and effectively divided into a number of segments by very narrow junctures. There are at least a dozen smaller areas that remain isolated from the main WHA, and numerous narrow ‘fingers’ which stick out from the core WHA. The Wet Tropics WHA boundary to area ratio is high with a sinuous boundary configuration that is some 3000 kilometres in length (IUCN 1988).
The fragmented nature of the Wet Tropics WHA makes its conservation inherently difficult. Ecological fragmentation restricts the movement of species between habitat fragments. This can alter historic, natural patterns of gene flow among populations, reduce the ability of populations to adapt to change, reduce dispersal of seeds and pollens, and have serious consequences for the long term preservation of evolutionary diversity. Species in habitats located on the fringes of the core WHA are more susceptible to extinction. Isolated pockets of habitat can only support small populations and these may be easily wiped out by gradual changes such as climate change or extreme events such as fire or drought. Large animals can be especially susceptible as they often need large areas to maintain viable populations. Extra effort must be devoted to isolates and outliers of the WHA if they are to remain viable (IUCN 1988).

1.3.4 Cumulative impacts

There is serious concern that the emerging impacts of climate change, combined with the impacts of existing and new invasive pests, as well as further fragmentation resulting from development pressures, could result in cumulative impacts which challenge the resilience of Wet Tropics ecosystems.

The Strategy provides a specific objective to address the threat of cumulative impacts on biodiversity conservation in the Wet Tropics WHA. Researching and monitoring the causes and sources of direct and cumulative impacts on biodiversity, and considering the cumulative impacts and flow-on effects of infrastructure such as roads and powerlines when assessing impacts on World Heritage values, frames the Strategy’s approach to addressing this challenge[6].

1.4 Measures to avoid, mitigate and offset impacts on the Wet Tropics WHA’s OUV

1.4.1 Protection of OUV

The prohibition of logging activities during listing of the WHA was probably the most significant and decisive step towards protecting the Wet Tropics WHA. The Wet Tropics Plan also provides protection for the Wet Tropics WHA OUV. The Wet Tropics Plan regulates activities inside the Wet Tropics WHA that have the potential to impact on the integrity of the Wet Tropics WHA OUV. Activities regulated include:

- destruction of native plants
- disturbances to earth and watercourses
- keeping of undesirable animals or plants
- building of structures or roads
- use of motor vehicles.

Three of the key components of the Wet Tropics Plan are:

- a zoning scheme
- a permit system
- principles and guidelines for deciding a permit application.

1.4.1.1 Zoning scheme

Under the Wet Tropics Plan, a zoning scheme regulating activity divides the Wet Tropics WHA into four zones called A, B, C and D. Each of the four zones has been classified according to their varying degrees of integrity, different physical and social settings and different management purposes[10]. Classification of each zone along differing attributes allows for the regulation of different types of activities and creation of clear management practices that protect the integrity and OUV of the Wet Tropics WHA.

The zoning scheme that takes effect under the Wet Tropics Plan is based on a ‘distance and disturbance’ model. A total of 32 zoning maps cover the Wet Tropics WHA and are available through the WTMA.

Zone A

Land included in zone A has a high degree of integrity and is remote from the disturbances associated with modern technological society. It is in its natural ecological, physical and aesthetic condition and sustaining this condition is the intent of this zoning. Visitors may expect to find solitude and no obvious management presence. To qualify for inclusion in zone A, land must:

- be at least 500 metres from all roads, cableways, powerlines, pipelines, towers, mines, quarries and other structures
- be at least 700 metres from clearings
- include a minimum area of 150 hectares of undisturbed habitat
- have no obvious signs of disturbance in the last 40 years (such as logging, for example).
Activity regulated under Wet Tropics Management Plan 1998

Contact/discuss proposal with WTMA/QPWS

Complete Application Form

Lodge with WTMA

Application successful?

No
Yes

Application unsuccessful

Proceed in accordance with Wet Tropics permit conditions

Applicant may request for WTMA to review decision

WTMA Review decision

Review Application successful?

No
Yes

Application unsuccessful

Proceed in accordance with Wet Tropics permit conditions

If review is unsuccessful, applicant may appeal through Queensland Planning and Environment Court

WTMA Review decision

Proceed in accordance with Wet Tropics permit conditions

Application unsuccessful

Figure 1.3.1 Wet Tropics Plan Permit Procedure System
Source: DSDIP, 2013
Zone B
Like land in zone A, zone B has a high degree of ecological integrity and is in a natural state but is not necessarily remote from disturbance. There is a reasonable expectation that it could be restored to a condition which would qualify for inclusion in Zone A. Visitors can expect solitude and limited evidence of a management presence (such as infrastructure). Lands in zone B must:
- be less than 500 metres from all roads, cableways, powerlines, pipelines, towers, mines, quarries and other structure
- be less than 700 metres from clearings
- include an area of up to 150 hectares of undisturbed habitat
- have some obvious signs of disturbance in the last 40 years
- not overlap with Zones A, C and D.

Zone C
Land in zone C contains disturbances associated with existing community infrastructure. Visitor facilities may be located in this zone. While there is some disturbance in this zone, the land is in a mostly natural state and will be managed to minimise any adverse impact of these facilities and associated activities, while protecting the integrity of the land.

Cleared areas which are associated with existing use rights have been included in zone C. It is intended that the majority of new and existing infrastructure and facilities will be accommodated in zone C and zone D. Zone C includes areas where there are clearings, roads, powerlines, pipelines, dams and cableways. It also includes quarries, gravel scrapes, paddocks, building or home sites, orchards and plantations, forestry camps, parking areas, cane fields, pine plantations, rifle ranges, forestry buildings, ranger stations, research plots, meteorological stations, airstrips, radio towers and Army camps.

