Acknowledgements

This plan has been developed with the support and assistance of staff in Council’s Natural Areas Management Unit. Council officers from the following departments also provided help: Environmental Planning and Conservation Unit, Parks and Recreational Services, Catchment Management, Pest Management, Animal Management, City Property, Engineering Services, the Office of City Architect and Heritage, and Legal Services. The Queensland Fire and Rescue Service has also provided valuable input.
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Executive summary

This management plan provides the strategic framework that will guide the development and delivery of management for the Tamborine Guanaba Conservation Reserves. It will be effective from the date the plan is adopted by Gold Coast City Council for a period of ten years.

The management cluster is an area of land stretching from Tamborine National Park in the west to the Coomera River in the east, and from Tamborine Oxenford Road in the north to the Canungra Land Warfare Centre in the south. Within this management cluster is a network of conservation reserves over which this plan makes management recommendations. This network of reserves is referred to as the ‘planning area’. The planning area consists of 20 separate reserves covering an area of approximately 632 hectares. All of these reserves are managed by Gold Coast City Council (GCCC).

The planning area forms an important component of the Darlington Range bioregional corridor, which has state level significance. Despite the spatial fragmentation of the reserves and the relative abundance of a number of pest plant species, the planning area contains 14 different regional ecosystems (REs). Three of these REs are ‘of concern’ and one is ‘endangered’ under the Vegetation Management Act 1999. Of the 682 plant species recorded in the planning area, 72 are of special significance including 8 species scheduled under federal legislation and 11 species scheduled under state legislation. Significant species include Randia moorei (spiny gardenia), Cryptocarya foetida (stinking cryptocarya) and Pararistolochia praevenosa (Richmond birdwing vine).

Fauna surveys of the planning area found 197 vertebrate species, and it is anticipated that further surveys would reveal the presence of many more species. Some are pest animal species that present considerable management challenges. These include wild dogs (Canis familiaris), foxes (Vulpes vulpes) and cats (Felis catus). Despite the pest species, the reserves contain a broad diversity of fauna, including several species listed as significant or threatened species under state and Commonwealth legislation. These include glossy black-cockatoo (Calyptorhynchus lathami), sooty owl (Tyto tenebricosa), Albert’s lyrebird (Menura alberti), koala (Phascolarctos cinereus), and platypus (Ornithorhynchus anatinus).

The planning area makes an important contribution to the Gold Coast landscape. The reserves are characterised by green hills and ridgelines in the west. Along the Coomera River, there are sweeping river views. The hills of the Tamborine Guanaba area are a significant element of the ‘green behind the gold’ of Gold Coast City. The majority of the planning area has a ‘high’ scenic amenity rating as per the GCCC scenic amenity ratings scale which range from ‘moderate’ to ‘very high’ (Terranean Mapping Technologies, 2008).

The planning area is currently utilised for a range of recreational activities including bushwalking, horse riding, bird watching, mountain biking, fishing, swimming and nature appreciation. This management plan outlines how recreation can be managed sustainably, including ways to attempt to eliminate the negative impacts of unauthorised activities such as trail biking and four wheel driving in sensitive ecological areas. The network of management/recreational tracks will be consolidated and consideration is being given to future day use facilities to enhance the visitor recreational experience.

The Tamborine Guanaba conservation reserves will be managed to protect and enhance their environmental, ecological, scenic and cultural heritage values whilst providing for sustainable nature based recreation. Management will aim to preserve the remarkable natural values of the reserves and will be based upon sound scientific information which is continually updated by ongoing monitoring and feedback through an adaptive management regime.
Acronyms used in this management plan

ASL: Above Mean Sea Level
BMP: Bushfire Management Plan
CAMBA: China and Australia Migratory Bird Agreement
DERM: Queensland Department of Environment and Resource Management
EPBC Act: Commonwealth *Environment Protection and Biodiversity Act 1999*
GCCC: Gold Coast City Council
JAMBA: Japan and Australia Migratory Bird Agreement
LAP: Local Area Plan
LGA: Local Government Area
NAMU: Natural Areas Management Unit (Gold Coast City Council)
NCA: Queensland *Nature Conservation Act 1992*
NCWR: Queensland *Nature Conservation (Wildlife) Regulation 2006*
OSPL: Open Space Preservation Levy
PACP: Pest Animal Control Plan
QFRS: Queensland Fire and Rescue Service
QPWS: Queensland Parks and Wildlife Service
SEQRP: South East Queensland Regional Plan 2009 - 2031
RAMSAR: Ramsar Convention on Wetlands
RE: Regional Ecosystem

Note: all names of organisations listed are current at the date of adoption of this plan.
1 Introduction

1.1 Management vision

To protect and enhance the environmental, ecological, scenic and cultural heritage values of the planning area whilst providing for sustainable nature based recreation.

1.2 Plan development and implementation

1.2.1 Methodology and overview

For planning purposes, Gold Coast City Council’s (GCCC) conservation estate has been divided into 19 ‘management clusters’, which comprise groups of reserves that are geographically and ecologically related. Management clusters are generally defined by prominent physical features including ridgelines, waterways and roads.

This management plan provides the strategic framework governing the development and delivery of all management programs and actions affecting the Tamborine Guanaba management cluster. The plan lists future management activities and uses to be permitted (whether temporary or permanent) within the planning area (subject to legislative and planning scheme approvals). Where other uses, activities and/or an increase in the scale of the permitted use are proposed subsequent to this plan, they will require a full review and assessment by GCCC. If the review deems that the proposal is likely to result in a substantial variation to current management strategies a formal amendment to the management plan will be required, including public consultation and adoption of the amended plan by GCCC. Activities, uses and increases in scale that are not generally in accordance with the specific management objectives for the planning area (Section 3.2) and the management strategies given in Chapter 4 will not be supported unless an environmental benefit is demonstrated and the proposal will lead to an increase in the community’s understanding and appreciation of the environment.

A process of site assessment, stakeholder consultation and literature review has been used to evaluate existing issues and values within the planning area (Sections 1 and 2) and guide the development of broad management principles, goals and objectives (Section 3). Underpinning these objectives is a legislative and policy framework (Section 3) that draws upon relevant State and Federal legislation and guidelines, in addition to relevant Council strategies, policies and corporate objectives.

Background information about the planning area, including the location, regional context and natural, cultural and social values of the reserve network is summarised in chapter 2. The legislative and policy framework for the management plan, at a local, State and National level, is summarised in section 3.1 and underpins the specific management objectives listed in section 3.2.

Chapter 4 is divided into 19 themes relating to specific management values (e.g. flora, fauna, Indigenous and European cultural heritage), issues (e.g. fire, pest species, access) and opportunities (e.g. restoration, recreation, education and research) within the planning area. For each theme the current management situation is presented, summarising the existing condition, management initiatives, management needs and threats. On the basis of key desired outcomes arising from the current management situation, a detailed management strategy for each theme is presented, comprising management actions and guidelines. Guidelines and actions are designed to be flexible enough to allow for adaptive management of the reserves and their resources. To assist with future reviews of the management plan, key monitoring priorities for management actions and guidelines are provided.
Chapter 5 provides a prioritised summary of management timeframes for each of the actions listed in chapter 4. Chapter 5 is intended to function as a stand alone work plan for natural areas operational staff and lists actions reserve by reserve to facilitate easy incorporation into operational work programs.

1.2.2 Implementation

GCCC’s natural areas management officers will undertake day-to-day management of the planning area and will coordinate the implementation of this management plan. Contractors and other GCCC staff will be responsible for the implementation of some management strategies. Management guidelines and actions detailed in this plan will be carried out within the annual works program of GCCC, subject to the availability of funding, staff and regional priorities. All staff working in the planning area should be familiar with the relevant parts of this plan, especially when working in environmentally sensitive areas.

For effective implementation of this management plan, there needs to be a regular, reliable flow of resources for ongoing management and capital works funding. As annual action plans and works programs are developed in more detail and the exact resource requirements are identified, these projects can be resourced accordingly.

For effective delivery of this management plan, council staff, councillors and contractors need to communicate effectively. Community endorsement is also critical in the effective implementation of this plan and public stakeholder input has been and continues to be an important part of plan development. As well as responding to existing public concerns, the plan provides guidelines to facilitate future public involvement and support.

A review of this management plan will be undertaken by GCCC within ten years of the date of approval.
2 Background

2.1 Location of the management cluster and planning area

The management cluster is an area of land stretching from Tamborine National Park in the west to the Coomera River in the east, and from Tamborine Oxenford Road in the north to the Canungra Land Warfare Centre in the south. Within this management cluster is a network of conservation reserves over which this plan makes management recommendations. Throughout this report, these reserves are collectively referred to as the ‘planning area’. The planning area is located in the central western Gold Coast, close to the boundary of the Gold Coast City Council and Scenic Rim Regional Council LGAs. Figure 1 is a map of the planning area. Most of the reserves are located in a rural setting, with only a small number on the eastern side of the planning area located in an urban setting.

The reserves have a total area of approximately 632.01 hectares. Key reserves within the planning area include Eagle Heights Conservation Area, King Parrot Reserve, Mystery Road Reserve, Gladrose Reserve, Caballo Road Reserve, Pleasant Parklands and Chariyes Crossing Park. A list of all reserves within the planning area is presented in Table 1.

A portion of land informally known as ‘188 Hollindale Road’ (Lot 78 on WD 687) was acquired in June 2008. This management plan will recommend that 188 Hollindale Road be renamed and amalgamated into the adjacent Eagle Heights Conservation Area. Throughout this plan, 188 Hollindale Road will be referred to as part of Eagle Heights Conservation Area. This management plan will also recommend that Yalloanbee Court Reserve (901SP207478) be renamed and amalgamated into the adjacent Gladrose Reserve. Therefore, throughout this management plan, Yallanbee Court Reserve will be referred to as part of Gladrose Reserve.
Figure 1. Tamborine Guanaba Conservation Reserves (the planning area)
Table 1. Reserves within the Tamborine Guanaba planning area

<table>
<thead>
<tr>
<th>Park Name</th>
<th>Address</th>
<th>Area managed by NAMU (hectares)(^1)</th>
<th>Ownership and Tenure</th>
<th>Reserve Purpose (applies to Qld State Land only)(^2)</th>
<th>Park Category(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds Road Reserve</td>
<td>31RP143324</td>
<td>2.10</td>
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<td>park and recreation</td>
<td>natural areas, conservation area</td>
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<td>Caballo Road Reserve</td>
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</tr>
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<tr>
<td></td>
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<td>Reserve Purpose (applies to Qld State Land only)</td>
<td>Park Category</td>
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<td>King Parrot Reserve</td>
<td>268WD6420</td>
<td>214.60</td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>natural areas, conservation</td>
</tr>
<tr>
<td></td>
<td>239WD6420</td>
<td>0.75</td>
<td>riparian</td>
<td>NA</td>
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</tr>
<tr>
<td></td>
<td>23CP853665</td>
<td>0.6593</td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>natural areas, conservation</td>
</tr>
<tr>
<td>Mango Tree Park</td>
<td>168WD4548</td>
<td>0.71</td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>recreation park, local park</td>
</tr>
<tr>
<td></td>
<td>riparian</td>
<td>0.17</td>
<td>riparian</td>
<td>NA</td>
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<tr>
<td></td>
<td>road</td>
<td>0.55</td>
<td>Road</td>
<td>NA</td>
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<td>Mystery Road Reserve</td>
<td>3RP807905</td>
<td>70.73</td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>natural areas, conservation</td>
</tr>
<tr>
<td></td>
<td>2WD5889</td>
<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>natural areas, conservation</td>
</tr>
<tr>
<td></td>
<td>3SP105554</td>
<td>70.73</td>
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<td>park and recreation</td>
<td>natural areas, conservation</td>
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<td></td>
<td>27WD6302</td>
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<td>park and recreation</td>
<td>natural areas, conservation</td>
</tr>
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<td></td>
<td>2RP890495</td>
<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>natural areas, conservation</td>
</tr>
<tr>
<td></td>
<td>road</td>
<td>1.50</td>
<td>road</td>
<td>NA</td>
<td>road</td>
</tr>
<tr>
<td>Piggotts Road Reserve</td>
<td>99SP109073</td>
<td>0.64</td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>linear park/linkage</td>
</tr>
<tr>
<td></td>
<td>riparian</td>
<td>0.75</td>
<td>riparian</td>
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<tr>
<td>Pleasant Parklands</td>
<td>130WD5472</td>
<td>38.77</td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>linear park/linkage</td>
</tr>
<tr>
<td></td>
<td>123WD5296</td>
<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>linear park/linkage</td>
</tr>
<tr>
<td></td>
<td>124WD5296</td>
<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>linear park/linkage</td>
</tr>
<tr>
<td></td>
<td>125WD5296</td>
<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>linear park/linkage</td>
</tr>
<tr>
<td>Park Name</td>
<td>Address</td>
<td>Area managed by NAMU (hectares)</td>
<td>Ownership and Tenure</td>
<td>Reserve Purpose (applies to Qld State Land only)</td>
<td>Park Category</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------</td>
<td>---------------------------------</td>
<td>------------------------------------</td>
<td>-------------------------------------------------</td>
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</tr>
<tr>
<td>126WD5297</td>
<td></td>
<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>linear park/linkage</td>
</tr>
<tr>
<td>4RP230753</td>
<td></td>
<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>linear park/linkage</td>
</tr>
<tr>
<td>13RP885094</td>
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<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>linear park/linkage</td>
</tr>
<tr>
<td>800SP118342</td>
<td></td>
<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park and recreation</td>
<td>linear park/linkage</td>
</tr>
<tr>
<td>121WD5181</td>
<td></td>
<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park</td>
<td>linear park/linkage</td>
</tr>
<tr>
<td>122WD5181</td>
<td></td>
<td></td>
<td>QLD State land GCCC as trustee</td>
<td>park</td>
<td>linear park/linkage</td>
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<tr>
<td>5RP853399</td>
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<td>QLD State land GCCC as trustee</td>
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<td>linear park/linkage</td>
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<td>Stewart Road Parklands</td>
<td>5RP147356</td>
<td>7.59</td>
<td>GCCC freehold</td>
<td>NA</td>
<td>natural areas, conservation</td>
</tr>
<tr>
<td></td>
<td>1SP21973</td>
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<td>GCCC freehold</td>
<td>NA</td>
<td>natural areas, conservation</td>
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<td></td>
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<td>0.39</td>
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<tr>
<td></td>
<td>road</td>
<td>0.18</td>
<td>riparian</td>
<td>NA</td>
<td>road</td>
</tr>
<tr>
<td>Total area of Tamborine Guanaba planning area</td>
<td></td>
<td>632.01 hectares</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

1 – Boundaries of the listed properties do not necessarily correspond entirely with those of the reserve; reserve boundaries are based on the extent of natural areas, not property boundaries. Natural areas are defined by the Gold Coast City Council Natural Areas Management Unit using a range of criteria including the amount of vegetation present, physical characteristics of the park, historical management patterns and the landscape setting of the park.


3 – In accordance with GCCC’s Public Open Space Classification System.
2.2 Regional context

The 632.01 hectares of reserves have been acquired through developer contributions, state government trusteeship and Council purchases. Eagle Heights Conservation Area has been purchased using the open space preservation levy (OSPL).

The management cluster is mostly rural, and much of the land adjoining the reserves is classified as rural residential land. Grazing and hobby farming are common land uses in the vicinity of the reserves, although there is also forested private land adjacent to the reserves. In the east of the management cluster there is the suburban area of Upper Coomera.

A portion of the management cluster is occupied by the Canungra Land Warfare Centre, which extends south beyond the management cluster boundary, and west into Scenic Rim Regional Council LGA. This is Commonwealth land which is largely vegetated and is contiguous with King Parrot Reserve; one of the larger reserves encompassed by this management plan. Tamborine National Park is located on the western boundary of the planning area and is contiguous with Eagle Heights Conservation Area. Guanaba Indigenous Protected Area (IPA) is located adjacent to Guanaba Creek Reserve and Mystery Road Reserve.

A large area of the land in the Tamborine Guanaba management cluster is mapped as having regional level significance under the Biodiversity Planning Assessment (BPA), which reflects the South East Queensland Regional Nature Conservation Strategy (SEQRNCS).

The Coomera River forms the eastern boundary of the reserve cluster, flowing adjacent to Clagiraba Road Causeway Reserve, Henri Roberts Drive Reserve, Stewart Road Parklands and Charlies Crossing Park. Running Creek, Guanaba Creek, Wongawallan Creek and Tamborine Creek all flow through the management cluster into the Coomera River.

The Darlington Range bioregional corridor extends along a north south axis through the western extremities of the planning area. This corridor has state level significance (GCCC 2005b). A second, regionally significant bioregional corridor follows the Coomera River, which defines the eastern boundary of the planning area (GCCC 2005b). The Guanaba Creek corridor runs east west through the centre of the planning area, and has local level significance (GCCC 2005b).

2.3 Significance of the planning area

2.3.1 Natural values

2.3.1.1 Geology

The management cluster is situated in the central west of the city. It extends from Eagle Heights on the eastern side of the of the Darlington Range east to the floodplains of the Coomera River in Maudsland - Oxenford. It stretches from the Coomera River in Clagiraba north to Tamborine Creek in Wongawallan, encompassing Guanaba and Guanaba Creek.

Overall, the landform can be described as steep hills, ranging in elevation from 400 metres Above Mean Sea Level (ASL) in Eagle Heights Conservation Reserve to 5 metres ASL at Charlies Crossing Park.

The underlying parent material of the Tamborine Guanaba area is metasedimentary Neranleigh-Fernvale beds. The Neranleigh Fernvale beds yield red, brown, yellow and grey kurosols, red ferosols and tenosols. These soils have a loamy top layer, with a clayey
subsoil. Their low pH tends to reduce their fertility and they generally have limited agricultural potential (Gold Coast City Council 2005c).

In the north of the management cluster (including part of Eagle Heights Conservation Area), the Neranleigh-Fernvale beds comprise massive banded chert, arenite, greywacke and greenstone. This has produced red ferrosols and tenosols. Ferrosols are generally more fertile than tenosols, but there is only a small amount of this soil type within the Tamborine Guanaba area.

Within the portion of Land Warfare Centre located in the southwest of the management cluster, the parent material includes Beechmont basalt and Chillingham volcanics. These are the result of volcanic activities 23 and 225 million years ago respectively. The Beechmont Basalt and Chillingham volcanics have produced small areas of yellow, red and brown kurosol, brown and other dermosols, red ferrosol and black vertosol.

There are areas of alluvium and colluvium valley infill associated with the smaller waterways including Guanaba Creek, Tamborine Creek and Running Creek. These areas have soils including kandosols, dermosols, yellow kurosol and rudosols. These creeks flow into the Coomera River, where there are various alluvial terraces grading into floodplain. In the northeast of the planning area, sand and gravel is extracted along the Coomera River from these alluvial terraces. The soils in these lower riverside areas include brown kandosol, brown dermosol, grey sodosol, grey dermosol, yellow kandosol, hydrosols, rudosols and black vertosol.

The underlying geology, soils and resultant topography has a large bearing on the diversity of vegetation types found within the reserves of the planning area. The infertile soils derived from the Neranleigh-Fernvale metasediments provide a suitable environment for various types of eucalypt open forest - woodland. The sheltered slopes adjacent to creeks support some moist, tall open eucalypt forest. In the upper reaches of the creeks where there is alluvium and colluvium, vine forest occurs. Downstream, there is eucalypt – she oak woodland and a small amount of melaleuca open forest on the river terraces. Elsewhere in the management cluster, there are small pockets of subtropical vine forest associated with the igneous Beechmont basalt and Chillingham volcanic parent materials (Gold Coast City Council 2005c).

2.3.1.2 Catchment

The planning area is located within the Coomera River catchment, which can be further divided into the Maudsland, Wongawallan Creek, Guanaba Creek and Mount Nathan – Clagiraba Creek sub-catchments. The Coomera catchment has significant local, regional and national environmental values. It is recognised as being a relatively ‘healthy’ catchment (WBM Oceanics Australia 2005).

Three major creeks, and many smaller ephemeral waterways run through the planning area. The Coomera River forms the eastern boundary of the planning area. The major tributaries of the Coomera River within the planning area include Guanaba Creek, which flows northeast across the planning area from Mystery Road Reserve. Wongawallan Creek flows from its headwaters in Wongawallan through the northeastern corner of the management cluster into the Coomera River. Tamborine Creek flows west along the northern boundary of the management cluster, where it joins with Wongawallan Creek before flowing on to the Coomera River. Baker Creek and Running Creek are other smaller creeks present within the planning area.

Mango Tree Park, Clagiraba Road Causeway Reserve, Henri Roberts Drive Reserve, Heritage Drive Reserve, Stewart Road Parklands and Charlies Crossing Park are all located on the Coomera River. Wongawallan Creek flows through Gladrose Reserve and Running
Creek flows through Eagle Heights Conservation Area. Guanaba Creek Reserve, Hollindale Family Park, Piggots Road Reserve and Guanaba Reserve are located on Guanaba creek. All of these waterways are located within the Coomera River Catchment (WBM Oceanics Australia 2005).

The planning area offers valuable protection to the waterways in the management cluster. In particular, the vegetated portions of the reserves provide important buffers and wildlife corridors, stability of the interface between land and water and protection of water quality which plays an important part in the river’s habitat and ecological values.

2.3.1.3 Flora

The planning area conserves a diverse assemblage of native flora characteristic of the South East Queensland Bioregion. This includes representatives of several vegetation types including various types of open eucalypt forest, notophyll vine forest and gallery rainforest.

Eagle Heights Conservation Area, Guanaba Creek Reserve, Mystery Road Reserve, King Parrot Reserve, Gladrose Reserve and Caballo Road Reserve all support significant tracts of native forest. Remnant vegetation of very high ecological value is found in Eagle Heights Conservation Area and King Parrot Reserve. These reserves contain fauna habitat such as fallen timber, hollow logs, tree hollows and some permanent water sources. Weeds are present in reasonably areas of these reserves, although this is being addressed by ecological restoration works.

Pleasant Parklands, Heritage Road Reserve, Clagiraba Road Causeway Reserve, Hollindale Family Park, Charlies Crossing Park, Charlies Crossing Park West, Mango Tree Park, Heritage Road Reserve, Birds Road Reserve, Guanaba Reserve and Henri Roberts Drive Reserve all contain significantly modified vegetation communities, although some of these reserves have small areas of native vegetation.

A total of 682 native and exotic plant species representing 431 genera from 126 families of vascular plants have been recorded within the planning area. This is exceptionally diverse in a global context (Leiper et al. 2001). Fourteen regional ecosystems (REs) and specific regional ecosystem vegetation communities (Queensland Herbarium 2009) have been identified. One of these regional ecosystems is classified as ‘endangered’ (RE 12.3.1, which is also an element of 12.3.1/12.3.2 below), with a further three classified as ‘of concern’ (REs 12.3.11, 12.11.9 and 12.3.2 (an element of 12.3.1/12.3.2)), under the Queensland Vegetation Management Act 1999. Of these REs, 12.3.1/12.3.2, 12.3.1 and 12.11.9 have low or very low representation within the city (GCCC, 2009a). Table 2 shows the vegetation types occurring within the planning area.).
### Table 2. Vegetation types occurring within the Tamborine Guanaba Conservation Reserves.

<table>
<thead>
<tr>
<th>Regional Ecosystem</th>
<th>Reserves where RE is found</th>
<th>Vegetation Description</th>
<th>GCCC Vegetation Type</th>
<th>Vegetation Management Act Status</th>
<th>Extent Remaining in City</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.3.1</td>
<td>Gladrose Reserve</td>
<td>Gallery rainforest (notophyll vine forest) on alluvial plains</td>
<td>20a</td>
<td>‘endangered’</td>
<td>18%</td>
</tr>
<tr>
<td>12.3.1/12.3.2 (90/10)</td>
<td>Hollindale Family Park, Guanaba Creek Reserve, Piggots Road Reserve</td>
<td>Gallery rainforest (notophyll vine forest) on alluvial plains/Eucalyptus grandis tall open forest on alluvial plains</td>
<td>20a/2b</td>
<td>‘endangered’/ ‘of concern’</td>
<td>18%/20%</td>
</tr>
<tr>
<td>12.3.7</td>
<td>Guanaba Reserve; Gladrose Reserve, Heritage Drive Reserve, King Parrot Reserve, Mango Tree Park, Charlies Crossing Road West Park, Pleasant Parklands, Stewart Road Parklands, Clagiraba Road Causeway, Henri Roberts Drive</td>
<td><em>Eucalyptus tereticornis, Melaleuca viminalis, Casuarina cunninghamiana</em> fringing forest</td>
<td>20</td>
<td>‘least concern’</td>
<td>36%</td>
</tr>
<tr>
<td>12.3.7a</td>
<td>Hollindale Family Park</td>
<td>A vegetation community of 12.3.7. Riverine wetland or fringing riverine wetland. Melaleuca bracteata open-forest. Occurs in drainage depressions on Quaternary alluvial plains</td>
<td>12</td>
<td>‘least concern’</td>
<td>67%</td>
</tr>
<tr>
<td>12.3.11</td>
<td>Gladrose Reserve; Henri Robert Drive, Mango Tree Park; Pleasant Parklands; Heritage Drive Reserve</td>
<td><em>E. tereticornis, Eucalyptus siderophloia, Corymbia intermedia</em> open forest on alluvial plains near coast</td>
<td>6</td>
<td>‘of concern’</td>
<td>8%</td>
</tr>
<tr>
<td>12.11.2</td>
<td>Eagle Heights Conservation Area, King Parrot Reserve,</td>
<td><em>Eucalyptus saligna or E. grandis, E. microcorys, E. acmenoides, Lophostemon conferts</em> tall open forest on metamorphics +/- interbedded volcanics</td>
<td>2a</td>
<td>‘least concern’</td>
<td>61%</td>
</tr>
<tr>
<td>12.11.2</td>
<td>Eagle Heights Conservation Area, King Parrot Reserve,</td>
<td><em>Eucalyptus saligna or E. grandis, E. microcorys, E. acmenoides, Lophostemon conferts</em> tall open forest on metamorphics +/- interbedded volcanics</td>
<td>2a</td>
<td>‘least concern’</td>
<td>61%</td>
</tr>
<tr>
<td>Regional Ecosystem</td>
<td>Reserves where RE is found</td>
<td>Vegetation Description</td>
<td>GCCC Vegetation Type</td>
<td>Vegetation Management Act Status</td>
<td>Extent Remaining in City</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>----------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>12.11.3</td>
<td>Eagle Heights Conservation Area, Gladrose Reserve, Mystery Road, Piggots Road Reserve, Reserve, King Parrot Reserve, Charlies Crossing Road West Park, Pleasant Parklands, Caballo Road Little Reserve, Caballo Road Reserve, Hollindale Family Park.</td>
<td><em>Eucalyptus siderophloia, E. propinqua</em> open forest on metamorphics +/- interbedded volcanics</td>
<td>1a</td>
<td>‘least concern’</td>
<td>63%</td>
</tr>
<tr>
<td>12.11.3a</td>
<td>Eagle Heights Conservation Area, King Parrot Reserve</td>
<td>A vegetation community of 12.11.3. <em>Open-forest of Lophostemon confertus</em> with <em>Eucalyptus microcorys</em> and <em>E. propinqua</em>. Occurs in gullies and exposed ridges of Paleozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.</td>
<td>2</td>
<td>‘least concern’</td>
<td>59%</td>
</tr>
<tr>
<td>12.11.3a/12.11.3</td>
<td>Stewart Road Parklands</td>
<td>A vegetation community of 12.11.3. <em>Open-forest of Lophostemon confertus</em> with <em>Eucalyptus microcorys</em> and <em>E. propinqua</em>. Occurs in gullies and exposed ridges of Paleozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics/ <em>Eucalyptus siderophloia, E. propinqua</em> open forest on metamorphics +/- interbedded volcanics</td>
<td>2/1a</td>
<td>‘least concern’/ ‘least concern’</td>
<td>59%/63%</td>
</tr>
<tr>
<td>12.11.5a</td>
<td>Eagle Heights Conservation Area, Caballo Road Reserve, Gladrose Reserve, Mystery Road Reserve, King Parrot Reserve, Guanaba Creek Reserve, Mango Tree Park, Pleasant Parklands, Stewart Road Parklands, Clagiraba Road Causeway.</td>
<td>A vegetation community of 12.11.5. <em>Open forest of Eucalyptus tindaliae, Eucalyptus carnea</em> +/- <em>Corymbia citriodora, Eucalyptus crebra, Eucalyptus major, E. helidonica, Corymbia henryi, Angophora woodsiana, C. trachyphloia</em> (away from the coast) or <em>E. siderophloia, E. microcorys, E. racemosa subsp. racemosa, E. propinqua</em> (closer to the coast). Occurs on Paleozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.</td>
<td>1</td>
<td>‘least concern’</td>
<td>51%</td>
</tr>
<tr>
<td>Regional Ecosystem</td>
<td>Reserves where RE is found</td>
<td>Vegetation Description</td>
<td>GCCC Vegetation Type</td>
<td>Vegetation Management Act Status</td>
<td>Extent Remaining in City</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------</td>
<td>------------------------</td>
<td>----------------------</td>
<td>----------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>12.11.5e</td>
<td>Gladrose Reserve, Mystery Road Reserve, King Parrot Reserve, Caballo Road Reserve, Eagle Heights Conservation Area, Guanaba Creek Reserve, Guanaba Reserve.</td>
<td>A vegetation community of 12.11.5. Open-forest complex in which spotted gum is a relatively common species. Canopy trees include <em>Corymbia citriodora, Eucalyptus siderophloia</em> or <em>E. crebra</em> (sub coastal ranges), <em>E. major</em> and/or <em>E. longirostrata</em> and <em>E. acmenoides</em> or <em>E. portuensis</em> or <em>E. helidonica</em> and/or <em>E. carnea</em> and/or <em>E. eugenioides</em>. Other species that may be present and abundant locally include <em>Corymbia intermedia, C. trachyphloia, Eucalyptus tereticornis, E. propinqua, E. biturbinata, E. moluccana</em> and <em>Angophora leiocarpa</em>. <em>Lophostemon confertus</em> often present in gullies and as a sub canopy or understorey tree. Mixed understorey of grasses, shrubs and ferns. Occurs on hills and ranges of Paleozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.</td>
<td>4</td>
<td>‘least concern’</td>
<td>43%</td>
</tr>
<tr>
<td>12.11.5a/12.11.3 (60/40)</td>
<td>King Parrot Reserve</td>
<td>A vegetation community of 12.11.5. Open forest of <em>Eucalyptus tindaliae, Eucalyptus carnea +/- Corymbia citriodora, Eucalyptus crebra, Eucalyptus major, E. helidonica, Corymbia henryi, Angophora woodsiana, C. trachyphloia</em> (away from the coast) or <em>E. siderophloia, E. microcorys, E. racemosa subsp. racemosa, E. propinqua</em> (closer to the coast). Occurs on Paleozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics./Eucalyptus siderophloia, E. propinqua open forest on metamorphics +/- interbedded volcanics</td>
<td>1/1a</td>
<td>‘least concern’/‘least concern’</td>
<td>51%/63%</td>
</tr>
<tr>
<td>12.11.9</td>
<td>Eagle Heights Conservation Area</td>
<td><em>Eucalyptus tereticornis</em> open forest on metamorphics +/- interbedded volcanics. Usually higher altitudes.</td>
<td>6a</td>
<td>‘of concern’</td>
<td>16%</td>
</tr>
<tr>
<td>12.11.10</td>
<td>Caballo Road Reserve, Caballo Road Little Reserve, King Parrot Reserve, Eagle Heights Conservation Area.</td>
<td>Notophyll vine forest +/- <em>Araucaria cunninghamii</em> on metamorphics +/- interbedded volcanics.</td>
<td>29</td>
<td>‘least concern’</td>
<td>27%</td>
</tr>
</tbody>
</table>

**Non remnant communities**

| NA | Areas cleared of vegetation or greatly modified for agriculture, pasture, mining or urban development. | c | NA | NA |
| NA | Miscellaneous non-remnant vegetation | misc | N/A | N/A |
| NA | Regrowth of Acacia species | acac | NA | NA |

1 Gold Coast City Council Nature Conservation Strategy 2009 -2019
2 Vegetation Management Act 1999
3 Gold Coast City Council 2005b
At least 72 flora species within the planning area are considered to be significant species (see Table 3). Eleven of these are listed as threatened (vulnerable and near threatened) under the Queensland Nature Conservation (Wildlife) Regulation 2004. Of these, 8 are also protected under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. A further 61 species are identified as city wide significant (CWS) flora within the flora and fauna database of the Gold Coast City Nature Conservation Strategy 1998.

Table 3. Significant plants known to occur within Tamborine Guanaba Conservation Reserves.

<table>
<thead>
<tr>
<th>Genus</th>
<th>Species</th>
<th>Common Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acacia</td>
<td>bakeri</td>
<td>marblewood</td>
<td>CWS</td>
</tr>
<tr>
<td>Acacia</td>
<td>binervata</td>
<td>two-veined hickory</td>
<td>CWS</td>
</tr>
<tr>
<td>Acacia</td>
<td>viscudula</td>
<td>sticky wattle</td>
<td>CWS</td>
</tr>
<tr>
<td>Acalypha</td>
<td>nemorum</td>
<td>southern acalypha</td>
<td>CWS</td>
</tr>
<tr>
<td>Alectryon</td>
<td>subcinereus</td>
<td>wild quince</td>
<td>CWS</td>
</tr>
<tr>
<td>Angophora</td>
<td>subvelutina</td>
<td>broad-leaved apple</td>
<td>CWS</td>
</tr>
<tr>
<td>Baloghia</td>
<td>marmorata</td>
<td>jointed baloghia</td>
<td>VUL</td>
</tr>
<tr>
<td>Belvisia</td>
<td>mucronata</td>
<td>needle fern</td>
<td>CWS</td>
</tr>
<tr>
<td>Billardiera</td>
<td>scandens</td>
<td>common apple-berry</td>
<td>CWS</td>
</tr>
<tr>
<td>Bosistoia</td>
<td>pentacocca var. pentacocca</td>
<td>native almond</td>
<td>CWS</td>
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<td>Bosistoia</td>
<td>transversa</td>
<td>three-leaved bosistoia</td>
<td>CWS</td>
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<tr>
<td>Bouchardatia</td>
<td>neurococca</td>
<td>union nut</td>
<td>CWS</td>
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<tr>
<td>Brachychiton</td>
<td>bidwillii</td>
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<td>CWS</td>
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<td>Caladenia</td>
<td>catenata</td>
<td>white caladenia</td>
<td>CWS</td>
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<tr>
<td>Calanthe</td>
<td>triplicata</td>
<td>Christmas orchid</td>
<td>CWS</td>
</tr>
<tr>
<td>Cayratia</td>
<td>acris</td>
<td>hairy water vine</td>
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<tr>
<td>Chiloglottis</td>
<td>sylvestris</td>
<td>bird orchid</td>
<td>CWS</td>
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<td>Citrus</td>
<td>australasica</td>
<td>finger lime</td>
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<tr>
<td>Cordyline</td>
<td>congesta</td>
<td>palm lily</td>
<td>CWS</td>
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<tr>
<td>Corymbia</td>
<td>henriyi</td>
<td>large-leaved spotted gum</td>
<td>CWS</td>
</tr>
<tr>
<td>Croton</td>
<td>mammilatus</td>
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<td>CWS</td>
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<tr>
<td>Cryptocarya</td>
<td>foetida</td>
<td>stinking cryptocarya</td>
<td>VUL</td>
</tr>
<tr>
<td>Cryptocarya</td>
<td>macdonaldii</td>
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<td>CWS</td>
</tr>
<tr>
<td>Cupaniopsis</td>
<td>newmanii</td>
<td>long-leaved tuckeroo</td>
<td>NT</td>
</tr>
<tr>
<td>Cyperus</td>
<td>semifertilis</td>
<td></td>
<td>VUL</td>
</tr>
<tr>
<td>Daviesia</td>
<td>arborea</td>
<td>tree daviesia</td>
<td>CWS</td>
</tr>
<tr>
<td>Dendrocnide</td>
<td>moroides</td>
<td>gympie stinger</td>
<td>CWS</td>
</tr>
<tr>
<td>Dissiliaria</td>
<td>baloghioides</td>
<td>lancewood</td>
<td>CWS</td>
</tr>
<tr>
<td>Doodia</td>
<td>heterophylla</td>
<td>a rasp fern</td>
<td>CWS</td>
</tr>
<tr>
<td>Echinostephia</td>
<td>aculeata</td>
<td>prickly tape vine</td>
<td>CWS</td>
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<tr>
<td>Emmenosperma</td>
<td>alphitonioides</td>
<td>yellow ash</td>
<td>CWS</td>
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<tr>
<td>Endiandra</td>
<td>compressa</td>
<td>queensland greenheart</td>
<td>CWS</td>
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<td>Eupomatia</td>
<td>bennettii</td>
<td>small bolwara</td>
<td>CWS</td>
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<tr>
<td>Goodenia</td>
<td>ovata</td>
<td></td>
<td>CWS</td>
</tr>
<tr>
<td>Gossia</td>
<td>punctata</td>
<td></td>
<td>CWS</td>
</tr>
<tr>
<td>Graptophyllum</td>
<td>spinigerum</td>
<td>spiny graptophyllum</td>
<td>CWS</td>
</tr>
<tr>
<td>Grevillea</td>
<td>hilliana</td>
<td>white yiel yiel</td>
<td>CWS</td>
</tr>
<tr>
<td>Grewia</td>
<td>latifolia</td>
<td>dysentery plant</td>
<td>CWS</td>
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<tr>
<td>Gymnura</td>
<td>drymophila var. drymophila</td>
<td></td>
<td>CWS</td>
</tr>
<tr>
<td>Harnieria</td>
<td>hygrophioides</td>
<td>white justicia</td>
<td>CWS</td>
</tr>
<tr>
<td>Homalanthus</td>
<td>stillingiiolus</td>
<td>little bleeding heart</td>
<td>CWS</td>
</tr>
<tr>
<td>Lepidozamia</td>
<td>peroffskyana</td>
<td>shining burrawang</td>
<td>CWS</td>
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<tr>
<td>Lomandra</td>
<td>confertifolia subsp. pallida</td>
<td>mat-rush</td>
<td>CWS</td>
</tr>
<tr>
<td>Lomandra</td>
<td>laxa</td>
<td>mat-rush</td>
<td>CWS</td>
</tr>
<tr>
<td>Macadamia</td>
<td>integrifolia</td>
<td>macadamia nut</td>
<td>VUL</td>
</tr>
<tr>
<td>Macadamia</td>
<td>tetraphylla</td>
<td>macadamia nut</td>
<td>VUL</td>
</tr>
<tr>
<td>Marsdenia</td>
<td>hemiptera</td>
<td>large-leaved milk vine</td>
<td>NT</td>
</tr>
<tr>
<td>Marsdenia</td>
<td>longioba</td>
<td>slender-leaved milk vine</td>
<td>VUL</td>
</tr>
<tr>
<td>Medicosma</td>
<td>cunninghamii</td>
<td>medicosma</td>
<td>CWS</td>
</tr>
<tr>
<td>Genus/Species</td>
<td>Common Name</td>
<td>Status</td>
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<td>---------------</td>
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<tr>
<td><em>Mischocarpus</em> anodontus</td>
<td>veinypearfruit</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Notelaea</em> johnsonii</td>
<td>veinless mock olive</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Oxalis</em> ochnodes</td>
<td></td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Pararistolochia</em> praevanosa</td>
<td>Richmond birdwing vine</td>
<td>NT$^1$</td>
<td></td>
</tr>
<tr>
<td><em>Parsonia</em> brisbanensis</td>
<td>brisbane silkpod</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Parsonia</em> lilacina</td>
<td>crisped silkpod</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Passiflora</em> aurantia var. aurantia</td>
<td>red passion flower</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Passiflora</em> herbertiana subsp. herbertiana</td>
<td>native passion flower</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Phyllanthus</em> micro cladus</td>
<td>spiny phyllanthus</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Podolobium</em> illicifolium</td>
<td>prickly shaggy pea</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Pollia</em> macrophylla</td>
<td>large-leaved pollia</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Pouteria</em> queenslandica</td>
<td>bluish coondoo</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Randia</em> moorei</td>
<td>spiny gardenia</td>
<td>END$^{1,2}$</td>
<td></td>
</tr>
<tr>
<td><em>Rubus</em> moluccanus var. moluccanus</td>
<td>Moluccan raspberry</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Seringia</em> arborescens</td>
<td>seringia</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Solanum</em> serpens</td>
<td></td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Solanum</em> shirleyanum</td>
<td></td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Syncarpia</em> glomulifera subsp. glomulifera</td>
<td>turpentine</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Tasmannia</em> insipida</td>
<td>pepper bush</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Tephrosia</em> rufula</td>
<td></td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Viola</em> betonicifolia subsp. betonicifolia</td>
<td>arrowhead violet</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Viscum</em> articulatum</td>
<td>leafless mistletoe</td>
<td>CWS$^3$</td>
<td></td>
</tr>
<tr>
<td><em>Zieria</em> collina</td>
<td>Mt Tamborine zieria</td>
<td>VUL$^{1,2}$</td>
<td></td>
</tr>
</tbody>
</table>

$^1$ near threatened (NT) vulnerable (VUL) and endangered (END) as per the Queensland Nature Conservation (Wildlife) Regulation 2006.

$^2$ near threatened (NT) vulnerable (VUL) and endangered (END) as per the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

$^3$ city wide significant (CWS) species as per the Gold Coast City Council 1998b.

Flora studies within the planning area have determined that Gold Coast City Council vegetation types 29, 1a, 2 and 2a (Table 2) contain significant habitat for rare and threatened plant species (Searle and Maden 2007). Eagle Heights Conservation Area contains the largest quantity of these vegetation types, suggesting that this reserve offers significant habitat for rare and threatened plants.

In addition to providing habitat for local flora and fauna, the planning area is a significant component of a bioregional corridor extending from Tweed Heads to Beenleigh. This key linkage is identified as the Darlington Range Corridor in Council’s Common Nature Conservation Classification System Mapping Review (GCCC 2005b). The Darlington Range Corridor is recognised as a State Significant Corridor (DERM 2007), providing opportunities for altitudinal plant and animal dispersal and migration, and home ranges for larger native fauna. This corridor runs in a north south direction through the west of the management cluster and incorporates parts of King Parrot Reserve, Mystery Road Reserve, Guanaba Creek Reserve and Eagle Heights Conservation Area. At a regional scale, the small, scattered reserves along the Coomera River contribute to a southwest-northeast corridor linkage. This linkage is identified as the Coomera River Corridor in Council’s Common Nature Conservation Classification System Mapping Review (GCCC 2005b). These reserves have highly modified vegetation communities, and some of the reserves have been almost completely cleared of vegetation. A local corridor known as the Guanaba Creek Corridor follows Guanaba Creek, incorporating Guanaba Creek Reserve, Hollindale Family Park, Guanaba Reserve and Piggott’s Road Reserve. This corridor is identified as a locally significant corridor in Council’s Common Nature Conservation Classification System Mapping Review (GCCC 2005b). It also contains ‘endangered’ and ‘of concern’ regional ecosystems.