Zone D
Zone D contains lands where there are, or may be, visitor facilities of a well developed type. Visitors and visitor facilities will not be confined to this zone, but it is intended that the more intensive, organised visitor activities and associated facilities would be focused here. Facilities may include picnic shelters, barbecues, interpretive facilities and car parks. Lands in zone D will still be in a mostly natural state. The presence of management is likely to be obvious (such as signs and facilities). The zone will be managed to minimise any adverse impacts of activities and facilities, and to protect and rehabilitate the land.

1.4.1.2 Permit system
To regulate activity within the Wet Tropics WHA’s four zones, the Wet Tropics Plans details which activities in the Area are prohibited, allowed under permit or allowed without a permit[11]. It also sets out the procedures for permit applications and their assessment (Figure 1.3 1) which is undertaken by the WTMA.

The principles and guidelines under Part 4 Division 2 of the Wet Tropics Plan against which permit applications must be assessed recognise that the most important consideration in deciding an application is the likely impact of the proposed activity on the integrity of the Wet Tropics WHA. The WTMA must also decide an application in a way that minimises the likely impact of the proposed activity on the Wet Tropics WHA’s World Heritage values.

These principles and criteria also include the precautionary principle, prudent and feasible alternatives, carrying capacity and community considerations.

Regulation and permit assessments are informed by years of corporate knowledge and experience within the WTMA; scientific advice about biophysical and socioeconomic benefits and impacts; and community considerations (including social, economic and cultural aspects).

1.4.2 Mitigate impacts on OUV - inside the Wet Tropics WHA

1.4.2.1 Community services infrastructure and its use
As mentioned in the WTMA’s 2011 Periodic Report on the Wet Tropics WHA, transport infrastructure such as roads and railway corridors and their associated impacts are two of the five key negative factors identified with respect to protecting and conserving the OUV of the Wet Tropics WHA. The Wet Tropics Plan takes these risk factors into account by way of special provisions that must be considered in deciding a permit application in relation to roadworks. For example:
- the WTMA may issue a permit to build a road only if building the road would not have a net adverse impact on the integrity of the Wet Tropics WHA or there is no prudent and feasible alternative[12]
- Wet Tropics zoning maps regulate which roads are open to motor vehicles and which ones require a Wet Tropics permit.
Another key initiative adopted by the WTMA to avoid and mitigate potential impacts associated with maintenance of community services infrastructure has been the development of infrastructure-specific codes of environmental best practice to be considered as part of permit conditions. For example, the WTMA has worked with infrastructure agencies involved in roadworks, electricity supplies and water supplies in developing such codes of practice. The WTMA also supports these infrastructure agencies in ensuring appropriate training is provided to works crews and contractors in implementing such codes.

Significant activities associated with development inside the WHA including the building and maintenance of roads, powerlines, towers, railways, cableways and visitor sites (as examples) require a permit issued by the WTMA. In the 12 months from March 2012 to February 2013, the WTMA issued a total of 11 permits to undertake activity in the WHA[13]. These permits were awarded to a mix of state government agencies and local councils to undertake maintenance and minor construction works.

1.4.2.2 Invasive plants, animals and pathogens

Two further key negative factors identified in the WTMA’s recent UNESCO Periodic Report were:

- invasive terrestrial species such as weeds, feral animals and pathogens
- invasive freshwater species such as water weeds and pest fish.

The Wet Tropics Plan includes a list of undesirable plants and a list of undesirable animals which must not be propagated or kept in the Wet Tropics WHA. These two lists generally do not duplicate pest species on Australian or Queensland declared pest lists, but include specific species which have been identified by the WTMA as having potential to invade the Wet Tropics WHA.

Supporting legislative instruments such as the Land Protection (Pests and Stock Route Management) Act 2002 and the Fisheries Act 1994 assist the Wet Tropics Plan to avoid and mitigate the spread of undesirable plants and animals. The Land Protection (Pests and Stock Route Management) Act 2002 categorises highly invasive plants and animals into three classes and enforces the legal obligation of landowners (including the State) to control Class 1 plants and animals. Similarly, landowners must take reasonable steps to keep land free of Class 2 and Class 3 plants and animals. All three classes of undesirable plants and animals are considered to have the potential to cause adverse economic, social and environmental impacts.

1.4.3 Mitigate impacts on OUV – outside the Wet Tropics WHA

1.4.3.1 Biosecurity measures

Consistent with the findings of the Wet Tropics Periodic Report to the World Heritage Committee, the WTMA’s State of the Wet Tropics Report 2010–2011 on biosecurity[14] recognises that priority must be given to preventing new incursions of pests with potential to invade and impact on the Wet Tropics WHA. The least costly, most effective way of dealing with potentially invasive pests is a combination of preventative measures (to avoid their introduction in the first place) alongside early detection and rapid response to new incursions, with permanent management only as the last option.