More recently, the Clagiraba to Southern Moreton Bay bioregional corridor has been mapped by DERM and GCCC (Chenoweth, 2009). This corridor links Moreton Bay with Coombabah wetlands, Nerang National Park and Hinterland vegetation adjacent to the planning area. Heritage Road Reserve and Stewart Road Parklands are located within the bounds of this corridor.
2.3.1.4 Fauna

With the exception of Birds Road reserve, recent fauna surveys have been carried out across the planning area. Searle and Maden, 2010 recorded a total of 197 vertebrate species within the planning area. This included 29 native and one exotic mammal species, 121 native and three exotic bird species, 18 native reptile species, 14 native and one exotic amphibian species and seven native and one exotic fish species. As with all fauna surveys it is likely that many more species are present, but were not directly recorded during survey work. Based on the habitat characteristics of the planning area it is likely that the reserves support many more vertebrate resident and migratory species and an invertebrate assemblage totalling thousands of species.
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Status</th>
<th>Recorded or Predicted in Planning Area</th>
<th>Ecological Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AMPHIBIANS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adelotus brevis</td>
<td>tusked frog</td>
<td>VUL¹</td>
<td>recorded</td>
<td>Inhabits rainforest and eucalypt forest. Also lives in pasture and around human habitation (Queensland Museum 2007).</td>
</tr>
<tr>
<td>Litoria pearsoniana</td>
<td>cascade treefrog</td>
<td>END¹</td>
<td>recorded</td>
<td>Dense riparian vegetation, streams in rainforest, and wet eucalypt forest (Queensland Museum 2007).</td>
</tr>
<tr>
<td>Mixophyes fleayi</td>
<td>Fleay’s barred-frog</td>
<td>END¹</td>
<td>predicted</td>
<td>Mountain rainforest (Queensland Museum 2007).</td>
</tr>
<tr>
<td>Mixophyes iteratus</td>
<td>giant barred-frog</td>
<td>END¹</td>
<td>predicted</td>
<td>Wet forests (Queensland Museum 2007).</td>
</tr>
<tr>
<td><strong>REPTILES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cautula zia</td>
<td>rainforest skink</td>
<td>NT¹</td>
<td>predicted</td>
<td>Habitat is litter in the most moist areas, susceptible to drying (New South Wales Parks and Wildlife Service 1999)</td>
</tr>
<tr>
<td>Hoplocephalus stephensii</td>
<td>Stephen’s banded snake</td>
<td>NT¹</td>
<td>predicted</td>
<td>Rainforest and eucalypt forests and rocky areas up to 950 m in altitude (NSW Government 2005)</td>
</tr>
<tr>
<td>Acanthophis antarcticus</td>
<td>death adder</td>
<td>NT¹</td>
<td>predicted</td>
<td>Inhabits dry and wet eucalypt forests, rainforest and lowland heath. Often uses leaf litter for cover (Wilson 2005).</td>
</tr>
<tr>
<td>Coeranoscincus reticulatus</td>
<td>rainforest skink</td>
<td>NT¹,²</td>
<td>predicted</td>
<td>Found mostly in closed forest and possibly open layered Eucalyptus forest. Generally recorded in moist layered forest on loamy basaltic soils (Department of Sustainability, Environment, Water, Population and Communities, 2010)</td>
</tr>
<tr>
<td>Saproscincus rosei</td>
<td>rainforest skink</td>
<td>NT¹</td>
<td>predicted</td>
<td>Occurs in rainforests and wet eucalyptus habitats (Wilson 2005).</td>
</tr>
<tr>
<td><strong>BATS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chalinolobus dwyeri</td>
<td>large-eared pied bat</td>
<td>NT¹</td>
<td>predicted</td>
<td>Forages in dry sclerophyll and along rainforest edges.</td>
</tr>
<tr>
<td><strong>BIRDS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accipiter novaehollandiae</td>
<td>grey goshawk</td>
<td>NT¹</td>
<td>recorded</td>
<td>Occurs in various forests, particularly coastal closed forest (Simpson and Day 2004).</td>
</tr>
<tr>
<td>Calyptorhynchus lathami</td>
<td>glossy black-cockatoo</td>
<td>VUL¹</td>
<td>recorded</td>
<td>Dependent on Allocasuarina and prefers forest with this plant genus.</td>
</tr>
<tr>
<td>Lathamus discolor</td>
<td>swift parrot</td>
<td>END¹,²</td>
<td>predicted</td>
<td>Dry sclerophyll eucalypt forests and woodlands. Occasionally occurs in wet sclerophyll forests (Swift Parrot Recovery Team 2001a)</td>
</tr>
<tr>
<td>Ephippiorhynchus asiaticus</td>
<td>black-necked stork</td>
<td>NT¹</td>
<td>recorded</td>
<td>Inhabits river pools, swamps, tidal flats (Simpson and Day 2004).</td>
</tr>
<tr>
<td>Menura alberti</td>
<td>Albert’s lyrebird</td>
<td>NT¹</td>
<td>recorded</td>
<td>Wettest rainforests or wet sclerophyll forests with a wet understorey, often of</td>
</tr>
<tr>
<td>Scientific Name</td>
<td>Common Name</td>
<td>Status</td>
<td>Recorded or Predicted in Planning Area</td>
<td>Ecological Requirements</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
<td>--------</td>
<td>----------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td><em>Ninox strenua</em></td>
<td>powerful owl</td>
<td>VUL&lt;sup&gt;1&lt;/sup&gt;</td>
<td>predicted</td>
<td>Inhabits open sclerophyll forests and woodlands (Simpson and Day 2004). Needs larger tracts of forest for survival.</td>
</tr>
<tr>
<td><em>Podargus ocellatus plumiferus</em></td>
<td>plumed frogmouth</td>
<td>VUL&lt;sup&gt;1&lt;/sup&gt;</td>
<td>predicted</td>
<td>Plumed Frogmouths live in rainforest and also use rainforest trees within sclerophyll vegetation (Department of Sustainability, Environment, Water, Population and Communities, 2010c)</td>
</tr>
<tr>
<td><em>Podargus ocellatus</em></td>
<td>marbled frogmouth</td>
<td>VUL&lt;sup&gt;1&lt;/sup&gt;</td>
<td>predicted</td>
<td>Prefers subtropical rainforest, particularly in deep, wet, sheltered gullies along creeklines and often containing stands of Bangalow Palms or ferns (Department of Sustainability, Environment, Water, Population and Communities, 2010d)</td>
</tr>
<tr>
<td><em>Tyto tenebricosa</em></td>
<td>sooty owl</td>
<td>NT&lt;sup&gt;1&lt;/sup&gt;</td>
<td>predicted</td>
<td>Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Nests in large tree hollows. (Department of Sustainability, Environment, Water, Population and Communities, 2010e)</td>
</tr>
</tbody>
</table>

**MAMMALS**

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Status</th>
<th>Recorded or Predicted in Planning Area</th>
<th>Ecological Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Dasyurus maculatus</em></td>
<td>spotted-tailed quoll</td>
<td>VUL&lt;sup&gt;1&lt;/sup&gt;</td>
<td>predicted</td>
<td>Favourable habitat contains generally older and more structurally diverse forests which support a range of habitat requirements such as trees with hollows, hollow logs on the ground, rocky outcrops, caves and rock crevices (Department of Environment and Climate Change, 2007).</td>
</tr>
<tr>
<td><em>Phascolarctos cinereus</em></td>
<td>koala</td>
<td>VUL&lt;sup&gt;1&lt;/sup&gt;</td>
<td>recorded</td>
<td>Occurs in dry and wet eucalypt forest and melaleuca forest (Strahan 2002).</td>
</tr>
<tr>
<td><em>Pteropus poliocephalus</em></td>
<td>grey-headed flying-fox</td>
<td>VUL&lt;sup&gt;1,2&lt;/sup&gt;</td>
<td>recorded</td>
<td>Roosts in eucalypt forest, mangroves and melaleuca forest (Strahan 2002; Churchill 1998).</td>
</tr>
</tbody>
</table>

**BUTTERFLIES**

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Status</th>
<th>Recorded or Predicted in Planning Area</th>
<th>Ecological Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ornithoptera richmondia</em></td>
<td>Richmond birdwing butterfly</td>
<td>VUL&lt;sup&gt;1&lt;/sup&gt;</td>
<td>recorded</td>
<td>Eggs are laid on the larval food plant <em>Pararistolochia praevenosa</em> which grows in rainforest (Common and Waterhouse 1981).</td>
</tr>
</tbody>
</table>

<sup>1</sup> near threatened (NT) vulnerable (VUL) and endangered (END) as per the Queensland Nature Conservation (Wildlife) Regulation 2006.

<sup>2</sup> near threatened (NT) vulnerable (VUL) and endangered (END) as per the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

<sup>3</sup> where the ecological requirements of a species are present in the planning area and there is anecdotal or other evidence of the presence of such species, they are listed as predicted.
Of the fauna species recorded in the reserves, nine are listed as being of conservation significance under State and Commonwealth Legislation (Table 4). A number of significant species not directly recorded in the planning area are likely to be present, and these have been noted as ‘predicted’ in Table 4. This is because of the presence of suitable habitat and other indirect evidence suggesting the species is likely to exist in the planning area. For example, whilst survey work has not detected the presence of the endangered Fleay’s barred-frog (*Mixophyes fleayi*) or the endangered giant barred-frog (*M. iteratus*), it is likely that they are present in the planning area. This is particularly true for Fleay’s barred-frog (*Mixophyes fleayi*) which has been found in the Guanaba Indigenous Protected area directly adjacent to Guanaba Creek Reserve and Mystery Road Reserve. Eagle Heights Conservation Area also contains potential habitat for several species listed under the *Queensland Nature Conservation (Wildlife) Regulation 2006* including the vulnerable brush tailed phascogale (*Phascogale tapoatafa*) and the vulnerable long nosed potoroo (*Potorous tridactylus*). These are not listed as ‘predicted’ in Table 4 as there is less evidence to suggest they might actually be present than the other species listed.

In addition to those species listed as threatened under State and Commonwealth legislation, a large number of species recorded within the planning area are classified under the *Nature Conservation (Wildlife) Regulation 2006* as being ‘Special Least Concern Species’ – for example, the koala (*Phascolarctos cinereus*), platypus (*Ornithorhynchus anatinus*) and great egret (*Ardea alba*). Whilst survey work has not directly detected its presence, it is highly likely that the Echidna (*Tachyglossus aculeatus*), another ‘Special Least Concern Species’ is also present in the planning area. Many migratory bird species such as the cattle egret (*Ardea ibis*) that also fall under the category of ‘Special Least Concern Species’ have also been recorded in the planning area.

Koalas are present in a number of the reserves. For example, koalas have been directly observed in Guanaba Creek Reserve, Mystery Road Reserve, King Parrot Reserve and Eagle Heights Conservation Area and it is highly likely that koalas are also present in other reserves. *State Planning Policy 2/10* is a land use planning document which incorporates maps of koala habitat value assessment. This mapping shows that the majority of the planning area is designated as low value bushland habitat, with small patches of medium value bushland habitat in King Parrot Reserve, Eagle Heights Conservation Area, Gladrose Reserve, Caballo Road Reserve, Stewart Road Parklands and Pleasant Parklands. The remaining area is made up of non habitat areas and some small areas suitable for rehabilitation. In 2007, Biolink consultants were commissioned by GCCC to produce the Koala Habitat and Population Assessment for Gold Coast City LGA, and these maps were used in the preparation of the *GCC Nature Conservation Strategy 2009-2019*. With the exception of Guanaba Reserve, Birds Road Reserve, Charlies Crossing Park, Charlies Crossing Park West and small section of Stewarts Road Reserve, the entire planning area is mapped by Biolink 2007 as koala habitat areas. Pleasant Parklands is designated as an urban koala area, and the remaining reserves are designated as koala conservation areas.

Overall, the number of reptilian species recorded in the planning area is considered low. This may be partially due to the survey methodology used, and partially due to the small size of some of the reserves. Had targeted fauna surveys been conducted over a period of years, it is expected that many more species may have been recorded. The small size of some of the reserves may also be contributing to a low number of reptilian species. The smaller the reserve the greater the impact of edge effects and other limiting factors such as increased predation.

The planning area supports a relatively high number of mammal and bird species. This can be attributed to the presence of some large reserves such as Eagle Heights Conservation Area and King Parrot Reserve. In addition, the presence of permanent water bodies, a diversity of habitats (including rainforest, wet sclerophyll and riparian vegetation), well
structured vegetation, a relatively wide elevation gradient, and a not too frequent or severe fire regime over many of the reserves has probably helped to maintain diverse mammal and bird assemblages.

A relatively high number of frog species are present. This is probably due to the good quality tributaries and associated riparian vegetation. The introduced cane toad (*Chaunus marinus*) is present in large numbers.

The vulnerable glossy black-cockatoo (*Calyptorhynchus lathami*), rare sooty owl (*Tyto tenebricosa*) and rare Albert’s lyrebird (*Menura alberti*) have all been recorded in Eagle Heights Conservation Area. In addition to these species, Eagle Heights Conservation Area also provides critical habitat for the vulnerable powerful owl (*Ninox strenua*) and the vulnerable Richmond birdwing butterfly (*Ornithoptera richmondi*).

The planning area supports a diverse assemblage of local, nomadic and migratory fauna. The large amount of bushland within the management cluster, the diversity of habitat types, and the complexity of the vegetation are reflected by the high vertebrate and invertebrate diversity of the planning area. Eagle Heights Conservation Area and King Parrot Reserve form extensive contiguous habitat areas with other large conservation managed lands such as Tamborine National Park, Canungra Land Warfare and Guanaba Indigenous Protected Area. The presence of watercourses and associated riparian vegetation throughout the planning area probably mean that fauna are using these areas as corridors for movement. Guanaba Creek is a corridor of local significance, and the Coomera River is a regionally significant corridor.

2.3.2 Landscape values

The planning area makes an important contribution to the landscape values of the Gold Coast. It is characterised by green hills and ridgelines in the west of the planning area. Along the Coomera River, there are sweeping river views. The hills of the Tamborine Guanaba area are a significant element of the ‘green behind the gold’ of Gold Coast City.

Council has developed scenic amenity mapping for the city, which assigns a scenic amenity rating of between one (very low) and ten (very high). This rating is comprised of two factors: scenic preference, and visual exposure. Scenic preference is defined as “a rating of the community’s liking for scenery of open space compared to areas occupied by built structures, measured by photographs” (Terranean Mapping Technologies, 2008). Visual exposure is “a measure of the relative visibility of the landscape with respect to a set of viewpoints” (Terranean Mapping Technologies, 2008). Overall scenic amenity ratings within the planning area range from ‘moderate’ (a rating of four) to ‘very high’ (a rating of ten), with the majority of the planning area having ‘high’ scenic amenity (a rating of eight or nine). These high ratings demonstrate the considerable amenity role that the planning area plays within the Gold Coast landscape.

Overlay Map 22 of the *GCCC Planning Scheme* shows two ‘scenic routes’ within the planning area on the ‘scenic tourist routes’ mapping. One route stretches from King Parrot Reserve in the west to Heritage Drive Reserve in the East, roughly following Henri Roberts Drive. The second scenic route extends from the Pacific Motorway near ‘Movieworld’ west along the northern boundary of the planning area to the Scenic Rim Regional Council boundary north of Eagle Heights Conservation Reserve.

The *Gold Coast Scenic Amenity View Corridor Study* (Terranean Mapping, 2009) identified some 27 important strategic view corridors to be considered for protection throughout the city. One such view corridor is directly adjacent to Mango Tree Park, and is identified as ‘View Corridor Reference 22’. The view is from the elevated bridge over the Coomera River looking west along Beaudesert Nerang Road. It provides good views of the river with mature...
native woodland on the banks. It has rural roadside grassland in the centre of the view with densely vegetated local ranges in the middle ground and the distance. The perspective of the road ahead draws the viewer's eye to the ranges in the distance. Whilst not within a reserve, this view is directly adjacent to the planning area and part of the view is of Mango Tree Reserve.

Several reserves in the planning area are prominent natural elements in the central hinterland area of the Gold Coast. Eagle Heights Conservation Area, King Parrot Reserve and Mystery Road Reserve are visible from the coastal lowlands and surrounding areas such as the Pacific Motorway. The planning area has significant landscape value in the context of the Gold Coast City Council local government area.

2.3.3 Cultural heritage values

2.3.3.1 Aboriginal

The planning area is part of the Yugambeh language region which extends from the southern Gold Coast, north to Beenleigh and west to Beaudesert. The traditional owners of the planning area include the Kombumerri and Wangerriburra people. There is evidence indicating that the Kombumerri and Wangerriburra people have had a presence in the Yugambeh region for over 24,000 years.

The use of the Yugambeh language in the naming of towns, rivers and other landscape features in the planning area is a constant reminder of the area’s cultural heritage:

- The name Guanaba is derived from the word ‘Gugugan’, which was the name of the locality now known as Beenleigh (Watson, 1944). It isn’t fully understood how the word came to be used for the area now known as Guanaba. It is possible that at the time Watson recorded this, the Gugingin family had taken refuge in the Coomera Hills, some distance from Beenleigh. It is also possible that this family group utilised the area on a seasonal basis.

- The name Tamborine is also thought to have stemmed from the Aboriginal term Dhan’- bi’rin, meaning ‘place of cliffs’. Dhan is thought to be the abbreviated version of Dha’g-n, meaning ‘place’. Bi’rin means ‘cliff’ or ‘cliffs’ (Watson, 1946).

- Wongawallan is thought to have been derived from an Aboriginal word. ‘Wonga’ and ‘wallan’, are Aboriginal words meaning pigeon and water respectively. Wongawallan may have also come from the words ‘wangum’ and ‘walum’, meaning cut or scarred face. Wongawallan was also the name of a Yugambeh Aborigine who lived in the Coomera area in the 1870s (GCC, 2008a).

Within the planning area, there are a number of different types of Aboriginal artefacts including single stone artefacts, stone artefact scatters, scarred trees, ceremonial areas and rock rings (Hague Best 2010, pers. comm.). There are greater concentrations of Aboriginal artefacts along the ridgelines, suggesting that these areas with greater visibility were of importance. Other artefacts are present alongside watercourses, including the Coomera River (Bonhomme Craib and Associates, 2000).

The Guanaba Indigenous Protected Area (IPA) is located in the southwest of the management cluster. Guanaba IPA is managed by the Ngarang-Wal Gold Coast Aboriginal Association Incorporated. Guanaba IPA is contiguous with Guanaba Creek Reserve and Mystery Road Reserve. Guanaba IPA is managed as a category IV IUCN (International Union for the Conservation of Nature) area, meaning it is managed to maintain, conserve and restore species and habitats.
2.3.3.2 European

The area now known as the Gold Coast was first visited by Europeans in the late 1700s. Originally a part of New South Wales and effectively a penal colony, the area saw very little European occupation until after the 1820s.

From the 1850s onwards, loggers worked the Gold Coast region in search of red cedar, white beech and hoop pine. Place names such as Cedar Creek and Beechmont are a testament to the significance of the timber industry in the history of the Gold Coast.

In 1869 prior to the completion of the government survey of 1870, the coastal lowlands from Southport, north to Beenleigh and west to the Darlington Range were opened to selection, effectively establishing leaseholds with the right to purchase. Although the land was initially cleared for cattle runs, commercial crop production (such as bananas, sugar cane, cotton and arrowroot) became the predominant land use.

A number of European families settled in the Guanaba area and made their living timber getting, dairy farming, and for a period, growing bananas. The population growth in this area lead to the opening of a school in the 1920s. The number of pupils attending the school fluctuated, and by 1942 the school was closed and children began attending the Maudsland School (GCCC, 2009c).

The pace and scale of development within the planning area during the 1900s has contributed to there being only a limited number of remaining relics representing the early days of European settlement.

Overlay Map 3 of the GCCC Planning Scheme lists Lot 507 on SP192138 as an ‘Other Heritage Listing’. This allotment of land is directly to the south of Pleasant Parklands and is bounded by the Coomera River on its northeast side. It is the site of the original Kleinschmidt’s Flour Mill. Today, little remains of this historic structure.

2.3.4 Recreation values

The exceptional natural values of the planning area allow for a range of nature-based recreational opportunities. Bushwalking, nature observation, camping, swimming, fishing, running, mountain biking and horse riding occur within the reserves. Some of these activities occur as-of-right, whereas others are regulated by a permit system under Local Law 9 (Parks and Reserves) 2008.

Limited recreational infrastructure is provided in some of the reserves. For example, there is a horse step-through, hitching rails, and a table and benches in Guanaba Reserve. Parts of Pleasant Parklands, Guanaba Reserve, Charlies Crossing Park and Gladrose Reserve are also maintained as open grassed fields to allow for active ‘kick and play’ activities and horse riding. A number of tracks are maintained throughout the planning area, providing safe access for nature based recreation such as bushwalking.

Nerang National Park (managed by DERM) is located close to the planning area and offers further opportunities for nature based recreation, including horse riding and mountain bike riding. Tamborine National Park (also managed by DERM) is located to the west of Eagle Heights Conservation Area. Tamborine National Park, which is directly adjacent to the planning area offers a range of nature based recreational opportunities which complement the opportunities available inside the planning area.
2.3.5 Scientific and education values

Some parts of the planning area have exceptional ecological value, such as Eagle Heights Conservation Area, King Parrot Reserve, Guanaba Reserve and Mystery Road Reserve. There is a great diversity of vegetation and habitat types represented within the planning area. The proximity of the conservation reserves to a major waterway, namely the Coomera River further increases their value for scientific research and education. As such the Tamborine Guanaba Conservation Reserves offer many opportunities for scientific research and education.

The role of the reserves in forming part of the altitudinal gradient corridor from the low lying areas around Upper Coomera and the coastal plain to the high altitude areas around Eagle Heights Conservation area is also of scientific interest. This is of particular interest with regard to species migration to higher altitude areas as a potential result of global warming.

Some scientific research is carried out within the reserves and section 4.16 of this management plan makes recommendations on permitting and monitoring research activities in the planning area.

2.3.6 Social and economic values

The planning area makes a significant contribution to the lifestyle and well-being of local residents through scenic amenity, access to open space and the opportunity for nature appreciation.

There have been a number of community tree plantings throughout the planning area, such as along Guanaba Creek within Guanaba Reserve. Similarly, there are various bush restoration groups that have been and/or continue to be active in Pleasant Parklands and Gladrose Reserve.

A portion of Hollindale Family Park is leased to Scouts Australia. This reserve contains a Scout hall or ‘den’ with a kitchen and amenities, plus associated infrastructure such as water tanks. These facilities are utilised by various Scout and Guide groups for tent based camping approximately twice per month throughout the calendar year. These groups undertake nature based activities within Hollindale Family Park, usually as a part of their nature education program where participants work towards a ‘badge’ or award.

The annual Drummley walk commemorates the life of Billy Drummley, an indigenous Australian of the Yugambeh language group. The walk commences at Jubilee Park in Beaudesert. Over a number of days, participants walk through a number of the reserves in the management cluster. More information about the Drummley walk is given in Section 4.10.1.1.

There are commercial operators that utilise the planning area. For example, a commercial four wheel drive ecotourism operator conducts tours in Eagle Heights Conservation Area. The natural values of the area deliver an economic benefit, as ‘ecotourists’ are prepared to pay for such tours. To some extent, local businesses such as wineries, stables and function centres also benefit from the aesthetically pleasing backdrop offered by the reserves.

2.4 Climate change

Current observations of global air and ocean temperatures, changing sea levels and melting snow and ice indicate a warming of the global climate system (IPCC, 2007), with a warming of approximately 0.8 – 1.3 °C recorded in Northern NSW since 1950 (CSIRO, 2007). The Australian Government now includes loss of climatic habitat caused by anthropogenic
(human –induced) emissions of greenhouse gases as a key threatening process (DEH 2004).

Specific impacts of the changing climate are difficult to predict, with simulated climate futures varying considerably in their predictions of variables such as rainfall, wind speeds, relative humidity and storm activity (Bushfire CRC, 2006). Regional changes to climate, however, are likely to have significant impacts on species biodiversity, including changes in species distributions as some species are no longer able to survive in a particular area and others become more competitive, colonise new areas and displace other species (CSIRO, 2007). It is anticipated that climate change will impact Gold Coast weather patterns and amplify the occurrence of extreme events like cyclones and heat waves and natural disasters including bushfire, flood and drought (GCCC 2009b). At particular risk are species that occupy a narrow altitudinal or latitudinal distribution that is unlikely to retain the required temperature envelope for that species under a changing climate (Westoby and Burgman, 2006). Even for those species physiologically able to cope with a change in temperature, threats may arise from the cumulative effects of multiple stressors including coping with competitors and diseases previously confined to warmer zones (DECC NSW, 2008), changed disturbance regimes, loss of critical habitat or changes to physiological and biological processes due to elevated atmospheric carbon dioxide (Pittock 2003, Howden et al., 2001).

Conservation planning under climate change needs to be wide-scale as there are limits to what can be achieved at a reserve, or even a regional scale (Hughes and Westoby, 1994). Management attempts to retain species in their present location are dependent on those species being able to tolerate changing temperatures and associated stresses including competition and disease. Translocation of threatened species to a more suitable temperature envelope requires alignment of numerous other factors, including soils, rainfall, disturbance regimes, competition and co-dependant species. Therefore the option of attempting to halt global carbon emissions and prevent further warming is likely to be critical (Westoby and Burgman 2006).

Climate change, however exacerbates other threats to biodiversity. Management options that can be adopted at the reserve scale to mitigate these threats may in turn maximise the capacity of species and ecosystems to adapt to changing climates (DECC NSW, 2008; NRMMC, 2004). Relevant management options are provided in Section 4 of this plan and include specific actions and guidelines to assist in: building resilience into natural systems through reducing existing threats to biodiversity; ongoing development of an adequate, representative and well connected protected area network; monitoring and research into the impacts of climate change and adaptation options for threatened species and ecosystems; and adapting management systems to incorporate climate change information and associated management tools.

GCCC’s Climate Change Strategy (GCCC, 2009b) has been developed to provide a comprehensive approach to climate change on the Gold Coast. The dynamic nature of the Gold Coast, with around 55 kilometres of coastline, over 260 kilometres of navigable waterways and an historic and anticipated high population growth rate makes its exposure to climate change particularly unique. The main focus of the Climate Change Strategy is to provide Council and the community with a well-defined direction for responding to climate change risks and challenges and to develop resilience to future impacts. The Climate Change Strategy adopts two broad treatment options to address the risks of climate change: mitigation of the impacts of climate change through reducing the city’s carbon footprint and addition to adaptations to changing circumstances in response to anticipated climate change.

A comprehensive risk response matrix has been developed to identify and prioritise how GCCC will address climate change risks including bushfire, drought, extreme weather events and impacts on biodiversity. In addition, Council’s Climate Change Strategy provides for Council’s functions and services to be continually informed by a contemporary understanding
of climate change, resulting in ongoing adaptive risk-based management responses. The strategy will be reviewed annually to ensure it is consistent with the most recent and relevant information, science and response methodology available.
3 Management framework

3.1 Legislative and policy framework

3.1.1 Bold Future Vision and GCCC Corporate Plan 2009 - 2014

In 2007, GCCC resolved to involve the Gold Coast community in a consultative process to guide the future of the city over the next 30 years. This process lead to the development of the "Bold Future" vision, which set down an inspirational vision for the city. GCCC endorsed the Bold Future Vision and its key targets – all of which were then utilised to develop the GCCC Corporate Plan 2009 – 2014.

The Tamborine Guanaba Conservation Reserves Draft Management Plan aligns with the GCCC Corporate Plan 2009 – 2014. Bold Future Key Focus Areas to which this proposal aligns in the Corporate Plan 2009-14, and outcomes/action statements that this plan delivers on are listed below.

**Key Focus Area:1 A city leading by example**
- Outcome 1.1: There are strong foundations for a sustainable city.
- Outcome 1.2: The community is actively involved in the city.

**Key Focus Area:2 A city loved for its green, gold and blue**
- Outcome 2.1: Parks and open green spaces are connected, safe and accessible for all members of the community.
- Outcome 2.2:Biodiversity is protected.
- Outcome 2.3: Wildlife corridors are well managed and connected.
- Outcome 2.4:The city’s beaches and coastline are protected to sustain their amenity and biodiversity.
- Outcome 2.5: Water and waterways across the city are protected and enhanced

**Key Focus Area:4 A safe city where everyone belongs**
- Outcome 4.1:Our active and healthy community embraces recreation, leisure and social interaction.

3.1.2 Gold Coast Open Space Preservation Levy Acquisition Program

Over 28% of the planning area consists of land purchased with GCCC’s Open Space Preservation Levy (OSPL). The OSPL acquisition program contributes to achieving the core objectives of the Gold Coast City Council Nature Conservation Strategy 2009-2019 (GCCC, 2009a) by securing the protection of areas of high conservation value in public ownership. The major aims of the OSPL acquisition program are to consolidate and expand the city's existing protected area network and to assist GCCC in fulfilling the intent of the Conservation Strategy Plan contained within the Gold Coast City Nature Conservation Strategy. Lands acquired with the OSPL are designated by the Gold Coast City Council as conservation areas.

Eagle Heights Conservation Area has been progressively purchased over a period of time using the Open Space Preservation Levy.: Lot 60W311182 was acquired on 1 June 2005; Lot 92 on WD801 was acquired on 26 May 2000, and Lot 78 on WD 687 was acquired on 27 June 2008 for the primary purpose of nature conservation. The direction of management for the planning area reflects the overarching principle established in the Management Guidelines for Sites Acquired with the Open Space Preservation Levy (Phase 1 and 2 Acquisition Programs), which indicates that sites purchased with funds derived from the OSPL must have been acquired primarily for nature conservation; must be managed to
preserve their significant ecological values, and must be used in such a way as not to negatively impact upon those values (GCCC 2004a). These guidelines describe the actions required for the short-term management of the sites and recommendations for longer term management. Many of the actions or strategies initiated as an Immediate Action via the guidelines are recommended to continue as actions contained in this management plan.

3.1.3 Gold Coast Planning Scheme and other GCCC policies and guidelines

3.1.3.1 Domains and Local Area Plans

The majority of the reserves are located within the public open space domain of the GCCC Planning Scheme. The intent of this domain is to provide for the protection of land in public ownership for nature conservation, outdoor recreation, landscape preservation, environmental buffers, natural resource management, and natural hazard management purposes. It is intended that all land within the public open space domain be subject to a development concept plan or an integrated management plan which will guide future development.

Eagle Heights Conservation Area, and the western sections of Gladrose Reserve are situated within the rural domain. The purpose of this domain is to support a wide range of rural activities and legitimate rural economic activity within suitable hinterland areas, whilst protecting the land’s nature conservation, open space and landscape interest values. Preservation of landscape character, important topographical features, wildlife and wildlife habitats are identified as key objectives.

A portion of Charlies Crossing Park West sits within the detached dwelling domain.

None of the reserves fall within Local Area Planning boundaries. Sections of Pleasant Parklands however, lie on the boundary of the Oxenford Local Area Plan, within the Extractive Industries precinct.

It is anticipated that conservation reserves located within the Rural Open Space Precinct will eventually be revised or updated to the Public Open Space Domain during future reviews of domain mapping.

3.1.3.2 Planning Strategy

The Nature Conservation Planning Strategy within the GCCC Planning Scheme has been developed in accordance with the GCCC Nature Conservation Strategy 2009-2019, as a mechanism to achieve protection of the city’s natural assets through the GCCC Planning Scheme and planning process. The Conservation Strategy Plan was also created (Planning Strategy Map PS-3: Conservation Strategy Plan, and Overlay Map OM20: Conservation Strategy Plan) which together with associated text, provides critical guidance to land use and management decisions within the city’s areas of natural vegetation.

The Conservation Strategy Plan identifies the majority of the planning area as a ‘large habitat system’. Under the Conservation Strategy Plan, large habitat systems have been identified as covering extensive areas of relatively intact habitat in the mountainous areas and the coastal marine areas of the city, supporting a variety of vegetation, and providing habitat for diverse fauna populations. These areas are intended to have the highest form of protection, and their function and integrity is best preserved by retaining large, intact areas and minimising fragmentation. Within the large habitat systems, conservation objectives should be paramount, and existing reserves should be protected against impacts from adjacent development.
A small area of Pleasant Parklands is classified at ‘bushland mosaic’ under the Conservation Strategy Plan (GCCC, 2010). Bushland Mosaics are large, and support significant vegetation associations. They also provide habitat for a diversity of fauna, and provide stepping stones for fauna movement between large areas of habitat. It is intended that these areas be retained and enhanced, with further fragmentation and vegetation loss to be avoided. Consolidation of fragments is encouraged and existing natural reserves should be protected against impacts from adjacent developments.

The City Image and Townscape Planning Strategy within the GCCC Planning Scheme provides an overall framework for the built form of the city that aims to retain and enhance the Gold Coast’s physical features and its distinctive built form. Key elements and relationships of the city’s landscape and form are shown on Planning Strategy Maps 11, 12, 13 and 14. These maps highlight the predominantly urban form of the city, and the major views and key elements that contribute to visual quality and primary scenic routes and gateways.

Planning Strategy Map 11 ‘City Image Urban Form’ identifies a ‘major ridgeline’ stretching north south through the management cluster, starting at Eagle Heights Conservation Area in the North, running south through Mystery Road Reserve and King Parrot Reserve. Major ridgelines and associated foothills are particularly important topographical features that contribute to the ‘green’ of the city. These should remain predominantly undeveloped and well vegetated, to protect the notion of the ‘green behind the gold’.

Planning Strategy Map 12 ‘City Image Major Views’ identifies a band of general views running north south through the reserve cluster, starting in the north at Eagle Heights Conservation Area, and running southeast through Hollindale family Park and through the eastern extremity of Mystery Road Reserve and King Parrot Reserve. Under the City Image and Townscape Planning Strategy, general views “encompass a broad viewing area of a significant scenic resource”.

Planning Strategy Map 13 ‘City Image Quality’ shows a band of visual city edges traversing the planning area. The band runs through Gladrose reserve in the north, south through Caballo Road Reserve, Piggots Road Reserve, then east through Guanaba Reserve. Visual City Edges are important physical elements which assist in strengthening the elevated topographical areas of the hinterland. They should continue to be experienced as a continuous green backdrop and silhouette on the skyline. The natural coastal ecosystems (dunal areas, coastal cliffs, points and estuarine entries) should retain a clear natural character.

Planning Strategy Map 14 ‘Major Scenic Routes and Transitory Gateways’ identifies two land based scenic routes. The first route traverses the northern boundary of the planning area, along Tamborine Oxenford Road and the second follows Henri Roberts Drive from the Coomera River through into Scenic Rim Regional Council Local Government Area and Tamborine Mountain. The ‘Scenic Routes – Land’ are visually significant corridors that pass through, or close to, landscape features. The scenic routes are significant for tourism and visitation and should be protected from inappropriate development, particularly in the immediate verge area. Built form, land use, aesthetics, siting and location associated with any proposed development, must have regard for the particular character of the scenic route and its contribution to the image of the City. Endemic vegetation should be protected and encouraged to enhance scenic value.

3.1.3.3 Priority Infrastructure Plan

The majority of the management cluster falls within the Guanaba Currumbin Valley Statistical Local Area (SLA). This SLA covers the very large western and southern regions of the city, stretching from Wongawallan in the North to Pigabeen in the south; and from Currumbin
Valley in the West to Elanora in the east. Population estimates associated with the Gold Coast Planning Scheme’s Priority Infrastructure Plan indicate that the population of the Guanaba Currumbin Valley SLA is expected to double from 31,943 in 2004 to approximately 64,971 people in 2021. Whilst this is not as high as some other SLAs in the city, it is still high enough that the population influx will correspondingly result in increasing impacts and demands on the reserves of the planning area.

A small amount of the management cluster falls within the Coomera Cedar Creek Statistical Local Area (SLA). Both Charlies Crossing Park and Pleasant Parklands are in this SLA. The Coomera Cedar Creek SLA covers an area stretching from Upper Coomera in the South to the Pimpama River in the North, and from Cedar Creek/Wongawallan in the west to the southern Moreton Bay Islands in the east. Population estimates associated with the GCCC Planning Scheme’s Priority Infrastructure Plan (PIP) indicate that the population of the Coomera Cedar Creek SLA is expected to expand fivefold from 16,073 in 2004 to approximately 86,782 people in 2021. This will result in strong demands and potential impacts on the reserves within this SLA.

An even smaller section of the management cluster falls within the Oxenford Statistical Local Area (SLA). No reserves are located within this SLA. The Oxenford SLA stretches from Studio Village in the south to Helensvale in the north, and from Maudsland in the west to Hope Island in the east. Population estimates associated with the GCCC Planning Scheme’s PIP indicate that the population of the Coomera Cedar Creek SLA is expected to increase from 10,165 in 2004 to approximately 13,545 people in 2021.

Council’s Recreational Priority Infrastructure Planning (PIP) identifies a proposed recreational track in the planning area. This is the Tamborine Mountain to Nerang National Park track, which passes through Heritage Drive Reserve, and King Parrot Reserve. Ultimately, this track would link Nerang National Park to Tamborine Mountain. This is discussed in Section 4.10.1.1.

3.1.3.4 The Gold Coast City Nature Conservation Strategy 2009-2019

The vision of the Gold Coast City Nature Conservation Strategy 2009 – 2019 is “to provide a framework for Council to conserve the city’s biodiversity and to protect a viable city-wide conservation network in partnership with the community and other agencies. The strategic objective of the strategy is to ‘conserve the city’s biodiversity and natural assets through Council’s overarching and strong commitment to protecting, managing and restoring a diverse, connected and viable conservation network across public and private lands.”

The strategy sets two targets that will be used to measure its success:

- 50 percent of the city’s land area will be covered by native vegetation in 2019 (no net loss)
- 55 percent of the city’s land area will be covered by native vegetation in 2040 (net gain)

There are a number of outcomes in the strategy, and one of these is: “Adaptive management that responds to risks such as climate change is applied in administering Council’s natural area reserve system.” In order to achieve this strategic outcome, a number of key actions have been laid down.

The following strategic intents are mandated by the NCS for conservation units (see Conservation Strategy Map, page 14 of the NCS) that are in the planning area:

- Significant Urban Biodiversity – Substantial Remnants: remnant vegetation in the south-central section of the planning area has been designated as ‘Substantial Remnants’ under the NCS. The strategic intent for these areas is to retain and
enhance the diversity, extent and condition of terrestrial and aquatic habitats within substantial remnants in urban areas by avoiding and managing impacts arising from pests, fire, unauthorised vehicle access, fragmentation and other edge effects resulting from their urban context.

- **Significant Urban Biodiversity – Urban Conservation Mosaic:** the majority of the planning area is designated ‘Urban Conservation Mosaic’ under the NCS. Strategic intents of the NCS for these areas are: 1) conserve the ecological diversity of the urban areas by protecting and restoring ‘endangered’ and locally endangered regional ecosystems, restoring priority sites, and retaining and connecting vegetation corridors to nodes of habitat and, 2) work with residents to create an active, involved and aware community that appreciates the City’s natural values and supports nature conservation, either through direct involvement in action or through the support of Council and others.

- **Critical Corridors – Hinterland:** two critical corridors pass through the management cluster. Under the NCS, the strategic intent of these areas is to conserve vegetated corridors to connect significant tracts of habitat and improve their viability.

Key Action 23 of the GCCC NCS is: "Natural area reserve management: Develop and implement reserve management and associated operational plans. Undertake flora and fauna surveys of acquired areas to inform management actions". Thus, the Tamborine Guanaba Conservation Reserves Management Plan addresses Key Action 23 of the GCCC NCS.

### 3.1.3.5 Other GCCC policies and guidelines

The provisions of a number of other GCCC policies and guidelines have been considered in the development of this management plan. These include: the *Gold Coast City Bushfire Management Strategy 1998; City of the Gold Coast Pest Management Plan 2006-2010; Our Natural Playground: A Parks and Recreation Plan for the Gold Coast; Gold Coast City Climate Change Strategy 2009-2014* and the *Gold Coast City Council Corporate Plan 2005-09*.

An Interim Management Plan (IMP) was prepared for the Eagle Heights Conservation Area in 2006. This plan was designed to provide an overview of the Eagle Heights Conservation Area’s key values, threatening processes, management objectives and management strategies. It provides interim guidelines for a range of land management operations including: landscape, soils and catchment protection; native plants and animals; bushfire management; pest plants and animals; cultural heritage; recreation and interpretation; and neighbours, surrounding land uses and future development. Having been prepared in accordance with the intent of the IMP, the adoption of this management plan supersedes the IMP for the planning area.

The day to day operations of Council’s natural areas management officers, who are the asset custodians for Council’s conservation reserves, are guided by the *Natural Areas Management Unit Business Plan 2008-2011*. Implementation and prioritisation of management actions and guidelines given in this management plan will be in accordance with the *Natural Areas Management Unit Business Plan 2008-2011*.

### 3.1.4 Strategies for South East Queensland

#### 3.1.4.1 The South East Queensland Regional Plan 2009 - 2031

*The South East Queensland Regional Plan 2009-2031* (Office of Urban Management, 2009) provides a sustainable growth management strategy for South East Queensland. Within this strategy, the majority of the planning area falls within the ‘regional landscape and rural production area’. Under the plan, such areas have non urban values such as environment
and conservation, and the areas are to be protected from urban and rural residential development.

The northeastern corner of the planning area around Upper Coomera is mapped within the Urban Footprint. This incorporates Pleasant Parklands and Charles Crossing Park. Land within the urban footprint is recognised under the South East Queensland Regional Plan 2009 – 2031 (SEQRP) as providing for southeast Queensland’s urban development needs up until 2031. Not all land within the urban footprint is to be developed for urban purposes, as there is some land subject to flooding and other constraints. To the west of the planning area, the urban footprint sits over the Tamborine Mountain township, directly adjoining King Parrot Reserve and Mystery Road Reserve.

The SEQRP designates areas of high and general ecological significance. Most of the reserves within the planning area are mapped as having high ecological significance and are classed as open space areas. There is a scattering of areas of general ecological significance across the planning area, including areas within Pleasant Parklands and Mystery Road Reserve.

Under the SEQRP, all reserves except Birds Road Reserve are classified as open space. Other classifications in the SEQRP include recreational areas, agricultural areas and parks and forest, none of which apply to the planning area.


The area is not mapped as an area of importance to koalas under the Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006-2016. It is, however mapped under the State Planning Policy 2/10 May 2010. Under this planning policy, the majority of the planning area is designated as low value bushland habitat, with small patches of medium value bushland habitat in King Parrot Reserve, Eagle Heights Conservation Area, Gladrose Reserve, Caballo Road Reserve, Stewart Road Parklands and Pleasant Parklands.

3.1.4.3 The South East Queensland Natural Resource Management Plan 2009 - 2031

The South East Queensland Natural Resource Management Plan 2009-2031 (Department of Environment and Resource Management 2009) establishes a single set of targets designed to assist with implementing relevant regional outcomes, principles and policies. It aligns with the South East Queensland Regional Plan and supports the sustainability framework outlined in that plan. Measurable regional targets are established under the themes of air and atmosphere, coastal and marine, community engagement, land, nature conservation, regional landscape areas, traditional owner engagement and water. This management plan addresses a range of the regional targets set down by the SEQ Natural Resource Management Plan, including:

Nature conservation

- NC1 – Remnant and woody vegetation. By 2031 the 2001 extent of regional vegetation cover – including both remnant vegetation (35%) and additional non-remnant woody vegetation (22%) – will be maintained or increased
- NC2 – Vegetation fragmentation and connectivity. By 2031, there will be no net fragmentation of larger tracts (greater than 5000 hectares) and 20% of priority smaller tracts (less than 5000 hectares) will be better connected than the 2003 baseline
- NC4 – Vulnerable ecosystems. By 2031, at least 4% of the original pre-clearing extents of vulnerable regional ecosystems will be represented in protective measures.
- NC5 – Native species. In 2031, the 2008 conservation status of native species will be maintained or improved
- NC6 – habitat for Priority Species. By 2031, the 2001 extent and condition of habitat for priority taxa will be maintained or increased.