As the most populous part of northern Australia, the Wet Tropics represents an important frontline of biosecurity for Australia. In the last decade, the Wet Tropics has had numerous incursions of high risk environmental pests including diseases such as myrtle rust, feral animals such as tramp ants and Asian honey bees, and a range of weeds that have the potential to invade tropical ecosystems. The WTMA’s State of Wet Tropics Report 2010–2011 on biosecurity identifies the most important management interventions will be those that ensure:

- regional capacity is in place for the early detection of new pest and disease incursions
- systems in place to engender rapid responses to pest and disease incursions as soon as detection has been confirmed
- systems in place to allow resources to be drawn upon quickly for an effective initial eradication response
- that there are appropriately skilled personnel available in the region to ensure rapid and effective emergency responses during serious incursions

1.4.3.2 Local government planning schemes

Vegetation clearing and fragmentation of natural habitats outside the Wet Tropics WHA have the potential to adversely affect the integrity of the Wet Tropics WHA by severing ecological connectivity. Loss of remnant native forests adjoining the Wet Tropics WHA may also impact on the Area’s integrity. Local government planning schemes in the Wet Tropics region often apply conservation overlays within their planning schemes which offer varying levels of protection to remnant vegetation via a range of development assessment requirements.
The FNQ Regional Plan maps areas of high ecological significance (HES) and many of these areas play an important role in maintaining the integrity of the Wet Tropics WHA. Similarly, the FNQ Regional Plan maps strategic rehabilitation areas (SRAs) which provide strategic corridors whereby habitat restoration effort can be targeted to offset impacts of development activities. The mapping of areas of HES and SRAs provides a sound bioregional framework whereby local governments have the opportunity to identify such areas when reviewing their respective planning schemes and incorporate appropriate planning and development measures.

To assist local government planning schemes reflect the state interests, the Queensland Government is reforming the state’s planning system. A single draft state planning policy is being developed to replace the various current state planning policies. This single draft state planning policy clearly articulates matters of state interest in relation to planning and development and how these interests are to be reflected in local government planning schemes, council development assessment processes and in designating land for community infrastructure.

Biodiversity and the coastal environment are clearly articulated as state interests in the single draft state planning policy. It calls on local planning instruments to reflect appropriate consideration of MNES and strategic offset areas, as well as facilitating the protection of MNES and maintaining or enhancing ecological connectivity[15].

1.4.4 Offsets

Environmental offsets compensate for unavoidable impacts on significant environmental values such as irreplaceable and highly valuable species and ecosystems and MNES. They are used when it is determined that a significant environmental impact of a development cannot be avoided or mitigated. Offsets can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation or averted risk, protecting areas where there is imminent or projected loss of biodiversity.

Development within the WHA may trigger offset requirements under the Australian Government’s EPBC Act and/or the Queensland legislation such as the Vegetation Management Act 1999 and Nature Conservation Act 1992. The WTMA is currently reviewing the operation of the Wet Tropics Plan and intends to seek amendments whereby the WTMA, when deciding a permit application, must also consider any action that could be taken to offset any adverse impact the proposed activity may have on the Wet Tropics WHA’s integrity.

As part of the Queensland Government’s reform of the planning system, development of an offsets policy that responds to the changing requirements of planning and development in Queensland is an important part of strengthening Queensland’s environmental management.

At the time of writing, the Queensland Government was reviewing its approach to offsets and is committed to implementing a new strategic offsets policy, providing better integration of requirements, by replacing the existing five Queensland offset policies.

The intention for the proposed offsets policy is to pre-identify suitable areas and/or suitable management strategies to achieve offset obligations through the use of strategic investment corridors and Direct Benefit Management Plans (DBMPs). This approach will incorporate key features of the strategic assessment.

A publicly-accessible Queensland government offset register is being developed to spatially identify sites that are the subject of an offset. The register will be a component of an overarching offsets data management system, which is a critical requirement for providing a high level of certainty in offset assessment and delivery to both industry groups and the government alike.

Identifying priority rehabilitation areas will continue to be important under the new approach for offsets in Queensland. For example, the Wet Tropics Conservation Strategy identifies critical cassowary habitats within the Mission Beach area and where linkages should be made to other coastal and mountain sections of the WHA (Figure 1.4 2). A number of rehabilitation projects have been undertaken to target restoration in these corridors.

1.5 Measures to enhance the Wet Tropics WHA’s OUV

1.5.1 Conservation priorities

The WTMA’s Wet Tropics Conservation Strategy (2004) identifies the major priorities required for action in and around the Wet Tropics WHA over the next decade to conserve the Wet Tropics WHA’s integrity and its OUV. The WTMA has recently reviewed the Wet Tropics conservation strategy and identified the need for more targeted prioritisation regarding biosecurity and habitat connectivity.
Figure 1.4  Rehabilitation priority areas for the Wet Tropics World Heritage Area
Source: WTMA, 2004
1.5.2 Climate change

The WTMA produces annual, themed State of the Wet Tropics reports. The theme for the 2007-2008 State of the Wet Tropics Report was Climate Change in the Wet Tropics – Impacts and Responses. This report recognised that climate change is a major and insidious threat to the ecosystems of the Wet Tropics WHA. Anticipated changes to temperature, rainfall and other climatic conditions will cause major changes to ecosystems and lead to the loss of many plant and animal species for which the Wet Tropics was listed on the World Heritage register.

The best way to make the forests of the Wet Tropics resilient to the anticipated adverse impacts of climate change is to ensure they are healthy and in good condition. This means reducing or eliminating other threats to forest health such as weeds, feral animals and disease; fragmentation and isolation; inappropriate fire regimes; and other impacts of human use in and around the WHA.

1.5.3 Fire management

Inappropriate fire regimes and fire regimes altered as a result of vegetation clearing, climate change and extreme weather events are a threat to the health and resilience of the Wet Tropics. The 2008 - 2009 State of the Wet Tropics Report identified a knowledge gap about what constitutes an appropriate fire regime in the Wet Tropics[16]. In response to this, and other issues, the Queensland Government has produced a specific Planned Burn Guidelines for the Wet Tropics Bioregion[17]. The guideline provides direction towards understanding the role, ecology and practice of Wet Tropics fire management. The guideline promotes the importance of fire management as a conservation tool to halt further loss or weakening of the integrity of lowland, highland and wetland fire-adapted communities and thereby maintaining the resilience and complexity of the Wet Tropics.