Regional landscape areas
- RLA2 – Outdoor recreation settings. By 2031, the 2011 extent of regional outdoor recreation settings will be maintained or increased.
- RLA3 – Outdoor recreation demand. By 2031, 90% of the demand for outdoor recreation will be met through a mix of public land, waterways and the voluntary provision of opportunities on private land.
- RLA4 – Regionally high-scenic amenity. By 2031, the area of regionally high-scenic amenity will be maintained or improved from the 2004 baseline.
- RLA5 – Locally important scenic amenity. By 2031, at least 90% of the 2004 area of locally important scenic amenity within each local government area will be retained.

Water
- W1 – Environmental flows. By 2031, environmental flows will meet aquatic ecosystem health and ecological process requirements.
- W5 – High Ecological Value waterways. In 2031, High Ecological Value waterways in SEQ will maintain their 2008 classification.
- W6 – Waterways maintenance and enhancement. In 2031, scheduled water-quality objectives for all SEQ waterways will be achieved or restored.
- W7 – Waterway restoration. By 2031, waterways classified as ranging from slightly to moderately disturbed and/or highly disturbed will have ecosystem health and ecological processed restored.


All management actions identified in this management plan are consistent with the Regional Nature Conservation Strategy for South East Queensland 2003-2008 (EPA, 2003). The strategy sets the regional framework for nature conservation, and has been endorsed by State and Local governments and establishes agreed processes for assessing, protecting and managing nature conservation and biodiversity values in South East Queensland. Furthermore, management actions are consistent with the targets and objectives of other relevant regional natural resource management plans including the South East Queensland Regional Water Quality Management Strategy/South East Queensland Regional Coastal Management Plan 2006.

3.1.5 State land held under trusteeship

Under the Land Act 1994, unallocated State land may be dedicated as a reserve for a community purpose as defined under Schedule 1 of the Act, with a trustee appointed to manage the trust land. The trustee must have some particular association or expertise with the trust land and its’ purpose, or with the local community and in a way that is consistent with the purpose for which the reserve was dedicated.

As a statutory body, GCCC is trustee for a number of such reserves within the planning area including Birds Road Reserve, Caballo Road Reserve, Little Caballo Road Reserve, Candy Creek Road Reserve, parts of Charles Crossing Park, Charles Crossing Road West Park, Clagiraba Road Causeway Reserve, Gladrose Reserve, Guanaba Creek Reserve, Guanaba Reserve, Henri Robert Drive Reserve, King Parrot Reserve, Mango Tree Park, Mystery Road Reserve, Piggots Road Reserve and Pleasant Parklands. The most common reserve purpose for these reserves is ‘park and recreation’ although some reserves have the purpose of ‘park’ as outlined in Table 1.
3.1.6 Building Nature’s Resilience – A Draft Biodiversity Strategy for Queensland

At the time of preparation of this management plan, “Building Nature’s Resilience – A Draft Biodiversity Strategy for Queensland” was under preparation. This strategy advocates increasing ecosystem resilience and sets down key targets for biodiversity conservation in Queensland over the next 10 years. The draft biodiversity strategy is supported by the Protected Areas for the Future (PAF) document which provides the detailed methodology that will be used to determine investment and land allocation decisions needed to reach the Protected Areas targets set down in “Toward Tomorrow’s Queensland.” The strategy has two goals for 2020.

- Reverse the decline in biodiversity.
- Increase the resilience of species, ecosystems and ecological processes.

To achieve these goals, the strategy has three primary objectives:
- Building protected areas
- Conserving species
- Managing extent, condition and connectivity

3.1.7 Other relevant legislation

Management of the planning area must be consistent with the provisions of all relevant State and Commonwealth legislation, including acts, regulations and international agreements. Table 5 outlines the primary legislative framework under which Council has management obligations. This table addresses those measures which are most directly relevant to management planning within the area and may be subject to change through amendments, repeal, or the creation of new legislation. For a more comprehensive list of legislation applicable to the management of the planning area, refer to Appendix B of Council’s Conservation Areas Management Planning Framework for sites acquired with funds from the Open Space Preservation Levy (GCCC 2004a).

**Table 5.** Relevant State and Commonwealth legislation and International agreements to the management of the planning area.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Legislation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td><em>Nature Conservation Act 1992</em></td>
<td>Provides for the conservation of nature and prescribes management principles for protected and other wildlife. Regulates clearing of all native plants ‘growing in the wild’</td>
</tr>
<tr>
<td></td>
<td><em>Nature Conservation (Wildlife) Regulation 2006</em></td>
<td>Establishes declared management intents for classes of protected wildlife that include addressing threatening processes through recovery plans and conservation plans.</td>
</tr>
<tr>
<td></td>
<td><em>Vegetation Management Act 1999</em></td>
<td>Provides for the protection of remnant vegetation.</td>
</tr>
<tr>
<td></td>
<td><em>Aboriginal Cultural Heritage Act 2003</em></td>
<td>Ensures protection of Aboriginal cultural heritage values and imposes a duty of care where construction or disturbance is planned.</td>
</tr>
<tr>
<td></td>
<td><em>Land Protection (Pest and Stock Route Management) Act 2002</em></td>
<td>Requires eradication, control or containment of declared weeds and animals on Council-managed land.</td>
</tr>
<tr>
<td></td>
<td><em>Fire and Rescue Services Act 1990</em></td>
<td>Requires a reduction of fire risk on Council-managed land and management measures to ensure that fire dies not impact upon neighbouring properties.</td>
</tr>
<tr>
<td></td>
<td><em>Land Act 1994</em></td>
<td>Provides for State Government land to be held in trusteeship by Council for Community Purposes.</td>
</tr>
</tbody>
</table>
## 3.2 Specific management objectives for the Tamborine Guanaba Conservation Reserves

The planning area will be managed to maximise its connectivity and ecological viability. The conservation and protection of its environmental, scenic, catchment and cultural heritage values will be paramount. This will be achieved through the provision of opportunities for low-impact sustainable nature-based public use, targeted interpretation and educational material, and strategic ecological management. The following objectives have been identified as essential to achieving these strategic outcomes:

- manage the planning area within the context of a broader interrelated reserve system
- maintain and enhance viable habitat corridors contributing to the ecological richness of the region
conserves geological and geomorphological features and maintains natural biophysical processes
promotes the diversity, integrity and viability of indigenous flora and fauna communities, particularly those identified as significant or threatened
protects and monitors threatened and biogeographically significant species and their habitat
undertakes ecological restoration to repair the structure and integrity of degraded ecosystems and improve habitat function
controls pest plant and animal species
implements fire management strategies that protect life and property, whilst ensuring the diversity and function of natural communities is maintained
protects the catchment values of Coomera River Catchment
protects and improves public appreciation of Aboriginal and European cultural heritage sites and values
involves traditional owners in cooperative management of indigenous cultural heritage values
protects and enhances the planning area’s significant landscape values
provides opportunities for safe, minimal-impact and sustainable nature-based recreation consistent with the protection of natural and cultural values
where necessary, develops recreational infrastructure that does not impact upon scenic values associated with intact vegetative cover along ridgelines visible from coastal areas
mitigates against existing and potential human-induced impacts upon biodiversity such as rubbish dumping, inappropriate use of the reserve, the effects of increased visitation and adjacent land uses
engenders greater public awareness and appreciation of the values and management of the planning area
provides interpretation and educational material that promotes appreciation of the reserve and support for the conservation of its values
encourages and facilitates scientifically rigorous research and monitoring to improve knowledge of natural and cultural values of the area, and provides feedback into the ongoing strategic management of reserves
manages pre-existing land uses, such as grazing, in a manner that supports and maintains natural and recreational values
develops and maintains strong relationships with neighbours, authorities, Government departments, other Council land and/or asset managers and other key stakeholders to enhance the protection, viability and integrated management of the area
where required, employs principles of adaptive management to address the potentially detrimental effects of climate change
manages the area in accordance with all relevant legislation and policy
4 Management strategies for Tamborine Guanaba Conservation Reserves

4.1 Landscape protection

4.1.1 Current management situation

The planning area has been designated with a slope instability hazard rating ranging from very low to very high, with the majority of the planning area covered by a moderate slope instability rating. There are areas of high and very high slope instability hazard along the steep ridgelines of King Parrot and Mystery Road Reserves. At present, both of these reserves are vegetated with native forest, albeit with a fair degree of weed invasion. To the east, where the landform flattens out along the Coomera River, the slope instability rating drops away to very low. Much of the land in this area has been cleared of native vegetation.

Historical landslips have been recorded in the planning area. One landslip has been recorded in King Parrot Reserve to the north of King Parrot Court. Four landslips have been recorded along the eastern side of Gladrose Reserve, mostly where there has previously been some degree of vegetation removal.

Overhead powerlines are a significant feature of the current landscape in the management cluster. These powerlines dominate Stewart Road Parklands, Birds Road Reserve, and parts of Caballo Reserve, and Gladrose Reserve. These essential services easements are often maintained by wide mown or generally cleared areas. There might be scope to minimise the level of clearing, and to undertake bush restoration works on the margins of these easements. Whilst this is acknowledged as lower priority work than urgent weeding or replanting needed in some reserves, it would improve landscape amenity and ecological functionality. Such restoration works would need to be undertaken in consultation with the asset manager (e.g. Powerlink or Energex) to ensure that personal safety, risk to property, asset security and access to infrastructure are not compromised.

Some of the reserves are accessed via powerline easements by unauthorised recreational four wheel drive vehicles and motorbikes. These vehicles cause significant damage to tracks and to native vegetation. Extensive damage to gates, fences and other reserve infrastructure has also been attributed to these unauthorised reserve users.

There are notable landscape features such as vistas of the Gold Coast and waterway views in the planning area. In some of the reserves, there is very limited access to these landscape features. This is largely due to the isolation of such landscape features and the ecological sensitivity of the surrounding areas. There are no formal outlooks established in the planning area. There are however, a number of informal lookout points which offer views of the Gold Coast. The north-eastern corner of Eagle Heights Conservation Area has one such lookout point, where the track widens and pedestrians can take in views of the Gold Coast skyline with the ocean beyond. There are also a number of views over the reserves from Macrozamia Drive and Romana Court, adjacent to King Parrot Reserve. Formalisation of such viewing points is not considered a priority action in the life of this management plan due to the current low level of use.

In parts of the management cluster including some of the reserves, trees have been illegally removed to facilitate unimpeded views from residences on the escarpments along Mystery Road Reserve and King Parrot Reserve. Ongoing monitoring of such illegal clearing with follow up by Local Law Officers is required.
The ‘priority infrastructure area’ of the GCCC Priority Infrastructure Plan (GCCC, 2010) is identified as the area intended to accommodate urban population growth to 2021. With the exception of Upper Coomera, in the northeast of the cluster, the Tamborine Guanaba Management Cluster falls outside of the priority infrastructure area. The amount of new infrastructure planned outside of the priority infrastructure area is relatively limited.

Roads and other built infrastructure are major features in the landscape and can form a significant barrier to fauna movement. Opportunities to include design features that facilitate safe fauna crossing and improve landscape amenity should be considered for key locations. No new roads or major road upgrades are proposed within the management cluster in the current GCCC Transport Priority Infrastructure Plan (GCCC, 2010). There are however, proposed bridge and culvert upgrades which are discussed in Section 4.2 (Catchment Management) and Section 4.11 (Built infrastructure).

4.1.2 Desired outcomes

- Significant landscape and scenic features within the planning area are protected and enhanced.
- Visual impacts on the natural landscape, especially from major viewing points, are minimised.
- Infrastructure complements and does not detract from the natural landscape.
- Geological hazards, soil erosion and slope instability are minimised and prevented where possible.

4.1.3 Management strategy

4.1.3.1 Guidelines

G1.1 Limit clearing of native vegetation within the planning area to that necessary for essential statutory and operational requirements.

G1.2 Ensure that reserve facilities and management infrastructure are located and designed to minimise their visual impact within the landscape.

G1.3 Ensure reserve facilities, visitor use and management actions do not adversely impact on geological and soil landscapes.

G1.4 Wherever possible, locate new infrastructure and facilities within previously disturbed sites and at appropriate setbacks to unstable slopes, as defined by the relevant engineering and/or geotechnical assessments where necessary.

G1.5 Avoid locating new infrastructure and embellishments within areas of moderate or high slope instability hazard. Where locating new infrastructure and embellishments within areas of moderate slope instability hazard or greater, a slope stability report must be prepared. This report must be prepared by a registered and appropriately experienced engineer and must: demonstrate that the area is suitable for building purposes (with due consideration of the stability risk and potential stability problems); and provide construction measures to support the proposed works.

G1.6 Discourage visitor and management access to areas that are susceptible to soil degradation and erosion.

G1.7 Fence or signpost unstable slopes where necessary (e.g. where there are risks to human safety, soil erosion, or sensitive vegetation communities). Any signage is to be undertaken as per the signage plan.
G1.8 Implement appropriate sediment and erosion control measures during all works conducted within the planning area, especially in areas upstream of frog habitat. For major works or those conducted on slopes of a moderate or high slope instability hazard, it is recommended that an erosion hazard assessment be conducted. Where necessary, an erosion and sedimentation control plan should be prepared.

G1.9 Ensure that weed control activities are conducted in such a manner as to minimise soil disturbance in erosion prone areas.

G1.10 Support the acquisition of vegetated and visually prominent properties within the planning area through GCCC’s open space preservation levy.

G1.11 Council’s parks and recreational services development assessment staff to liaise with Powerlink and Energex to ensure that future vegetation management within power easements in the planning area has minimal impacts on scenic amenity. This is particularly important along prominent ridgelines and may include appropriate revegetation along the edges of such easements.

4.1.3.2 Actions

A1.1 As part of the restoration work outlined in Section 4.6, liaise with other land managers (e.g. adjacent land owners and DERM) to encourage restoration of native vegetation and generate support for a collaborative approach to vegetation management along the Guanaba Creek and Coomera River bioregional corridors.

A1.2 Work with GCCC’s implementation and assessment, recreational planning and engineering services officers to ensure that future developments complement the natural character of the area, and protect significant scenic and landscape features adjoining or in proximity to the planning area.

A1.3 Undertake periodic site visits to monitor illegal vegetation clearing in the reserves. This may include photo monitoring over time at high risk sites. Illegal clearing will be reported to GCCC’s local law officers for investigation and where illegal clearing has occurred, replanting will be undertaken.

4.1.4 Key monitoring priorities

- Monitoring of vegetated ridgelines and elevated areas adjoining private property to assist in identifying unauthorised clearing of vegetation by residents and landowners for the purposes of view creation. Priority areas include in the vicinity of Mystery Road and King Parrot Reserves where illegal clearing has already occurred.
- Monitor sediment and erosion control measures used during any operational works so that any additional management requirements can be identified and implemented immediately.
- Conduct ongoing monitoring of management programs and actions aimed at improving landscape amenity to ensure their effectiveness.

4.2 Catchment management

4.2.1 Current management situation

The Coomera River is the largest watercourse flowing through the planning area. The main pressures on the Coomera River are land use change (e.g. from forest to grazing and residential development), excessive water extraction, degraded riparian zones and increasing recreational use of the river in the estuarine reaches (WBM Oceanics Australia, 2005).
All of the sub catchments within the Coomera River catchment are impacted by degradation of remnant vegetation, degradation of regrowth vegetation, riparian zone clearing, water flow reduction, water quality issues and fish migration issues. In addition, Mt Nathan-Clagiraba sub catchment has issues with ecological condition; Guanaba Creek sub catchment has water quality issues; Wongawallan Creek sub catchment has issues with ecological condition and water quality; and Maudsland sub catchment has issues with cleared riparian vegetation (WBM Oceanics Australia, 2005).

The Environmental Inventory of the Coomera River Catchment and its Tributaries (WBM Oceanics Australia, 2005) makes management recommendations about the waterways in the area. GCCC’s catchment management officers are broadly responsible for the implementation of such management actions, but the overall management of the planning area should be generally in accordance with this document. Management recommendations from The Environmental Inventory of the Coomera River Catchment and its Tributaries include:

- Maudsland sub catchment, which includes Charlies Crossing Park, Pleasant Parklands and part of Gladstone Reserve requires site assessments; revegetation to increase width of riparian zone, a weed control program and erosion monitoring and controls.
- Wongawallan Creek sub catchment, which includes Gladstone Reserve and part of Eagle Heights Conservation Area requires riparian revegetation to stabilise banks and provide shading; community education to reduce nutrient sources entering Wongawallan Creek, and capacity building extension programs.
- Guanaba Creek sub catchment which includes Guanaba Creek Reserve, Hollindale Family Park, Piggots Road Reserve and Guanaba Reserve requires identification and mitigation of nutrient inputs to Guanaba Creek and its tributaries.
- Mt Nathan-Clagiraba sub catchment which includes Stewart Road Parklands, Heritage Drive Reserve, Henri Roberts Drive Reserve, Clagiraba Road Causeway Reserve and Mango Tree Park requires riparian revegetation to stabilise banks and to provide shading; a reduction of nutrient sources entering tributaries of Coomera River via community education, and capacity building extension programs.

Urban and rural land development in the floodplain often leads to reduced vegetation cover along creek banks, increased stream flow velocities, bank scour and bank instability. Overlay Map 17 (Potential Flood Inundation Overlay Map) of the GCCC planning scheme indicates that Charlies Crossing Park, Pleasant Parklands, Stewart Road Parklands, Heritage Drive Reserve and Henri Robert Drive Reserve are subject to periodic flood inundation associated with the Coomera River. Instream and riparian vegetation aids in the reduction of flood velocities and stream bank erosion by dissipating floodwaters over adjacent floodplains. WBM Oceanics Australia recommend that riparian revegetation be a key aspect of catchment management in the planning area. Riparian restoration work has already been undertaken in portions of Pleasant Parklands, Guanaba Creek Reserve and Gladstone Reserve. This work is ongoing. It is recommended that this riparian restoration work be expanded and be undertaken along all reserves that are adjacent to Guanaba Creek and the Coomera River. Charlies Crossing Park is located on the Coomera River, and much of the park boundary is demarcated by the river. Historically this reserve has been cleared of vegetation and used for horse grazing. Severe erosion has occurred along the river bank, resulting in high, unstable scarps. It is imperative that a vegetated buffer be re-established along this section of the river bank to assist in stabilising the river bank. Such a buffer will also offer other benefits such as increased shading to the waterway and natural slowing, uptake and filtering of overland water flow. It is possible that such buffer restoration work may need to be accompanied by bank hardening and other engineering solutions in order to effectively stabilise the bank, and that revegetation work will need to be staged in accordance with availability of resources.
There are no formalised access points to the various waterways in the planning area. Informal access to the waterways however, is present in a number of reserves. As a general comment, this informal access is occurring at a low level and is not currently causing significant negative impacts. A notable access point to Guanaba Creek is in Guanaba Reserve. Swimmers and horse riders utilise the swimming hole at the southern end of this reserve. The carpark is located at the eastern end of the reserve and people park vehicles there and then walk to the swimming hole. A horse step-through is provided so that horse riders can ride directly to the swimming hole. Access to this swimming hole is valued by the community. It is possible that as the level of use increases into the future, access to this swimming hole will need to be formalised to ensure water quality and bank stability is not compromised. At this point, monitoring of the condition of the water hole and waterway is appropriate.

A number of GCCC upgrades to bridges and culverts within the planning area are planned within the next ten years. These include upgrades to a bridge or culvert at Guanaba Creek Road adjacent to Hollindale Family Park; a bridge upgrade to Kriedeman Road, just south of Gladrose Reserve; a bridge or culvert upgrade to Piggots Road adjacent to Piggots Road Reserve, and a bridge or culvert upgrade to Tarata Road adjacent to Guanaba Reserve. These projects may not all be completed within the next ten years, but planning is in place to implement them where resources are available. Where changes to streams are likely to occur (e.g. via lifting of low level crossings and earthworks for infrastructure), it is recommended that GCCC catchment management officers be included in stakeholder consultation.

There are proposed upgrades to two bridges on Tamborine Oxenford Road, on the northern boundary of the planning area. These upgrades are being carried out by the Department of Main Roads. At present, there are low level crossings present where Tamborine Oxenford Road crosses Wongawallan Creek and Tamborine Creek between Lok Evyn Court and Kriedeman Road. These crossings will be upgraded to bridges designed to better cope with higher water levels. Where such low level bridge crossings are upgraded, there is the potential for downstream scouring, erosion and vegetation removal when the low level crossing is removed. This needs to be considered when such projects are undertaken. This is particularly important, as Gladrose Reserve is just downstream of these crossings and may potentially suffer negative impacts. Again, it is recommended that GCCC’s catchment management officers be consulted regarding these projects.

GCCC’s acid sulfate soil hazard mapping indicates that acid sulfate soils are not present anywhere within the planning area.

4.2.2 Desired outcomes

- Catchment values, riparian condition, water quality and the health of waterways are monitored and either maintained or improved.
- Degraded riparian and aquatic ecosystems are rehabilitated to protect downstream water quality.
- Sustainable waterway access is maintained.

4.2.3 Management strategy

4.2.3.1 Guidelines

G2.1 Ensure that management actions do not adversely impact upon water quality or natural drainage patterns.
G2.2 Liaise with GCCC’s catchment management officers, DERM and South East Queensland Catchments in regard to catchment management initiatives required to maintain water quality within waterways of the planning area.

G2.3 Where changes to streams are likely to occur via lifting of low level crossings and earthworks for infrastructure, liaise with GCCC catchment management officers to ensure the impact of such works is kept to a minimum.

G2.4 Ensure that all new infrastructure is located at appropriate setbacks to waterways and ephemeral flow paths, as determined by a thorough feasibility assessment. Infrastructure is to be installed outside of the buffer zones specified in the *Environmental Inventory of the Coomera River Catchment and its Tributaries* (WBM Oceanics, 2005).

G2.5 Liaise with GCCC’s implementation and assessment, recreational planning and engineering officers to ensure that development or land use proposals within or adjacent to the reserves of the planning area do not result in significant alterations to natural flow regimes (including groundwater and seasonal surface variability), or impacts on existing public open space areas and aquatic ecosystems.

G2.6 Access to waterways should be minimised, with formal visitor use concentrated away from waterways – particularly in upper catchment areas. Only those access and recreational opportunities considered sustainable and environmentally appropriate should be permitted.

G2.7 Ensure that management actions and outcomes including riparian revegetation requirements are in accordance with the provisions of the *Environmental Inventory of the Coomera River Catchment and its Tributaries* (WBM Oceanics, 2005), the *Environmental Protection (Water) Policy 2009*, the *South East Queensland Regional Water Quality Management Strategy* (Healthy Waterways, 2001) and all other relevant catchment management strategies that apply to the planning area.

G2.8 Minimise use of herbicides near waterbodies. Under circumstances in which it is necessary to use chemical weed control methods in close proximity to waterbodies, ensure that only herbicides appropriate for use within aquatic and sensitive environments are applied.

G2.9 Minimise vehicle access to cross over points of waterways within the planning area.

4.2.3.2 Actions

A2.1 Within Charlies Crossing Park, and in other parks where ongoing monitoring reveals significant erosion along the banks of waterways, implement mitigation and remediation management strategies. This is to be carried out in conjunction with GCCC’s catchment management officers. Areas in which bank stability may compromise public safety should be assigned the highest priority.

A2.2 Monitor the level of use of informal waterway access in Guanaba Reserve and other parts of the planning area as necessary. Where unacceptable damage is occurring to riparian communities, repair or formalise such access points.

A2.3 Repair vehicular creek crossings in Eagle Heights Conservation Area at the locations shown in Figure 3.

A2.4 Where livestock are present in reserves, install or maintain stock proof fencing or other barriers to prevent unmanaged livestock access to waterways.
A2.5 As part of the Communication and Interpretation Plan and the Signage Plan (refer to Section 4.15), provide the community with educational and interpretational materials and opportunities to promote responsible attitudes and support for catchment management initiatives.

4.2.4 Key monitoring priorities

- During operational works in the vicinity of waterways, monitor to ensure that appropriate management measures for the protection of waterway values (e.g. sediment and erosion controls) have been implemented and adequately maintained.
- Monitor the effectiveness of reserve and park management using appropriate assessments.
- Monitor the effect of management strategies in preventing inappropriate access to waterways.

4.3 Native flora

4.3.1 Current management situation

The planning area contains vegetation ranging from very high quality remnant forest through to cleared paddocks, with a range of vegetation types in between. The vegetation types and the values associated with the vegetation are elaborated upon in Section 2.3.1.3.

Of the 72 significant species within the planning area, it is notable that *Randia moorei* (spiny gardenia), the only species listed as endangered, is found only within Vegetation Type 29, which is equivalent to regional ecosystem 12.11.10. Other species located within this vegetation type include the vulnerable *Baloghia marmorata* (jointed baloghia), vulnerable *Cryptocarya foetida* (stinking cryptocarya), near threatened *Cupaniopsis newmanii* (long-leaved tuckeroo), vulnerable *Cyperus semifertilis*, vulnerable *Macadamia integrifolia* (macadamia nut), vulnerable *Macadamia tetraphylla* (macadamia nut), near threatened *Marsdenia hemiptera* (large-leaved milk vine), and near threatened *Pararistolochia praevenosa* (Richmond birdwing vine). Within the GCCC LGA, 28.19% of the original preclearing amount of RE 12.11.10 remains. Of this, approximately 8.53% of the original preclearing amount of this regional ecosystem is protected within reserves. It is thought that 10% of the preclearing amount of RE 12.11.10 can ultimately be protected within the GCCC conservation network (GCCC, 2009d). This regional ecosystem is found in Caballo Road Reserve, Caballo Road Little Reserve, King Parrot Reserve and Eagle Heights Conservation Area. As an important habitat for threatened species, this vegetation type should be a conservation priority. This regional ecosystem should not be burned intentionally as it is fire sensitive. Appropriate fire regimes should be observed for each vegetation type, as outlined in Section 4.5.

Guanaba Creek Reserve and Hollindale Family Park contain small areas of regional ecosystem 12.3.1/12.3.2 (‘endangered’/’of concern’ regional ecosystems). These regional ecosystems are under represented in the Gold Coast City (GCCC, 2009a) and are not adequately represented within the existing reserve system. The portions of these regional ecosystems located within Guanaba Creek Reserve have been subject to slashing/brushcutting adjacent to the creek line. It is recommended that this slashing be stopped, and that the vegetation be allowed to recover with some assisted regeneration. The section of Hollindale Family Park containing 12.3.1/12.3.2 (‘endangered’/’of concern’ regional ecosystems) is currently leased to Scouts Australia. The Scout hall and associated infrastructure are all located within this ‘endangered’/’of concern’ regional ecosystem. It is recommended that during lease inspections, monitoring of the condition of this regional ecosystem also be undertaken (see Section 4.13).
There are large tracts of native vegetation adjoining the planning area including Tamborine National Park, the Canungra Land Warfare Centre and the vegetation of the Tamborine Mountain escarpment. These sit within the Darlington Range bioregional corridor. The Clagiraba to Southern Moreton Bay bioregional corridor links Moreton Bay with Coombabah wetlands, Nerang National Park and Hinterland vegetation adjacent to the planning area (Chenoweth Environmental Planning and Landscape Architecture, 2009). Heritage Road Reserve and Stewart Road Parklands are located on the outer margins of this corridor. These reserves incorporate large areas of cleared land and revegetation work in these reserves would increase the functionality of the corridor. The Guanaba Creek corridor includes some areas of regional ecosystems 12.3.1/12.3.2 (‘endangered’/‘of concern’) outside of the reserve network. Due to the under representation of these regional ecosystems within Gold Coast City and within the reserve network, incorporation of nearby patches into the reserve network should be considered.

There are prominent, cleared electricity easements in Mystery Road Reserve, Caballo Road Reserve, Stewart Road Parklands, Guanaba Reserve, Gladrose Reserve and Birds Road Reserve. These electricity easements need to be kept in a state suitable for the safe maintenance of the electrical infrastructure. Small scale revegetation and restoration work could be undertaken along the edges of these easements, and would increase the ecological and visual amenity of these reserves. More information about this is given in Section 4.1.

Canopy dieback of *Eucalyptus grandis* and *Eucalyptus salignus* has been observed in the southwestern portion of Eagle Heights Conservation Area, adjacent to Running Creek. Other areas of Tamborine Mountain, including the adjoining Tamborine National Park have also been affected by dieback (Doug White, 2010, pers. comm.). This dieback occurred in warmer weather, following a dry spell. It appears that the warm, dry weather facilitated a population influx of lerps (a part of the psyllid lifecycle) which in turn caused extensive canopy damage to the already drought stressed trees (Doug White, 2010, pers. comm.). As rainfall gradually increased, the canopy trees began to recover. It is possible that this kind of dieback will occasionally reappear when weather conditions are favourable for lerp breeding. It is notable that this type of dieback has similarities to BMAD (bell minor associated dieback), but in this instance the influx in the lerp population was not associated with increased numbers of bell minors.

At the time of preparation of this management plan, myrtle rust (*Uredo rangelii*) had only recently been identified in parks in south east Queensland. This is a serious disease affecting members of the Myrtaceae family. Whilst this disease has not been identified within the planning area, it is possible that this disease may move into the planning area at some point. It is important that management staff are aware of the disease and how to identify and report it.

Significant restoration works are being undertaken throughout the planning area, including within Eagle Heights Conservation Area, Gladrose Reserve and Pleasant Parklands. Ecological restoration is elaborated upon in Section 4.6.

### 4.3.2 Desired outcomes

- Structural and biological diversity and integrity of remnant vegetation communities, and populations and the diversity of rare, threatened or otherwise significant plant species are protected and enhanced.
- The full range (landscape biodiversity) of indigenous native plant species found within the planning area are protected and enhanced.
- Wildlife corridors and habitat connectivity are maintained and where possible improved.
- Increased understanding of indigenous native flora populations and population viability within the planning area to be achieved via monitoring, evaluation and research.
- Improved public understanding and support for the protection of indigenous native flora.
4.3.3 Management strategy

4.3.3.1 Guidelines

**G3.1** Prioritise management of ‘endangered’ and ‘of concern’ regional ecosystems; areas known to provide habitat for threatened and/or locally significant native plant species, and other areas possessing significant ecological features.

**G3.2** Ensure that management operations such as slashing, controlled burns, weed control, pest animal control, and the construction/maintenance of infrastructure do not impact upon significant plant species and communities. Where potential damage or incursion is likely, exclusion zones or barriers are to be created.

**G3.3** Where works necessitate the clearing of vegetation, approval must be sought under the Queensland *Vegetation Management Act 1999*, the Queensland *Nature Conservation Act 1992*, the *GCCC Planning Scheme* and any other relevant legislation.

**G3.4** Essential removal, translocation, propagation and seed collection of rare or threatened plant species is subject to assessment under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the Queensland *Nature Conservation Act 1992*, and relevant permits must be obtained prior to such activities being undertaken.

**G3.5** Seed collection activities are to be guided by GCCC’s seed collection policy (This is being developed in 2011 in accordance with Strategic Action 19.2 of the *GCCC Nature Conservation Strategy*). Seed collection is to be managed by GCCC’s natural areas restoration officers in accordance with any state or federal legislation that applies to the species.

**G3.6** In accordance with the information in Section 4.6, incorporate threatened species into revegetation programs where conditions are suitable to their establishment, growth and ongoing health.

**G3.7** Liaise with GCCC’s environmental planning officers to ensure that management of threatened plant species is consistent with the recovery planning process identified by relevant State or Commonwealth government agencies, and that management is in accordance with the management intent of their listing under the *Nature Conservation Act 1992* and the *Environment Protection and Biodiversity Conservation Act 1999*.

**G3.8** Liaise with GCCC’s environmental and recreational planning officers to promote the acquisition or protection of lands adjacent and/or proximate to the reserves of the planning area through the Open Space Preservation Levy and the development assessment process. Wherever possible the linkages along the mapped corridors in the planning area should be reinforced.

**G3.9** Liaise with other land managers (e.g. State government departments, other branches of GCCC, and neighbouring landholders) to encourage the retention of native vegetation in the management cluster and generate support for a collaborative approach to vegetation management in the area.

**G3.10** Where unacceptable disturbances to native vegetation are identified (e.g. through illegal clearing, encroachment, grazing, or garden waste dumping), implement appropriate management measures to control these activities. This may involve GCCC’s local law officers.
G3.11 Management staff will be kept up to date with the identification, notification and management Myrtle Rust (*Uredo rangelii*) and the legal requirements for reporting this disease.

4.3.3.2 Actions

A3.1 Conduct systematic flora surveys at regular intervals (e.g. every 3-5 years) in conjunction with GCCC’s environmental planning officers.

A3.2 Forward the results of all new flora surveys and incidental flora records to GCCC’s environmental planning officers to be incorporated into the *GCCC Nature Conservation Strategy* database.

A3.3 Cease the slashing/brushcutting in the ‘endangered’/‘of concern’ regional ecosystem adjacent to the creek line in Guanaba Creek Reserve.

A3.4 Actively promote vegetation retention and planting locally native plants in the management cluster. Additionally, through ranger patrols and interpretive material, provide information about environmental weeds, and the impacts of garden and dumping and illegal track creation.

4.3.4 Key monitoring priorities

- Monitor presence/absence and population changes at known locations of rare, threatened and/or locally significant plant species within the planning area.
- Monitor disturbances to native vegetation (e.g. through encroachment, dumping, illegal clearing etc), and the impact of management strategies in remediation and prevention of these.

4.4 Native fauna

4.4.1 Current management situation

Despite the spatial fragmentation of the reserves and considerable vegetation clearing in the adjoining landscape, the planning area supports a diverse native fauna assemblage. This diversity of fauna can be attributed to the presence of forested land and to the variety of habitats, vegetation types and landforms. It is important that management ensures the long-term protection of these essential habitat values to sustain populations of significant fauna species in the planning area.

Historically, much of the planning area has been subject to logging. Logging removes the large hollow-bearing trees that are used by many birds and mammals as roosting and breeding sites. Significant species that rely on large tree hollows include Stephen’s banded snake (*Hoplocephalus stephensii*), powerful owl (*Ninox strenua*) and glossy black cockatoo (*Calyptorhynchus lathami*). Logging is no longer occurring within the planning area, and it is expected that over time the number of large hollow bearing trees will gradually increase. This is a slow process, as trees may take 150 years or more to develop suitable hollows (Chenoweth Environmental Planning and Landscape Architecture, 2009).

The relatively high number of frog species in the planning area is largely due to the presence of good quality tributaries and associated riparian vegetation. To ensure this diversity is maintained, ground covers and riparian zones need to be managed to avoid dramatic short-term changes in the amount of cover present. Such changes can be caused by inappropriate fire regimes and removal of exotic riparian species without subsequent replacement of native vegetation. Watercourses and associated riparian vegetation form important local and regional wildlife movement corridors. These riparian areas are often the
only vegetation remaining when land is cleared to make way for pasture and residential development. Continuous connectivity of habitats is exceptionally important for many animals. Such connectivity allows fauna to move through the landscape for dispersal, migration and escape from bushfire. It is important to preserve, consolidate and expand these vegetated corridors, as outlined in Sections 4.3 and 4.6. Priority reserves for increasing riparian corridors are Charlies Crossing Park, Gladrose Reserve, Guanaba Reserve, Stewart Road Parklands, Guanaba Creek Reserve, Henri Roberts Drive, and Clagiraba Causeway Reserve.

Eagle Heights Conservation Area, King Parrot Reserve, Guanaba Creek Reserve, Mystery Road Reserve and Guanaba Creek Reserve incorporate and adjoin other land containing relatively undisturbed habitat. This includes Tamborine Mountain National Park, Guanaba Indigenous Protected Area and the Canungra Land Warfare Centre. The presence of this large area of habitat is reflected in the high faunal diversity recorded within these reserves. This large area of bushland habitat could play a crucial role in the survival of a number of local fauna species that will be directly affected by urban development and land clearing in the region. For example, the vulnerable powerful owl (*Ninox strenua*) has been recorded at Guanaba Creek Reserve and Eagle Heights Conservation Area in open Eucalyptus forest. The powerful owl is one species expected to utilise larger intact forest areas. Albert's lyrebird fledglings (*Menura alberti*) have been observed near Eagle Heights Conservation Area, suggesting that the area may provide breeding habitat for this near threatened species. The ongoing protection and consolidation of these larger areas of vegetated land is an important management issue. Future land acquisitions and developer contributions should be designed to link into and consolidate this large vegetated area.

A relatively high number of frog species are present in the planning area. Amphibian Chytridiomycosis which has been implicated in frog declines in Queensland may have contributed to the apparent extinction of a Tamborine Mountain population of the endangered Fleay’s barred-frog (*Mixophyes fleayi*) (Chenoweth Environmental Planning and Landscape Architecture, 2009). Whilst it has not been recorded within the planning area, Fleay’s barred-frog has been recorded in the Guanaba Indigenous Protected Area which adjoins Guanaba Creek Reserve and Mystery Road Reserve. Regular, ongoing fauna survey work in these reserves is recommended to monitor any changes in population numbers of frogs.

### 4.4.2 Desired outcomes

- Current levels of indigenous fauna species diversity are maintained and viable populations of native species are protected within the planning area.
- Habitat condition, diversity, connectivity and vegetation communities with lower levels of weed invasion are maintained and enhanced.
- Adequate habitat area is provided to maintain viable populations of rare, threatened or otherwise significant fauna.
- Increased understanding of indigenous native fauna populations and population viability within the planning area.
- Increased amount or riparian vegetation communities with little or no weed invasion.
- Greater public appreciation of and willingness to protect local native fauna.

### 4.4.3 Management strategy

#### 4.4.3.1 Guidelines

**G4.1** Undertake all management operations in such a way as to minimise disturbance to indigenous native fauna.
G4.2 Avoid sudden, inappropriate control of pest plant infestations which might lead to an abrupt decline in available habitat to local native fauna within the planning area. This is particularly important in riparian zones.

G4.3 Liaise with GCCC’s environmental planning officers to ensure that management of threatened fauna species is consistent with the recovery planning process identified by the relevant State and Commonwealth government agencies, and that management is in accordance with the management intent of their listing under the Nature Conservation Act 1992 and the Environment Protection and Biodiversity Conservation Act 1999.

G4.4 Essential removal and translocation of rare or threatened fauna species is subject to assessment under the Environment Protection and Biodiversity Conservation Act 1999 and Nature Conservation Act 1992, and relevant permits must be obtained prior to such activities being undertaken.

G4.5 Liaise with other land managers (e.g. State government departments, other branches of Council, and neighbouring landholders) in the development of a coordinated approach to fauna management, including pest control, disease prevention, and restoration of habitat connectivity.

G4.6 Encourage local residents to become involved in voluntary programs that contribute to wildlife conservation (e.g. land for wildlife and voluntary conservation agreements).

4.4.3.2 Actions

A4.1 Provide information to landholders near the reserves about the importance of practices that can contribute to koala and native fauna conservation including:
- not clearing/felling large hollow bearing trees
- domestic dog control measures particularly for night and dusk/dawn periods
- maintaining less than 30 centimetre gaps under property boundary fences to minimise restrictions to koala movement
- ensuring that swimming pool fencing is designed and positioned to keep both children and koalas safely out
- use of barb-free fencing
- increased driver diligence for ground-crossing koalas during dusk, night-time and dawn periods

A4.2 Consolidate and increase the total area of reserves and the linkages between the Eagle Heights Conservation Area, Caballo Road Reserve and Gladrose Reserve.

A4.3 Conduct systematic fauna surveys at regular intervals (e.g. every 3-5 years) in conjunction with GCCC’s environmental planning officers.

A4.4 Forward the results of all new fauna studies and incidental records to Council’s environmental planning officers to be incorporated into the GCCC Nature Conservation Strategy database.

A4.5 Where incidences of infectious fauna diseases such as amphibian Chytridiomycosis, Cryptococcosis, Toxoplasma gondii, Koala Chlamydiosis, and other diseases spread by pest animals are recorded within the planning area, assess the level of risk to fauna and where appropriate, undertake measures based on current best practice guidelines to control their spread. Council animal management staff will be consulted during this process.
4.4.4 Key monitoring priorities

- Monitor population changes of rare, threatened and/or locally significant fauna species within the planning area.
- Monitor visitor-related disturbance incidents including infringements of domestic dog restrictions during ranger patrols. Periodically review records to identify high risk periods and locations to inform future management.
- Undertake threatened species surveys to establish a dataset of sightings, habitat utilisation, and where possible, population estimates within the planning area. Priority should be given to the most threatened species.

4.5 Bushfire

4.5.1 Current management situation

Fire is an important natural phenomenon recognised as one of a number of factors determining the composition of vegetation and animal communities in Australia. Many species of Australian plants and animals have developed mechanisms or behaviour as a response to fire, and some require fire for reproduction or stimulation of new growth.

GCCCC will continue to support the South East Queensland Fire and Biodiversity Consortium in determining fire management requirements for the flora and fauna within the planning area. In particular, priority fire ecology research projects will be encouraged within the planning area and the broader Gold Coast landscape.

The majority of the planning area has moderate to high potential bushfire hazard ratings as per Overlay Map 10 of the GCCC Planning Scheme. This includes Eagle Heights Conservation Area, Mystery Road Reserve, King Parrot Reserve, Caballo Road Reserve, Little Caballo Road Reserve, much of Gladrose Reserve and the elevated parts of Guanaba Creek Reserve and Pleasant Parklands. At the time of preparation of this management plan, the 2011 bushfire hazard mapping was in the process of finalisation. This new version of mapping now only identifies medium and high bushfire hazard ratings, whereas the existing mapping also has a “low” bushfire hazard rating. The new mapping is largely consistent with the existing mapping, with the exception that some areas of Eagle Heights Conservation Area and Mystery Road Reserve now have high potential bushfire hazard rating where it was previously moderate. The reserves associated with streams and riparian vegetation tend to have low potential bushfire hazard ratings according to the existing mapping, and either medium or no bushfire hazard rating according to the new mapping. These include Guanaba Reserve, Piggots Road Reserve, Hollindale Family Park, Henri Roberts Drive Reserve, Mango Tree Park, Clagiraba Road Causeway Reserve, Charlies Crossing Park, Charlies Crossing Road West Park, and the lowland areas of Pleasant Parklands and Gladrose Reserve.

The Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010 (Eco Logical Australia, 2010) has been developed for the planning area (with the exception of the Yallanbee Court Reserve section of Gladrose Reserve), and has been adopted by Gold Coast City Council (Ex Minute SC10.1005.002 refers). All bushfire management in the planning area is to be undertaken in accordance with this plan. The plan identifies property and infrastructure assets, natural features and values, and provides direction for the management of fire in the planning area. The Bushfire Management Plan identifies the fire fighting infrastructure in the planning area. This infrastructure includes a network of fire trails, water filling points, water reservoirs and Guanaba Rural Fire Brigade Shed, located on Tarata Road adjacent to Guanaba Reserve.