1.5.4 Condition and integrity of the Wet Tropics WHA

Since listing, significant improvements to the health or condition of the Wet Tropics WHA have been achieved through a wide range of protection and management initiatives and natural recovery. For example:

- Wherever feasible, and as opportunities arise, obsolete infrastructure has been phased-out.
- The commencement of the Wet Tropics Plan in 1998 resulted in the formal closure of several thousand kilometres of redundant roads and logging tracks and regulated the use of others as management roads or presentation roads. Natural recovery along many of these roads has resulted in re-establishment of canopy connectivity and consequential reduction in fragmentation of rainforest habitat.
- The natural recovery of many areas which were logged has been complemented by active reforestation within and outside the Wet Tropics WHA, including wildlife corridors for endangered species such as cassowaries and mahogany gliders.
- Other internal fragmentation from powerlines and roads has been reduced by revegetation, the use of overpasses, underpasses and fish-friendly culverts on roads, and the removal of powerlines or their elevation above the canopy.
- Considerable efforts continue to be invested in improving management and maintenance practices of community services infrastructure through the use of codes of environmental practice and detailed environmental management plans.
- Many land tenures within the Wet Tropics WHA and surrounds have been given protected area status.

1.5.5 Community conservation and rehabilitation

The role of the community in World Heritage conservation is particularly important when managing threats to the Wet Tropics WHA’s integrity. Many threats to the WHA originate outside its boundaries and can only be addressed by working closely with landholders. Over the past 25 years a wide range of voluntary community groups and landholders have worked to re-establish rainforest and riparian habitat connectivity and improve habitat for endangered species such as the cassowary and mahogany glider. For example, the WTMA is currently managing a Caring for Our Country funded project on the Southern Atherton Tablelands to re-establish habitat connectivity on private lands and restore montane forest ecosystems identified as being particularly important as refuges from climate change.

The WTMA also places a strong emphasis on educating the community about how best to prevent or reduce threats to the Wet Tropics WHA. This includes advice on rainforest restoration, better design of infrastructure, caring for wildlife, and advice on how to control the spread of weeds and feral animals[18].

1.5.6 Aboriginal and Torres Strait Islander participation

The Wet Tropics Act recognises the important role that Aboriginal people play in the management of natural and cultural heritage in the property. Since its formation, the WTMA has established strong links with the Rainforest Aboriginal people of the Wet Tropics region. There are six languages spoken by 18 Rainforest Aboriginal tribal groups with ongoing traditional connections to lands and waters in and around the WHA[19]. Rainforest Aboriginal people have lived in Wet Tropics region for thousands of years and have a rich cultural and spiritual connection to the land, its plants, animals and complex ecosystem.

Through representative councils and organisations such as Giringun Aboriginal Corporation and Jabalbina Yalanji Aboriginal Corporation (as examples), partnership agreements between the Rainforest Aboriginal people and the WTMA encourage Aboriginal participation in land management and biodiversity conservation activities within the WHA.
Aboriginal participation in the management of the Wet Tropics WHA is undertaken through programs such as Queensland’s Land and Sea Ranger Program. Most land and sea rangers are Traditional Owners of land on which they work and are employed through local host organisations, with assistance by the Queensland Government[20]. As an example, the Djunbunji Land and Sea Program manages traditional country on behalf of all Mandingalbay Yidinji people. The Queensland Government collaborates with the Djunbunji Land and Sea Program Rangers through the provision of training and biosecurity monitoring on Mandingalbay Yidinji country[21]. The Djunbunji Rangers undertake a number of vital activities that assist in enhancing OUV inside and outside of the Wet Tropics WHA including:

• managing weeds, feral animals and other threats
• performing fuel reduction and ecological burning
• collecting data on protected species and habitats
• supporting disaster recovery efforts
• managing visitor activity
• recording traditional stories, and
• helping manage national parks[22]

1.5.7 Presentation of the World Heritage Area

Promoting presentation of the Wet Tropics WHA to visitors is a key function of the WTMA under the World Heritage Convention and the Wet Tropics Act. The WTMA works with QPWS, community conservation groups and the tourism industry to inform and educate residents and visitors about the wonders of the Wet Tropics WHA, its unique plants and animals and its scenic beauty.

The WTMA has been instrumental in establishing a range of Wet Tropics visitor centres and creating website information, school curriculum materials, community events, posters, booklets and brochures. The WTMA’s annual Cassowary Awards recognise community members for their contributions to World Heritage conservation, research and presentation. The WTMA is currently pursuing the establishment of a World Heritage Gateway centre in Cairns[23].

The tourism industry is a major contributor to presentation of the Wet Tropics WHA and its natural and cultural heritage values. In conjunction with the tourism industry and land managers, the WTMA developed the Wet Tropics Nature Based Tourism Strategy (2000) and the Wet Tropics Walking Strategy (2001) to promote sustainable tourism opportunities throughout the region and encourage community awareness and enjoyment of the Wet Tropics WHA through recreation and tourism. The WTMA recognises that properly managed, nature based tourism provides a valuable opportunity to present the Wet Tropics WHA and promote regional, national and international recognition, understanding and appreciation of the OUV of the Wet Tropics WHA. Such recognition and appreciation has resulted in enhanced support for the protection of the Wet Tropics WHA and its OUV.

The Wet Tropics Plan also regulates the use of motorised vehicles within the Wet Tropics WHA. The zoning maps make a range of visitor sites and access roads available for presentation and recreation opportunities.