Appropriate fire regimens are critical for the conservation and enhancement of biodiversity of many of the regional ecosystems in the planning area. Many flora and fauna species are
dependent on fire for their survival, and as such, fire may be introduced in some communities at an appropriate frequency and intensity to promote biodiversity and encourage regeneration. A number of regional ecosystems in the planning area are dependent upon fire to maintain their structure. These include RE 12.11.5 (Eucalyptus tereticornis open forest on metamorphics +/- interbedded volcanics.), and RE 12.11.3 (Eucalyptus siderophloia, E. propinqua open forest on metamorphics +/- interbedded volcanics). There are other regional ecosystems that are fire adapted, but for which the fire regime frequency is more difficult to establish in that these ecosystems have a mixture of sclerophyll species and more mesic species. These include RE 12.3.2 (Eucalyptus grandis tall open forest on alluvial plains) and RE 12.11.2 (Eucalyptus saligna or E. grandis, E. microcorys, E. acmenoides, Lophostemon confertus tall open forest on metamorphics +/- interbedded volcanics).

The most up-to-date, best practice fire regimes for the regional ecosystems in the planning area are presented in the Regional Ecosystem Description Database (DERM, 2010a). Hazard reduction burns generally should not occur below the lower frequency limit, with programs aiming to vary the inter-fire range within the limits for each regional ecosystem. Maximising this variability will allow for a mixed-aged forest, increase the mosaic patterns, and create different microclimates within the one forest type, serving to increase habitat and species diversity. As these regimes are those which generally apply to each regional ecosystem, they should only be used as a guide. Ultimately, decision making on the frequency of fires is a result of a number of factors including fuel load, proximity to properties, patch size, the recommended fire interval for the regional ecosystem, and other site specific information. This information is articulated in the Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010.

Some regional ecosystems within the planning area are not fire tolerant, such as RE 12.3.1 (Gallery rainforest (notophyll vine forest) on alluvial plains), RE 12.3.7 (Eucalyptus tereticornis, Melaleuca viminalis, Casuarina cunninghamiana fringing forest), RE 12.11.1 (and RE 12.11.10 (Notophyll vine forest +/- Araucaria cunninghamii on metamorphics +/- interbedded volcanics.). The Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010 states that fire is to be excluded from these regional ecosystems, including protecting these sensitive areas from wildfires or managing surrounding vegetation to reduce the impact of wildfi res on such vegetation.

Some parts of the planning area are currently subject to ecological restoration works. Most restoration work is being undertaken in areas that are not tolerant of fire, and in accordance with the Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010 these areas should not be burned intentionally. In a broader context however, the controlled burn regime must take into account ecological restoration works and the impact that fire has upon them. Weed germination can be greatly increased following fire events, even in reasonably weed free environments. Thus, as outlined in the Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010, weed control work needs to be synchronised with the burn program. Guanaba Reserve and Stewarts Road Reserve are identified in this management document as areas where the riparian buffer needs to be established or increased (see Action 6.4). The Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010, however identifies an asset protection zone and a wildfire mitigation zone respectively within these reserves. The establishment of a riparian buffer within a wildfire mitigation is typically compatible with the intent of this zone but may not be compatible with the intent of an asset protection zone. Where there is potential conflict between an asset protection and the establishment of a riparian buffer (see action 6.4) the asset protection zone must take priority.

In natural or semi natural systems with extensive connectivity between large habitat areas, fauna can cope with the temporary disturbance of bushfire by moving into adjacent habitat areas. Eagle Heights Conservation Area, Guanaba Creek Reserve, Mystery Road Reserve, King Parrot Reserve, Caballo Road Reserve and parts of Gladrose Reserve are large
enough and have enough adjoining privately and publicly owned habitat to allow this to occur. The smaller reserves within the planning area tend to be associated with riparian zones and support fire sensitive vegetation. These reserves generally will not be burned deliberately.

Fire can have negative impacts on the values of the planning area. Very hot fires can kill large trees as well as understorey vegetation. A fire regime where fires are too frequent can prevent native species from reaching reproductive maturity, reduce species diversity, destroy important habitat such as leaf litter and fallen logs and facilitate further invasion of weeds, particularly pyrogenic species such as molasses grass (*Melinis minutiflora*) that increase the overall bushfire hazard. Conversely, very infrequent fires impact detrimentally on species diversity, forest structure, the regeneration of native species and future fire intensity.

4.5.2 Desired outcomes

- Human life and property (including management structures) within and adjacent to the planning area are protected.
- Sites, relics and structures of European and Aboriginal cultural heritage value are protected from radiant heat and fire management activities.
- Ecosystem health and diversity is maintained and enhanced through best practice ecological fire management.
- Where possible, fire is excluded from ecological communities that are not tolerant of fire.
- Fire management is undertaken in cooperation with neighbours and other relevant organisations.
- Hazard reduction burns are synchronised with pre and post weed control works so as to maximise biodiversity and minimise maintenance.
- Where possible, unplanned fires are prevented from entering or leaving the planning area.
- Increased community understanding of fire hazards, individual responsibilities and fire ecology.
- Improved understanding of fire management requirements for ecosystems and species occupying the planning area.

4.5.3 Management strategy

4.5.3.1 Guidelines

**G5.1** Fire management is to be carried out in accordance with the Tamborine Guanaba Conservation Reserves Bushfire Management Plan (EcoLogical 2010).

**G5.2** Undertake fire planning and fire management to protect life and property; enhance species and habitat diversity, and connectivity across the landscape; and encourage recruitment of significant species.

**G5.3** Where life and property priorities allow, ensure that the timing of hazard reduction burns in mitigation and conservation zones (as determined by the *Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010*) supports ecological restoration projects. Wherever possible, weed monitoring and control are to be a priority following fire.

**G5.4** Ensure that thorough ground truthing is carried out at all sites prior to hazard reduction burning to identify safety issues and site constraints such as threatened species, restoration zones, valuable habitat or ecological communities with specialist management requirements.

**G5.5** Ensure that future fire management planning incorporates the recommendations of the South East Queensland Fire and Biodiversity Consortium and the Queensland Herbarium.
regarding appropriate fire management prescriptions for each regional ecosystem present within the planning area.

**G5.6** Prioritise management of mitigation zones that protect fire sensitive regional ecosystems from fire. These include RE 12.3.1 (Gallery rainforest (notophyll vine forest) on alluvial plains), RE 12.3.7 (*Eucalyptus tereticornis*, *Melaleuca viminalis*, *Casuarina cunninghamamiana* fringing forest), RE 12.11.1 (and RE 12.11.10 (Notophyll vine forest +/- *Araucaria cunninghamii* on metamorphics +/- interbedded volcanics.).

**G5.7** Fire management undertaken for each vegetation community in the planning area will aim to achieve fire intervals within the range identified in Regional Ecosystem Description Database (DERM, 2010a). If further research identifies a requirement for changes in these fire regimes then the regime in the Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010 will be altered.

**G5.8** To maximise opportunities for the protection of fire-sensitive species and ecosystems, GCCC’s natural areas management officers and seconded Queensland Fire Rescue Service officers are responsible for all fire planning and implementation within the planning area.

**G5.9** Aim to protect hollow-bearing trees and logs from fire during hazard reduction burn operations.

**G5.10** Wildfires will be extinguished as quickly as possible, except under circumstances in which the fire is considered to be of ecological benefit; does not threaten life and property; and QFRS have been consulted.

**G5.11** Fire management strategies that have the potential to impact upon sites of Aboriginal cultural significance will be developed in consultation with GCCC’s Indigenous Cultural Heritage Liaison officer.

**G5.12** Liaise with GCCC’s environmental planning officers regarding implementation of proposed fire management strategies on neighbouring ‘Land for Wildlife’ properties.

**G5.13** Liaise with GCCC’s development assessment officers to ensure that all necessary bushfire hazard reduction measures are incorporated into nearby new developments and do not adversely impact on the planning area.

**G5.14** Do not promote or provide for uses within the planning area that may substantially increase the fire hazard or risk of ignition and threaten neighbouring homes. Additionally, ensure that infrastructure is designed to minimise the potential for increased fire hazard.

**G5.15** Prohibit open fires (e.g. campfires, wood barbeques) within the planning area.

**G5.16** Avoid the use of heavy machinery for fire suppression within the planning area where possible, particularly in areas containing rare plants, threatened wildlife habitat, and anything of significant cultural heritage value.

**G5.17** Ensure that potentially hazardous management activities (such as slashing, welding, grinding and other construction/demolition activities) are excluded from the planning area during periods of very high or greater than very high fire danger ratings.

**G5.18** Maintain cooperation with other government agencies, neighbours and the local Rural Fire Brigade for the management of fire within and adjoining the planning area.

**G5.19** Ensure that bushfire management planning for the planning area is consistent with QFRS/RFS Local Action Plans and DERM Wildfire Response Plans.
G5.20 Where possible, prioritise and actively control weed infestations considered to substantially increase fire hazard potential, fire intensity and the site’s capacity to carry fire, e.g. molasses grass (*Melinis minutiflora*) and lantana (*Lantana camara*).

4.5.3.2 Actions

A5.1 Review the *Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010* every five years, in consultation with relevant stakeholders.

A5.2 Maintain management tracks in accordance with the *Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010*.

A5.3 Develop operational procedures for implementing the *Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010*, including the delivery of hazard reduction burns, conservation burns, all necessary ground truthing and the preparation, assessment and approval of burn proposals by Council’s natural areas management officers.

A5.4 Develop and maintain GIS mapping layers to inform fire planning, including:
- basic topographic attributes
- vegetation communities, including information on age classes
- threatened and significant plant species and communities
- the habitats of rare and threatened native animal species
- fire histories, including ignition sources and firepath information
- fuel load attributes
- management tracks and fire breaks
- water points
- infrastructure and assets
- restoration zones

A5.5 Exclude public access to all or part of the planning area during periods of extreme or catastrophic fire danger rating days, or during and immediately after hazard reduction burning operations. Ensure that signage in accordance with the signage plan is provided at all entry points advising the public of these closures and associated risk.

A5.6 Provide incident control support at wildfire events to maximise opportunities for the protection of fire-sensitive ecosystems.

A5.7 Keep neighbours and the general public informed of fire management activities through local media, GCCC’s website and signage at entry points to the planning area.

A5.8 Improve bushfire preparedness in high potential bushfire hazard areas through community education programs in consultation / cooperation with QFRS. Such programs will also educate residents about the threats posed by accidental fire and by dumping combustible garden waste in the reserves.

A5.9 Continue with vegetation and fuel hazard monitoring currently being undertaken in strategic reserves across the planning area. Where feasible, undertake such monitoring before and after fires and establish fire-exclusion areas to provide benchmarks for fire management research and monitoring.

A5.10 Ensure that adequate asset protection zones and buffers are identified for all recreational infrastructure, embellishments, and neighbouring residences.
A5.11 A record of hazard reduction burns and wildfires in reserves will be established in cooperation with the Rural Fire Brigade in order to assist with interpretation of subsequent flora and fauna survey results.

4.5.4 Key monitoring priorities

- Monitor vegetation recovery, habitat condition and plant species composition (including weeds) at all sites burnt during hazard reduction burns, conservation burns and wildfires.
- Establish long-term monitoring programs in unburnt and burnt areas following fires to assess the impact of fire frequency on species composition, diversity, habitat condition and vegetation health, and to assist future decision making regarding the use of fire as an ecological management tool within the planning area.
- Monitor incidence of garden waste dumping and accidental/malicious fires on or adjacent to the planning area to guide further management action.

4.6 Pest plants and ecological restoration

4.6.1 Current management situation

Of the 682 flora species recorded within the planning area, 96 species (approximately 14% of the total number of plant species) are not native to the Gold Coast City. Of these non native species, a number of species are pest plants. Many of the pest plant species present occur in low densities and are generally restricted to cleared or previously disturbed areas, the margins of access tracks, or reserve margins. There are however, some pest species such as lantana (Lantana camara) and a number of exotic vines that are problematic across the planning area. There are also some areas such as riparian zones where pest plants are present in significant numbers.

Land clearing and fragmentation, altered fire regimes and previous land uses including cattle grazing and dairy farming have increased the occurrence of several non-native species that are referred to as ‘declared pest plants’ under the Land Protection (Pest and Stock Route Management) Act 2002 and also ‘environmental weeds’ (non-native species that are actively invading natural vegetation communities). Some declared plants and environmental weeds are capable of altering the physical structure, environmental conditions and natural functions of ecosystems. These alterations of vegetation community structure often equate to substantial declines in native species diversity.

The Land Protection (Pest and Stock Route Management) Act 2002 has three designated categories for declared pest plants:

- Class 1 plant: not broadly established in Queensland, but has potential to become a serious pest; all landholders are required by law to keep their land free of Class 1 pests
- Class 2 plant: established in substantial areas of Queensland; all landholders must try to keep their land free of Class 2 pests
- Class 3 plant: commonly established in parts of Queensland; a notice may be issued on a landowner to take reasonable action to control an infestation of these weeds if it is causing or has the potential to cause an adverse impact on a nearby ‘environmentally significant area’.

Council has obligations under the Land Protection (Pest and Stock Route Management) Act 2002 to control class 1 and 2, and in some cases class 3 declared pest plants on the land it manages (i.e. if the land is adjacent to an ‘environmentally significant area’). Declared plants are targeted for control because they have, or could have serious economic, environmental or social impacts. Council’s pest management officers are the lead agency for control of class 1 and 2 pests in the planning area.
Declared plants are managed at the local level through Gold Coast City Council’s Pest Management Plan (GCCC, 2008b). Class 3 pests include some of the most serious environmental weed species such as lantana (*Lantana camara*), asparagus fern (*Asparagus aethiopicus* var. *Sprengeri*, *A. africanus* and *A. plumosus*) camphor laurel (*Cinnamomum camphora*), Singapore daisy (*Sphagneticola trilobata*) and the privets (*Ligustrum lucidum* and *L. sinense*).

A total of 12 declared weed species have been recorded in the planning area (Table 6). In addition, 55 of the weed species present have been identified amongst the 200 most invasive species within South East Queensland; and nine of these are listed in the top 20 (Batianoff and Butler, 2002).

Further weeds are likely to establish themselves in the future. Senegal tea (*Gymnocoronis spilanthoides*) has been recorded upstream of Charlies Crossing Park, and may establish itself closer to the planning area in the future. New weed infestations will be addressed on a priority basis by pest management and natural areas restoration staff, and reported to the relevant authorities where required. The management requirements of newly established weeds will be incorporated into the relevant restoration action plan or ecological restoration plan. Glush weed (*Hygrophila costata*) has also been recorded along the Coomera River and has the potential to spread to the planning area.

Some non-declared environmental weeds are considered a management priority due to their potential to infest and degrade natural areas. Within the Gold Coast City, many environmental weeds present a much more serious ecological threat than the declared weeds. Many environmental weeds hinder the survival and regeneration of native plant species, and in some cases, they may permanently alter both the structure and composition of native vegetation communities.

**Table 6.** List of declared and environmental weeds for control within the Tamborine Guanaba Conservation Reserves.

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Class†</th>
<th>Invasiveness‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ageratina adenophora</td>
<td>crofton weed</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Ageratina riparia</td>
<td>mist flower</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Ageratum houstonianum</td>
<td>blue billygoat weed</td>
<td></td>
<td>115</td>
</tr>
<tr>
<td>Ambrosia artemesifolia</td>
<td>annual ragweed</td>
<td>Class 2</td>
<td>-</td>
</tr>
<tr>
<td>Anredera cordifolia</td>
<td>madeira vine</td>
<td>Class 3</td>
<td>5</td>
</tr>
<tr>
<td>Asclepias curassavica</td>
<td>red-headed cotton bush</td>
<td></td>
<td>126</td>
</tr>
<tr>
<td>Asparagus aethiopicus var.<em>Sprenger</em></td>
<td>asparagus fern</td>
<td>Class 3</td>
<td>23</td>
</tr>
<tr>
<td>Asparagus africanus</td>
<td>asparagus fern</td>
<td>Class 3</td>
<td>6</td>
</tr>
<tr>
<td>Asparagus plumosus</td>
<td>asparagus fern</td>
<td>Class 3</td>
<td>57</td>
</tr>
<tr>
<td>Baccharis halimifolia</td>
<td>groundsel bush</td>
<td>Class 2</td>
<td>2</td>
</tr>
<tr>
<td>Bidens pilosa</td>
<td>cobbler's pegs</td>
<td></td>
<td>110</td>
</tr>
<tr>
<td>Cestrum parqui</td>
<td>orange cestrum</td>
<td></td>
<td>59</td>
</tr>
<tr>
<td>Chloris gayana</td>
<td>rhodes grass</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>Cinnamomum camphora</td>
<td>camphor laurel</td>
<td>Class 3</td>
<td>8</td>
</tr>
<tr>
<td>Conyza bonariensis</td>
<td>flaxleaf fleabane</td>
<td></td>
<td>185</td>
</tr>
<tr>
<td>Desmodium uncinatum</td>
<td>silver-leaf desmodium</td>
<td></td>
<td>64</td>
</tr>
<tr>
<td>Digitaria didactyla</td>
<td>queensland blue couch</td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>Eugenia uniflora</td>
<td>Brazilian cherry</td>
<td></td>
<td>118</td>
</tr>
<tr>
<td>Gomphocarpus physocarpus</td>
<td>balloon cotton bush</td>
<td></td>
<td>86</td>
</tr>
<tr>
<td>Hypoestes phyllostachya</td>
<td>polka dot</td>
<td></td>
<td>172</td>
</tr>
<tr>
<td>Jacaranda mimosifolia</td>
<td>jacaranda</td>
<td></td>
<td>156</td>
</tr>
<tr>
<td>Lantana camara</td>
<td>lantana</td>
<td>Class 3</td>
<td>1</td>
</tr>
<tr>
<td>Ligustrum lucidum</td>
<td>large-leaved privet</td>
<td>Class 3</td>
<td>15</td>
</tr>
<tr>
<td>Ligustrum sinense</td>
<td>small-leaved privet</td>
<td>Class 3</td>
<td>21</td>
</tr>
<tr>
<td>Lilium formosanum</td>
<td>formosa lily</td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>Lonicera japonica</td>
<td>japanese honeysuckle</td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>Macfadyena unguis-cati</td>
<td>cats claw creeper</td>
<td>Class 3</td>
<td>3</td>
</tr>
<tr>
<td>Scientific Name</td>
<td>Common Name</td>
<td>Class</td>
<td>Invasiveness</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
<td>-------</td>
<td>--------------</td>
</tr>
<tr>
<td>Macroptilium atropurpureum</td>
<td>siratro</td>
<td>-</td>
<td>51</td>
</tr>
<tr>
<td>Macropylioma var. axillare</td>
<td>red natal grass</td>
<td>-</td>
<td>65</td>
</tr>
<tr>
<td>Melinits minutiflora</td>
<td>molasses grass</td>
<td>-</td>
<td>38</td>
</tr>
<tr>
<td>Myriophyllum aquaticum</td>
<td>Brazilian water milfoil</td>
<td>-</td>
<td>69</td>
</tr>
<tr>
<td>Ochna serrulata</td>
<td>mickey mouse bush</td>
<td>-</td>
<td>22</td>
</tr>
<tr>
<td>Passalum mandiocanum</td>
<td>broad-leaf paspalum</td>
<td>-</td>
<td>72</td>
</tr>
<tr>
<td>Passiflora edulis</td>
<td>common passionfruit</td>
<td>-</td>
<td>193</td>
</tr>
<tr>
<td>Passiflora foetida</td>
<td>stinking passion flower</td>
<td>-</td>
<td>70</td>
</tr>
<tr>
<td>Passiflora suberosa</td>
<td>corky passion flower</td>
<td>-</td>
<td>37</td>
</tr>
<tr>
<td>Passiflora subpeltata</td>
<td>white passion flower</td>
<td>-</td>
<td>63</td>
</tr>
<tr>
<td>Pennisetum alopecuroides</td>
<td>swamp foxtail</td>
<td>-</td>
<td>95</td>
</tr>
<tr>
<td>Pennisetum purpureum</td>
<td>elephant grass</td>
<td>-</td>
<td>123</td>
</tr>
<tr>
<td>Phytolacca octandra</td>
<td>inkweed</td>
<td>-</td>
<td>125</td>
</tr>
<tr>
<td>Pinus elliottii</td>
<td>slash pine</td>
<td>-</td>
<td>44</td>
</tr>
<tr>
<td>Psidium guajava</td>
<td>guava</td>
<td>-</td>
<td>116</td>
</tr>
<tr>
<td>Rhaphiolepis indica</td>
<td>indian hawthorn</td>
<td>-</td>
<td>101</td>
</tr>
<tr>
<td>Ricinus communis</td>
<td>castor oil plant</td>
<td>-</td>
<td>81</td>
</tr>
<tr>
<td>Rivina humilis</td>
<td>coral nymphe</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>Salvia coccinea</td>
<td>red salvia</td>
<td>-</td>
<td>114</td>
</tr>
<tr>
<td>Schinus terebinthifolius</td>
<td>broad-leaf pepper tree</td>
<td>Class 3</td>
<td>9</td>
</tr>
<tr>
<td>Senecio madagascariensis</td>
<td>common fireweed</td>
<td>Class 2</td>
<td>82</td>
</tr>
<tr>
<td>Senna pendula var. glabrata</td>
<td>smooth senna</td>
<td>-</td>
<td>45</td>
</tr>
<tr>
<td>Solanum mauritianum</td>
<td>wild tobacco</td>
<td>-</td>
<td>61</td>
</tr>
<tr>
<td>Solanum searforthianum</td>
<td>Brazilian nightshade</td>
<td>-</td>
<td>55</td>
</tr>
<tr>
<td>Sphagnetecola triloba</td>
<td>Singapore daisy</td>
<td>-</td>
<td>16</td>
</tr>
<tr>
<td>Syagrus romanzoffiana</td>
<td>cocos palm</td>
<td>-</td>
<td>75</td>
</tr>
<tr>
<td>Tradescantia fluminensis</td>
<td>wandering jew</td>
<td>-</td>
<td>58</td>
</tr>
<tr>
<td>Tradescantia zebrina</td>
<td>zebina</td>
<td>-</td>
<td>105</td>
</tr>
</tbody>
</table>


There is a significant amount of Asparagus plumosus (asparagus fern) in King Parrot Reserve and Eagle Heights Conservation Area. This species is also present in some of the smaller reserves. Lantana camara (lantana) is a problem in Eagle Heights Conservation Area and King Parrot Reserve. Nephrolepis cordifolia (fishbone fern) is present in high numbers in the southern riparian area of Eagle Heights Conservation Area and Solanum chrysotrichum (devil’s fig) is scattered throughout the moist disturbed areas of this reserve. Recent restoration work has significantly reduced the amount of these weeds present in the planning area. Passiflora subpeltata (white passionflower) and to a lesser extent the other non native Passiflora spp. (passionfruits) are widespread throughout the entire planning area. Melinits minutiflora (molasses grass) is also common in the reserves, especially in dry sclerophyll areas.