1.5.8 The World Heritage Area and its role in the life of the community

Article 5 of the World Heritage Convention states that a WHA’s cultural and natural heritage should be given a function in the life of the community. The Wet Tropics Act ensures a broad cross-section of the community plays an integral role in management of the Wet Tropics WHA. The Wet Tropics Act established an independent Board to oversee the WTMA and its management of the WHA. The Board has traditionally represented a range of community interests, including science, local government, tourism and Rainforest Aboriginal people. The Board is responsible to the Wet Tropics Ministerial Council, made up of representatives of the Australian and Queensland Governments. A range of advisory committees have also been established under the Wet Tropics Act, representing science and research, Rainforest Aboriginal people, conservation, tourism and the broader regional community.

The Wet Tropics Act prescribes extensive community consultation in the development of the management plans and any subsequent changes. The WTMA must also have regard to Aboriginal traditions and liaise and cooperate with Aboriginal people particularly concerned with the land. The Wet Tropics Act also charges the WTMA with developing public education programs and promoting the Wet Tropics WHA.

1.6 Information gaps and how they are being addressed

The WTMA continues to be actively involved in coordinating and promoting solutions-based research to address information gaps and improve management in relation to World Heritage integrity and the OUV of the Wet Tropics. The WTMA was one of the founding partners in the establishment of the Rainforest Cooperative Research Centre in 1993 and more recently has been actively engaged in promoting Wet Tropics research priorities under the Commonwealth’s Marine and Tropical Sciences Research Facility and the current National Environmental Research Program (NERP).
1.6.1 Research

There are a number of research projects currently being undertaken that are helping to identify and better understand the status, trends and pressures impacting upon the values that underpin the OUV of the Wet Tropics WHA. As examples, two have been briefly outlined below.

The Condition and Trends of North Queensland Rainforests Program is one of the research programs being conducted within the Wet Tropics WHA under the Australian Government’s NERP Tropical Ecosystem Hub in partnership with James Cook University. This program involves four projects focusing on biodiversity drivers of Queensland’s Wet Tropics rainforests, particularly rainforest fauna refugia and hot spots of genetic diversity in the World Heritage Area and adjacent Cape York regions. The Program will deliver species distribution models and composite biodiversity maps using long term data sets to describe patterns of environmental change. The Program’s results will contribute to State of the Environment and World Heritage reporting for the Wet Tropics WHA, and provide information to assist the development assessments under the EPBC Act.

The second project of significance being undertaken in the Wet Tropics WHA through NERP’s Tropical Ecosystem Hub, in partnership with the Australian Tropical Herbarium, will increase our understanding of the values that underpin the OUV of the Wet Tropics WHA. This project will better characterise plant biodiversity refugia in the rainforests of the Wet Tropics by assessing genetic diversity at a landscape scale in rainforest plants and fungi.

An important attribute of the rainforests of the Wet Tropics WHA is that they preserve one of the most complete and continuous records of Earth’s evolutionary history including links to Gondwanan rainforests. This study is investigating the distribution of plant and fungal taxonomic richness, endemism, and genetic diversity (as a measure of evolutionary history) across the Wet Tropics WHA at the level of genus, species, and population. This information will provide a solid foundation for conservation prioritisation of the OUV of the WHA.

In collaboration with its statutory Scientific Advisory Committee, the WTMA has identified information gaps and research priorities in its Wet Tropics Research Strategy 2010 – 2014. The Wet Tropics Research Strategy categorises information needs into five research themes as follows:

A. Understanding the condition and trends of the natural and cultural environment
1. Ecological/forest health
2. Priority species and ecosystems
3. Understanding the OUV of the Wet Tropics WHA
4. Rainforest Aboriginal cultural studies

B. Understanding risks and threats to the WHA
1. Alien and invasive species
2. Impact mitigation – community infrastructure
3. Climate change impacts and adaptation strategies and regional responses
4. Land use change

C. Sustainable use and management of the WHA
1. World Heritage presentation, recreation and tourism
2. Giving the Wet Tropics WHA a role in the life of the community
3. Socio-economic and environmental benefits (ecological goods and services)

D. Habitat management and restoration
1. Habitat management and restoration

E. Science/management partnership performance
1. Adoption – making a difference (from science to application)

The Wet Tropics Research Strategy also promotes the concept of the Wet Tropics WHA as an international ‘learning landscape’ for multi-disciplinary tropical research through building on previous research initiatives and collaborations in the region and also through promoting the Wet Tropics WHA to attract new research effort and investment into the Wet Tropics. At the time of writing, a review of the Research Strategy is scheduled to take place during 2013-14.

1.7 Resourcing, monitoring, evaluation and compliance regimes

1.7.1 Resourcing

QPWS allocates in the order of $16 million per annum for management of national parks within the Wet Tropics WHA. In recognition of its World Heritage status and in order to protect and manage the OUV of the Wet Tropics WHA across other tenures, funding is also provided under Schedule 1 of the Wet Tropics Act, being the Management Scheme Intergovernmental Agreement for the Wet Tropics WHA. Funding in recent years under the Agreement has been in the order of $2.7 million per annum from the Australian Government and $1.8 million from the Queensland Government. The combined funds provide resources for the WTMA to undertake its various functions set under the
Wet Tropics Act as well as proving funds for QPWS to undertake priority World Heritage management activities in protected areas within the WHA. These priority activities are identified in annual partnership agreements between the WTMA and the QPWS.

1.7.2 Monitoring

1.7.2.1 Monitoring the integrity of the Wet Tropics WHA and the condition of its OUV

Governments and regional institutions have invested in a range of research infrastructure including a canopy crane facility and a comprehensive network of long-term rainforest monitoring plots. These have been established to examine long-term dynamic processes in forests and monitor climate change signals and their ecological impacts.

The Australian Canopy Crane Research Station (ACCRS) at Cape Tribulation is one of five Long Term Ecological Research sites in Australia allied to the International Long Term Ecological Research Network (ILTER), and is one of twelve canopy cranes in forests around the world. The Cape Tribulation monitoring plot is the exemplar site in the Wet Tropics, with more information being gathered on this one hectare of rainforest than any other hectare of ecosystem in Australia.

An initiative of the Australian Government’s Department of Innovation, Industry, Science and Research is the National Collaborative Research Infrastructure Strategy (NCRIS). Part of this strategy includes establishing the Terrestrial Ecosystem Research Network (TERN). TERN aims to provide a set of dedicated observation sites, standardized measurement methodologies, equipment, data, and information services for ecosystem research and natural resource management across Australia.

As part of TERN, a Supersite Network Demonstrator node has been established in the Wet Tropics through co-investment funding from the Queensland Government. The Supersite Network Demonstrators will link specific site-based observations to regional issues of significance. This will be facilitated by providing consistent, high quality data streams to a central database facility. The Rainforest Biodiversity Node, coordinated by James Cook University has recently established the large Robson Creek supersite and supports the Cape Tribulation supersite and canopy crane.

The National Climate Change Adaptation Research Facility (NCCARF) is a national interdisciplinary effort to generate the information needed by decision-makers in government and in vulnerable sectors and communities to manage the risks of climate change impacts.
The Terrestrial Biodiversity Adaptation Research Network is hosted by James Cook University’s Centre for Tropical Biodiversity and Climate Change. The primary goal of this network will be to develop practical strategies that increase the resilience of terrestrial ecosystems and maximise their adaptive potential under climate change. National research networks such as NCCARF and TERN enable the region’s researchers to collaborate with other Australian and international researchers to generate, share and apply research findings on a wider basis and increase their sphere of influence.

The WTMA, in association with the region’s researchers, is now in the process of considering how monitoring data collected throughout the Wet Tropics WHA over several decades can be applied to provide robust indicators on status and trends with respect to OUV attributes and World Heritage integrity.

1.7.2.2 State of the wet tropics annual reporting

The WTMA is required to report annually to the Australian Government as well as the Queensland Government regarding the State of the Wet Tropics WHA. Since 2008, the WTMA has adopted a theme-based approach for these reports. For example:

- Climate Change in the Wet Tropics – Impacts and Responses (2007 - 2008)
- Condition of the Wet Tropics WHA – a report card (2008-2009)
- Managing Tourism in the Wet Tropics (2009-2010)
- New and Emerging Biosecurity Threats in the Wet Tropics (2010-2011)
- The Function of the Wet Tropics of Queensland World Heritage Area in the Life of the Community (2011-2012)

1.7.2.3 Reporting on the condition of the wet tropics WHA

It is intended that the report card theme used for the 2008-2009 State of the Wet Tropics report will be revisited every four to five years as a basis for regular reporting on the condition and integrity of the OUV of the Wet Tropics WHA. It will also provide key information to assist in the completion of the six-yearly UNESCO Periodic Reporting on the Wet Tropics WHA. This is a similar approach taken for the adjacent GBRWHA where the GBR Outlook report is issued every five years.

The 2008-2009 report on the condition of the Wet Tropics WHA provided a profile of the Wet Tropics WHA summarising the extent of the major pressures affecting the condition of the Wet Tropics WHA at the time of its inscription onto the World Heritage List in December 1988. It applied a report card approach examining the condition of the Wet Tropics WHA within the context of the surrounding Wet Tropics bioregion. Finally it outlined a range of opportunities for action to be taken at a regional level to mitigate and better manage issues which emerged from the assessment process.

The 2008-2009 report recognised that the Wet Tropics WHA cannot be managed in isolation from surrounding land use. Accordingly, the report presented data about both the WHA and relevant indicators for the wider bioregion.

The WTMA’s Annual Reports provide information on investigation, enforcement and other compliance activities within the Wet Tropics WHA.

The WTMA also provides ‘situation and issues’ reports on a quarterly basis to the Wet Tropics Board. These reports focus on the protection, conservation, rehabilitation and presentation aspects pertaining to Australia’s obligation under the World Heritage Convention.


1.8 Program effectiveness

It is considered that the overall management effectiveness of the Wet Tropics Plan is effective in identifying OUV, avoiding and mitigating impacts on the Wet Tropics WHA and its OUV, and enhancing these values. The assessment tool provided by the World Heritage Centre for the WTMA to undertake the 2011 UNESCO Periodic Reporting supports this assessment by concluding the following with respect to management effectiveness:

- No serious management needs have been identified for management of the property.
- The integrity of the World Heritage property is intact.
- The Wet Tropics WHA's OUV has been maintained.

The integrity of the WHA, remains intact as a result of statutory protection and non-statutory management measures that ensure that the WHA's OUV is protected and enhanced over the long term. The three regulatory components (zoning system, permit system, and principles and guidelines) that take effect under the Wet Tropics Plan demonstrate the Program’s ability to effectively protect the integrity and the OUV of the Wet Tropics WHA, and manage potential impacts on the Wet Tropics WHA.
The regulatory mechanism provided by the principles and guidelines allows the WTMA to carefully monitor approved development activities being undertaken in the Wet Tropics WHA. This demonstrates the Program’s ability to avoid and mitigate impacts of activity on the Wet Tropics WHA. Identification of strategic rehabilitation areas within and outside the WHA also indicates a new approach to offsetting the impacts of development activity in the region.