GCCC is currently undertaking bushland restoration work at Eagle Heights Conservation Area. This work is funded by OSPL funds via the OSPL restoration team, as the site was purchased using OSPL funds.

Some restoration work was carried out in Pleasant Parklands as a condition of the original development application over this area. Pleasant Parklands has since benefited from extensive planting work undertaken by an ‘individual carer’ under the Beaches to Bushland program. GCCC assists with follow up maintenance, and occasionally the individual carer is assisted by other members of the public. There is no restoration action plan or ecological restoration plan for this site, but restoration work is ongoing.

Historically, Gladrose Reserve has benefited from the efforts of the Wongawallan Creek Bushcare Group, which was operating under the GCCC Beaches to Bushland Program.
community restoration site action plan has been developed for Gladrose Reserve. This plan provides for the long and short term ecological restoration of native plant communities by a systematic pest plant control program, together with replanting with locally native species where appropriate. The outcomes listed in the Gladrose Reserve Community Restoration Site Action Plan (GCCC, 2007a) are:

- restore and expand remaining native vegetation by controlling weeds
- repair riparian vegetation including its structure, integrity and diversity
- protect the creek bank from erosion
- improve habitat opportunities for a variety of native fauna
- provide learning opportunities for local landholders in “bush restoration”
- improve the amenity of the park as a focal point in the community
- strengthen relationships in the community.

The outcomes in the restoration plan are still guiding restoration works and are applicable in the long term.

An ongoing commitment to restoration will help to conserve and improve the condition of native vegetation within the planning area. In order to achieve the best results possible with the resources at hand, prioritisation of reserves is important. High priority restoration areas are those which satisfy some or all of the following:

- highly intact vegetation communities
- ‘endangered’ and ‘of concern’ regional ecosystems
- vegetation communities supporting threatened plant and animal species
- known bioregional corridors (as per the GCCC Nature Conservation Strategy 2009-2019)
- riparian zones and other linkages between reserves
- areas surrounding sensitive vegetation
- areas already under maintenance
- areas being prepared for fuel reduction or ecological burning
- previously burned areas
- areas identified having significance to the community

Ultimately, restoration priorities are site specific and are subject to a range of other factors including the resources available, accessibility of the site, land use on neighbouring allotments, and the availability of skilled field staff. Incidental field observations suggest that Eagle Heights Conservation Area, King Parrot Reserve, Gladrose Reserve and Guanaba Creek Reserve are high priority reserves for restoration work within the planning area.

At the time of preparation of this plan, GCCC is considering leasing a section of Charlies Crossing Park to a local pony club. Should this lease arrangement proceed, it will increase the level of priority for restoration work in this park. This is due to the high, unstable river banks along the park boundary and the need to stabilise them, especially if the park is to be utilised by a local sporting club. Whilst the stabilisation of the river bank may require bank hardening and other engineering work, the planting of a buffer in this area is an integral part of ensuring long term stability in an ecologically responsible manner.

It is recommended that revegetation work to establish vegetated riparian buffers of a width consistent with The Natural Wetland Areas and Natural Waterways Code of the GCCC Planning Scheme be undertaken throughout the planning area.

Ecological restoration will be guided by the development of ecological restoration plans or action plans by GCCC natural areas management officers. Restoration planning should identify priorities, appropriate management practices, techniques and methodology for implementation of effective control of pest plants and rehabilitation of degraded areas. Eagle Heights Conservation Area, King Parrot Reserve, Guanaba Creek Reserve, and Charlies
Crossing Park are priority reserves for the development of ecological restoration plans or ecological action plans.

Assisted regeneration is a preferred restoration method because it maximises positive outcomes at a relatively low cost. This approach is appropriate in relatively intact native plant communities where limited intervention such as weed control, track closure and fencing is sufficient to restore the native vegetation through natural regeneration and successional processes. Wherever possible, assisted regeneration will be used in restoration work.

4.6.2 Desired outcomes

- Restore degraded native vegetation communities and minimise impacts associated with pest plants and their control on native flora and fauna, cultural heritage sites, and landscapes within the planning area.
- Reduced threat of future weed invasion and vegetation disturbance.
- Seek to develop appropriate riparian buffers to waterways.
- Restoration and pest plant control is planned in a strategic, coordinated and collaborative manner.
- The public are informed of ecological restoration and pest plant management programs within the planning area via ongoing education and interpretive signage.
- Biodiversity is enhanced and ecological communities are more resilient to further disturbances.
- A range of different habitat types are restored.

4.6.3 Management strategy

4.6.3.1 Guidelines

G6.1 In cooperation with GCCC’s pest management officers, natural areas management officers will coordinate all pest plant control programs within the planning area, including management of declared species. The removal of weeds from GCCC reserves by private individuals without GCCC consent, although often well-intentioned, has the potential to cause significant ecological damage and is illegal.

G6.2 Pest plant priorities, planning, and management to be aligned with the intent and objectives of all relevant Commonwealth, State and GCCC guidelines, strategies, policies and legislation.

G6.3 Wherever possible, mechanical weed removal techniques should be confined to cleared pasture areas.

G6.4 Management techniques should minimise the spread of pest plants throughout the planning area e.g. by confining visitor and management access to formed roads and tracks.

G6.5 Where revegetation is required within the planning area, locally sourced naturally occurring species must be utilised.

G6.6 In order to maximise opportunities for ecological restoration in association with the hazard reduction burning program, GCCC’s natural areas restoration officers and relevant fire officers are to collaborate.

G6.7 Ensure that restoration activities are carried out with due sensitivity to fauna habitat, including:
  - sensitive use of herbicides adjacent to waterway/wetland areas. Herbicides will generally not be permitted to enter natural waterways and artificial water bodies within the planning area, and where possible, herbicide-free buffer zones should be
established around aquatic systems to minimise risk. Under circumstances in which it is necessary to apply herbicides within close proximity to water bodies, low-impact chemicals suitable for use in aquatic environments (e.g. Glyphosate Bioactive or equivalent) should be used
- no rapid or substantial loss of fauna habitat associated with restoration works. This is mainly an issue in smaller reserves where the habitat present is not surrounded by other habitat that fauna can temporarily utilise. In such areas, rehabilitation of weedy areas known to provide fauna habitat is to be staged to ensure no complete temporary loss of food resources or cover for ground dwelling species.
- where an area is lacking in appropriate species, incorporation of known food plants of fauna species into restoration programs (at an appropriate phase of vegetation establishment).

G6.8 Until an ecological restoration plan, restoration action plan or similar restoration brief has been developed for each reserve, pest plant control should be limited to essential works only (i.e. follow up work and the removal of declared species, high-threat environmental weeds, infestations located in high visitation areas, and species considered to be a fire hazard or significant threat to the ecology of the site).

G6.9 All restoration plans for the planning area should include:
- defined order of works and follow up required
- appropriate techniques and herbicide rates for restoration and follow up
- flora species list and appropriate native planting list where revegetation is required
- where appropriate, a map identifying work zones, site features (waterways, access etc) and locations of major or priority infestations
- where appropriate, monitoring and reporting protocols including performance criteria to assess effectiveness of restoration programs

G6.10 Ecological restoration work should seek to maximise biodiversity at a landscape level and ensure that a diversity of foraging habitat remain available to key fauna species.

G6.11 Ensure that restoration activities adjacent to waterways are staged to achieve a gradual transition from any existing exotic species to native plant species, preventing exposure and accelerated erosion of stream banks.

G6.12 Weed hygiene declarations are to be obtained from suppliers where landscaping materials and plants are being installed or utilised in the planning area.

4.6.3.2 Actions

A6.1 Regularly update the GCCC Natural Areas Management Unit database with restoration methodology, area covered, hours worked, weed species observed, weeds treated during restoration work and other significant observations.

A6.2 Develop and implement ecological restoration plans or restoration action plans for Eagle Heights Conservation Area, King Parrot Reserve, Guanaba Reserve and Charlies Crossing Park. As resources become available, develop restoration action plans for other reserves in the planning area requiring restoration works.

A6.3 Continue expanding the area undergoing ecological restoration and maintenance work at Eagle Heights Conservation Area, Gladrose Reserve and Pleasant Parklands, ensuring that adequate resources are provided for follow-up management.

A6.4 As resources become available, establish vegetated buffers along the banks of waterways in the planning area in accordance with The Natural Wetland Areas and Natural Waterways Code of the GCCC Planning Scheme. This will be carried out by GCCC’s natural
areas management officers in partnership with GCCC’s catchment management officers and may utilise the resources of appropriately trained and experienced community groups or contractors. This action will need to be sympathetic to any asset protection zones in the Tamborine Guanaba Bushfire Management Plan.

A6.5 Undertake restoration work along the riparian section of Guanaba Creek Reserve with the aim of re-establishing the ‘endangered’/’of concern’ mapped remnant vegetation.

A6.6 Conduct regular inspections of the planning area to assess weed recolonisation following bushfires. Carry out follow-up weed control where necessary.

A6.7 In accordance with the signage plan, install interpretive signage adjacent to restoration areas to educate visitors about the restoration process, how restoration affects ecological values, and how individual residents and neighbours can help.

A6.8 Together with pest management staff, participate in the development and implementation of coordinated regional pest plant control initiatives with neighbours, community groups, and other land management agencies. Where feasible, pursue partnerships with DERM and Scenic Rim Regional Council to facilitate collaborative pest plant management and ecological restoration between Council reserves managed by the State and neighbouring Councils. This is particularly important where pest plant species are located upstream of sites recently restored by Council.

A6.9 Incorporate natural areas management staff field observations of Class 1 and 2 declared plants into the GCCC Natural Areas Management Unit ‘incidental records database’. Ensure that this information is regularly fed into the GCCC NCS flora and fauna database.

A6.10 Provide timely notification to Council’s Pest Management Unit of new infestations of Class 1 and 2 declared plants to enable better integration of control and monitoring activities.

4.6.4 Key monitoring priorities

- Monitor restoration sites to assess the success of ecological restoration programs and carry out follow up works until native vegetation is sufficiently well established to minimise further weed invasion. Ideally, monitoring will include photographs of the site over time.
- Monitor new occurrences of pest plant species or expansions of existing infestations within the planning area.
- Monitor reserve boundaries during ranger patrols to identify and regulate new instances of green waste dumping or vegetation disturbance.

4.7 Pest animals

4.7.1 Current management situation

Pest animals are those species not native to the planning area that have a detrimental impact on natural areas through predation, displacement and competition with native animals. Small fauna populations in the more fragmented reserves of the planning area are less resilient to chance disturbances and external pressures and are therefore particularly vulnerable to predation by or competition from pest animals. A number of species of pest animals are present in the planning area including wild dogs (*Canis familiaris*), foxes (*Vulpes vulpes*), cats (*Felis catus*), goats (*Capra hircus*), Indian/common myna birds (*Acridotheres tristis*) and cane toads (*Chaunus marinus*).

The *Land Protection (Pest and Stock Route Management) Act 2002* identifies pest animal species and criteria for their control. A number of animals described as Class 2 pest animals
under the Act occur within the planning area (Table 7). Under the Act, landowners including State and local government agencies must take reasonable steps to keep land clear of Class 2 animals.

Table 7. Priority pest animal species in the planning area and their status.

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Class</th>
<th>GCCC priority</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acridotheres tristis</em></td>
<td>Indian/common myna</td>
<td>Non-declared</td>
<td>Medium</td>
</tr>
<tr>
<td><em>Canis familiaris</em></td>
<td>wild dog</td>
<td>Class 2</td>
<td>High</td>
</tr>
<tr>
<td><em>Capra hircus</em></td>
<td>goat</td>
<td>Class 2</td>
<td>NA</td>
</tr>
<tr>
<td><em>Chaunus marinus</em></td>
<td>cane toad</td>
<td>Non-declared</td>
<td>Low</td>
</tr>
<tr>
<td><em>Felis catus</em></td>
<td>feral cat</td>
<td>Class 2</td>
<td>Low</td>
</tr>
<tr>
<td><em>Lepus capensis</em></td>
<td>brown hare</td>
<td>Non-declared</td>
<td>NA</td>
</tr>
<tr>
<td><em>Mus musculus</em></td>
<td>house mouse</td>
<td>Non-declared</td>
<td>NA</td>
</tr>
<tr>
<td><em>Rattus rattus</em></td>
<td>black rat</td>
<td>Non-declared</td>
<td>NA</td>
</tr>
<tr>
<td><em>Streptopelia chinensis</em></td>
<td>spotted turtle dove</td>
<td>Non-declared</td>
<td>NA</td>
</tr>
<tr>
<td><em>Vulpes vulpes</em></td>
<td>fox</td>
<td>Class 2</td>
<td>High</td>
</tr>
</tbody>
</table>

2 Gold Coast City Council Pest Management Plan.

There are populations of rusa deer (*Cervus timorensis*) in the vicinity of the planning area. Whilst there are no direct records of this species in the reserves, it is possible that rusa deer enter the planning area from time to time. These are a Class 2 pest in Queensland.

A number of feral animals in the planning area are listed as part of key threatening processes under the *Environment Protection and Biodiversity Conservation Act 1999*. These include:

- predation by feral cats
- predation by the European red fox
- the biological effects, including toxic ingestion of cane toads (*Chaunus marinus*)
- competition and land degradation by unmanaged goats

Beyond the feral animal problem, domestic dogs and cats are also present in the residential areas of the management cluster. These animals have an impact on native fauna, especially if owners are unaware of the need for desexing, microchipping and registration of domestic animals. Educating local residents about the environmental values that are impacted by inappropriate or irresponsible pet ownership is very important in addressing this problem.

Wild dogs are recognised as a significant threat to native fauna in the planning area, in particular small to medium-sized mammals. Wild dogs are present in Eagle Heights Conservation Area, King Parrot Reserve, Mystery Road Reserve, Henri Roberts Drive and probably a number of other reserves. Wild dogs are also present in the nearby Canungra Land Warfare Centre. Wild dogs prey upon native wildlife and are a threat to significant macropods and small mammals. Wild dogs and other feral animals utilise cleared management tracks, roads and utility corridors to access isolated fauna habitats. The extent of management tracks therefore, should be kept to the minimum required. It is important that GCCC management actions are consistent with the actions of the Queensland Wild Dog Offensive group (QDOG) who, at the time of preparation of this report had just ‘refreshed’ the Queensland Wild Dog Strategy. This strategy aims to reduce the impact of wild dogs in peri urban and coastal areas, as opposed to a zero tolerance policy inside the wild dog barrier fence. A key part of this policy is the ‘nil tenure’ planning process. This means that all landholders need to work together, regardless of Council boundaries, land tenure or other boundaries.

The European red fox was deliberately introduced to Australia in the mid to late 1800’s. It occurs in a wide range of habitats (including urban areas) but is most common in woodland and semi-open habitats. Foxes have been observed in the planning area and generally inhabit similar areas to wild dogs. The species has played a major role in the decline of many
ground-nesting birds and small to medium sized ground-dwelling mammals (Reddiex and Forsyth, 2004). Predation pressure from single individuals can result in severe declines in susceptible fauna populations. Although GCCC animal control officers undertake fox control activities across the city, foxes continue to present control challenges due to their ability to adapt and succeed in both altered and semi-natural landscapes. Fox baiting is an effective control strategy, but this technique becomes impractical in urban and peri urban settings (due to the risk posed to domestic animals). Humane trapping and euthanasia by carbon dioxide are currently used to manage foxes in reserves. Once removed from a site however, foxes are able to rapidly recolonise from adjacent areas, such as the Canungra Land Warfare Centre, Tamborine National Park and the Guanaba Indigenous Protected Area.

Feral and domestic cats are likely to have made significant negative impacts on the native fauna of the planning area. Cats have been found to prey on over 345 different native animal species (DERM, 2010c). Where rabbits are abundant, they generally comprise the largest proportion of feral cat diets (Molsher, 1999). In urban environments where rabbit densities are likely to be relatively lower than those of rural populations, native fauna are likely to be at greater risk for predation by cats. Queensland's feral cat population stands at about 1.5 million, which is greater than the domestic cat population. But even domestic cats kill and injure wildlife in surprising numbers (DERM, 2010c). Feral cats present considerable challenges for control programs due to generally low trapping success and a lack of reliable methods for estimating cat abundance for measuring the effectiveness of control efforts (Reddiex and Forsyth, 2004).

Spotted turtle doves (*Streptopelia chinensis*) have been recorded in the planning area. This bird displaces native bird species and competes for limited resources. Indian/common mynas (*Acridotheres tristis*) are also present throughout the planning area. Indian/common mynas displace native bird species, kill the eggs and offspring of native birds and compete with native species for resources. It is envisaged that at some point in the future, a multiple Council control strategy will be developed to deal with the Indian/common myna problem.

*Toxoplasma gondii* is a protozoan parasite known to be transmitted to native ground animals by both feral and domestic cats (Denny and Dickman, 2010). The primary route of transmission is thought to be carnivorism. It is also thought, however that the disease may be transmitted to herbivorous animals where cat faeces have come into contact with plant materials that are subsequently eaten. Invertebrates may act as disease vectors to insectivorous dasyurid ground animals. Further study into the feral cat population would be beneficial in determining whether *Toxoplasma gondii* is a concern to indigenous species in the planning area.

At present, GCCC’s natural areas management officers maintain incidental records of pest animals observed throughout the planning area. GCCC’s animal management officers also record and map incidental sightings of feral animals. No strategic, definitive monitoring of feral animal populations has been undertaken. Monitoring of feral animal numbers particularly wild dogs and foxes is required to better inform management strategies. Without appropriate population numbers it is difficult to determine the impact these feral species are having on the native fauna present including susceptible rare or threatened species like Albert’s lyrebird (*Menura alberti*) and the two known threatened frog species.

The scheduled control of introduced animals needs to be prioritised in order to better utilise resources. Species that fulfil one or more of the following criteria should be assigned a higher priority for control work:

- declared species or those for which a national emergency control program has been declared or those known to be an important problem in other conservation areas or states
- species that have significant environmental impact, including damage to threatened species, catchment values and recreation values
Under Local Law 12 Part 9 (55), it is possible to exclude domestic dogs from specific reserves. Given that there is a wild dog population already present, the onerous task of domestic dog exclusion is not warranted in all reserves at this stage. It is recommended that dog exclusion zones be limited to Eagle Heights Conservation Area, King Parrot Reserve and Mystery Road Reserve. This is due to the very high ecological and habitat values of these reserves. All other reserves within the Tamborine Guanaba Conservation Area will remain categorised as dog on-leash areas unless evidence becomes available that warrants a reassessment of the situation and subsequent additional protection. For example, as wild dog management actions are rolled out, the feral population may drop to a level that makes exclusion of domestic dogs in these smaller reserves worthwhile.

At present, there are no apiary sites located in the planning area. Regulation of the honey industry by the Department of Employment Economic Development and Innovation aims to minimise the spread of various bee diseases, and weed and plant pathogens such as Phytophthora. The effects, either detrimental or beneficial, of honey bees in conservation reserves is not well understood and requires assessment before allowing bee keeping in the planning area.

Current pest animal management in the Tamborine Guanaba Conservation Reserves is reactionary in nature. For example following a fox or wild dog attack on wildlife, Council's animal management officers may undertake control work in the vicinity of the attack. A strategic approach to pest animal management across the planning area, and indeed the broader region is required. A strategic pest animal control plan is needed, and partnership agreements will need to be established with adjoining private landowners, adjoining councils, DERM and the Department of Defence to develop a coordinated pest animal control program.

4.7.2 Desired outcomes

- Reduced impacts of pest animals on native flora and fauna.
- Strategic, coordinated and collaborative pest control planning.
- Improved public understanding of and support for, pest animal management programs within the planning area.
- The neighbouring community is well educated with regard to responsible pet ownership.

4.7.3 Management strategy

4.7.3.1 Guidelines

**G7.1** Ensure pest animal control programs utilise best practice techniques that minimise impacts on non-target species and comply with animal welfare practices set out in the *Animal Care and Protection Act 2001*.

**G7.2** Evaluate the environmental and social acceptability of all pest animal control methods before they are adopted.

**G7.3** Continue to support GCCC’s animal management officers in undertaking existing programs for the control of pest animals within the planning area. Establish a protocol to
ensure that adequate notice is provided to natural areas operational staff prior to all pest animal control activities to enable closure of all or part of the reserve where required.

**G7.4** Wherever possible, utilise pest animal control strategies that include multiple control methods, target multiple species, and form part of a strategic and collaborative program.

**G7.5** No new permits will be issued for bee keeping within the planning area.

**G7.6** Ensure that clear and appropriate notice is provided to visitors and local residents during pest animal control and baiting programs. This is to be in keeping with current legislative requirements. Where a potential threat to the public exists, exclude public access from relevant reserves.

### 4.7.3.2 Actions

**A7.1** Prohibit domestic dogs under Local law 12 Part 9 (55) within Eagle Heights Conservation Area, King Parrot