In contrast, the threats posed by the rate of spread of pest species through the bioregion remain a serious concern for the WTMA. Efforts to control pest species, while challenging, are possible and depend on a number of factors including early intervention programs, management capability and programs to increase the resilience of the Wet Tropics ecosystem. Through the review of the Wet Tropics Plan and other Program components, progress is being made to address this challenge.

The five key negative pressures identified with respect to protecting and conserving the OUV of the Wet Tropics WHA are:

- climate change
- invasive terrestrial species such as weeds, feral animals and pathogens
- invasive freshwater species such as water weeds and pest fish.
- ground transport and linear infrastructure such as roads and powerline corridors
- effects arising from use of transportation such as motor vehicles

The WTMA is working with regional researchers to identify priority climate refuge areas in the Wet Tropics WHA and to identify priority corridors for biota to access such refuge areas as the climate changes.

WTMA, in association with the region’s researchers, is now in the process of considering how monitoring data collected throughout the Wet Tropics WHA over several decades can be applied to provide robust indicators on status and trends with respect to OUV attributes and World Heritage integrity. Increasing the resilience of the Wet Tropics ecosystem through management interventions, such as research and monitoring activities, is acknowledged as the best adaptive measure to counter the emerging impacts of climate change[9].

Invasive pest species, including plants, animals and pathogens, are more prevalent now than at the time of the WHA listing and their impact is presumably more pervasive. The rate of spread of invasive plants throughout the bioregion is increasing more rapidly than can be managed through existing eradication and control programs. This has significant adverse consequences for biodiversity.

Significant improvements to the health or condition of the Wet Tropics WHA have been achieved through the closure of several thousand kilometres of redundant roads and logging tracks and the subsequent reduction of fragmentation through re-establishment of canopy connectivity. Other internal fragmentation has been reduced by the removal of powerlines or their elevation above the canopy.

The three regulatory components (zoning system, permit system, and principles and guidelines) that take effect under the Wet Tropics Plan provide the WTMA with an ongoing mechanism to protect OUV and enhance it where possible. Regulatory instruments such as the principles and guidelines also impose strict controls on the impact of development activities occurring in the Wet Tropics WHA.

The fragmented nature of the Wet Tropics WHA and the need to meet growing demand for community services infrastructure in the region is challenging for the conservation of biodiversity and protection of OUV. Fragmentation of habitat within and outside of the Wet Tropics WHA is one of the major indirect impacts affecting the Wet Tropics region.

The WTMA has supported re-establishment of connectivity by working with conservation groups, local government and NRM regional bodies in revegetation projects associated with priority rehabilitation corridors. Strategic rehabilitation areas within these corridors have been identified to enhance the habitat or connectivity for key MNES. For example, the Wet Tropics Conservation Strategy identifies critical cassowary habitats within the Mission Beach area and where linkages should be made to other coastal and mountain sections of the WHA.

Queensland’s mapping system provides an excellent tool which identifies the essential habitat required to support terrestrial threatened species and key roosting and breeding sites for migratory species. This mapping is integrated into regional planning, port planning and industrial planning, although not explicitly in all cases. This helps ensure that areas critical for MNES are avoided from the outset and no further habitat fragmentation occurs.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Effectiveness</th>
<th>Confidence</th>
<th>Trend</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>Demonstrated ability to identify MNES including OUV</td>
<td>Very effective</td>
<td></td>
<td></td>
<td>OUV in the Wet Tropics WHA is identified through the WTMA’s preparation of the retrospective Statement of OUV for the Wet Tropics WHA. The WTMA has expertise in identification of natural heritage attributes associated with the OUV of the Wet Tropics WHA.</td>
</tr>
<tr>
<td>Demonstrated ability to assess impacts</td>
<td>Very effective</td>
<td></td>
<td></td>
<td>The WTMA is responsible for annual reporting on the State of the Wet Tropics WHA. The WTMA is responsible for assessing and deciding permit applications (including EIAs) for activities inside the Wet Tropics WHA which have potential to impact on the integrity of the Wet Tropics WHA.</td>
</tr>
<tr>
<td>Effectiveness in avoiding impacts</td>
<td>Very effective</td>
<td></td>
<td></td>
<td>In deciding permit applications under the Wet Tropics Management Plan, the WTMA must consider whether there are prudent and feasible alternatives to undertaking the activity in the Wet Tropics WHA, and whether any action could be taken to prevent any adverse impacts.</td>
</tr>
<tr>
<td>Effectiveness in mitigating impacts</td>
<td>Effective</td>
<td></td>
<td></td>
<td>In deciding a permit application the WTMA must consider whether there are alternative ways of carrying out the activity to mitigate or minimise any adverse impacts, including potential monitoring requirements or rehabilitation activities.</td>
</tr>
<tr>
<td>Effectiveness in offsetting unavoidable impacts</td>
<td>Partially effective</td>
<td></td>
<td></td>
<td>Strategic rehabilitation areas have been identified to enhance the habitat or connectivity for key MNES. The WTMA is also seeking to have offset provisions adopted under its review of the Wet Tropics Management Plan.</td>
</tr>
<tr>
<td>Contribution to enhancement of MNES including OUV and management of existing pressures</td>
<td>Effective</td>
<td></td>
<td></td>
<td>The WTMA develops management strategies to conserve and enhance the OUV of the Wet Tropics WHA and implements such strategies in partnership with land management agencies.</td>
</tr>
<tr>
<td>Demonstrated ability to adapt system over time to incorporate new knowledge</td>
<td>Very effective</td>
<td></td>
<td></td>
<td>The WTMA plays a lead role in promoting the Wet Tropics WHA as a learning landscape and to ensure the Wet Tropics WHA continues to be managed as a WHA of the highest standard.</td>
</tr>
<tr>
<td>Resourcing, monitoring and compliance</td>
<td>Effective</td>
<td></td>
<td></td>
<td>Resourcing limitations pose a risk to being able to manage pressures such as weed and feral animals.</td>
</tr>
<tr>
<td><strong>Overall effectiveness</strong></td>
<td>Effective</td>
<td></td>
<td></td>
<td>The Wet Tropics Management Plan and supporting Program components provide specific planning and operational arrangements to avoid and minimise impacts from development activity within the Wet Tropics WHA.</td>
</tr>
</tbody>
</table>
1.8.1 Projected condition of the Wet Tropics WHA’s OUV

While the assessment of management effectiveness for the Wet Tropics WHA is considered effective, forecasting the projected condition of the Wet Tropics WHA over the long term remains a challenging task. The projected condition and the successful protection and conservation of the Wet Tropics WHA’s OUV remains dependent on:

- maintenance of effective planning and regulatory frameworks
- implementation of adaptive measures to build resilience of the Wet Tropics biota to the emerging impacts of climate change
- sufficient resources being available for dealing with invasive pests
- sufficient resources being available for monitoring trends in condition of OUV attributes.

The WTMA is committed to maintaining effective planning and regulatory frameworks, and as research and monitoring activities grow in sophistication over time, the projected condition of the Wet Tropics WHA will become easier to ascertain. The recent arrival of myrtle rust and its potential impact on Wet Tropics species and ecosystems, and the threatening advance of tramps ants such as electric ant and yellow crazy ants into the Wet Tropics WHA are of particular concern. The full extent of these impacts may take decades to become evident.

1.9 Possible improvements to the Program

The following provides a summary of suggested improvements to biosecurity and integrity issues that could be made to the Program which would help to protect and manage the OUV of the Wet Tropics WHA.

As the most populous part of northern Australia, maintaining biosecurity in the Wet Tropics region is a growing challenge. Alongside building the resilience of the Wet Tropics WHA (as the best adaptive measure to counter the emerging impacts of climate change), biosecurity remains the biggest challenge and poses the most significant threat to maintaining the OUV of the Wet Tropics WHA. The WTMA’s 2010-2011 State of the Wet Tropics Report identifies a number of specific issues that require improvement when it comes to maintaining biosecurity for the Wet Tropics WHA including:

- a need for comprehensive early warning surveillance
- a need for contingency plans for environmental weeds, pest and diseases
- a need to build regional capability and skill sets

The Wet Tropics WHA would benefit from comprehensive early warning surveillance to detect new incursions of invasive pests. If the discovery of a new pest is overlooked for several years, particularly if it is not a human health or agricultural issue, it becomes very costly or even impossible to eradicate. Increased capacity and resources are required in surveillance and diagnostics. This is essential as the first line of defence against biosecurity risks. Increased efficiency of surveillance and improved prospects of early detection of an incursion within the Wet Tropics WHA are essential [14].

There are effective contingency plans and financial resources in place to quell incursions by human health and agricultural biosecurity risks, however the financial and personnel commitments deployed for environmental pests, weeds and diseases and the level of urgency in responding are far less effective.

The capacity to manage risks across the biosecurity and quarantine continuum will increasingly be impacted upon by skill shortages and general labour availability. It is important to build regional capacity, as reduced capability can significantly disadvantage them during an emergency. There is also a need to increase regional skill sets particularly around environmental surveillance.

Most of the community does not appreciate the scale of the threat that environmentally invasive pest species pose to Australia’s iconic biodiversity hotspots such as the WTWH. Community education campaigns and school curriculum materials on invasive species impacts on the natural environment need to be increased.

Another major focus of the WTMA for building the resilience of the Wet Tropics WHA is to reconnect the various sections of the WHA with ecological corridors. The Wet Tropics Conservation Strategy identifies a range of wildlife corridors between sections of the Wet Tropics WHA. Some of these connections are currently being reinstated as opportunities and resources become available (e.g. via landholder incentive programs or revegetation projects). There is some urgency to establish or protect major corridors in areas where roads and urban development are threatening ecological connectivity.
1.10 Key outcomes and learnings from the demonstration case

Key outcomes and learnings from this demonstration case are:

- The establishment of the WTMA under the Wet Tropics Act to ensure Australia’s obligation under the World Heritage Convention is met and to ensure the Wet Tropics Area is managed and maintained as a WHA of the highest standard has been demonstrated.

- The Wet Tropics Plan and its administration by WTMA have been effective in avoiding, minimising and mitigating impacts in the Wet Tropics WHA.

- Invasive pest species are more prevalent now than at the time of the WHA listing. The rate of spread of invasive plants throughout the bioregion is increasing more rapidly than can be managed through existing eradication and control programs. This has significant adverse consequences for biodiversity.

- The emerging and projected impacts of climate change on the OUV of the Wet Tropics WHA continue to be a major concern and challenge for management.

- The identification of strategic rehabilitation areas and areas of high ecological significance under the FNQ Regional Plan provides an opportunity for such areas to be incorporated into local government planning schemes and potentially restored in the future. The re-establishment of such wildlife corridors across the Wet Tropics regional landscape provides a potential tool for enhancing the integrity of the Wet Tropics WHA.
1.11 Information sources


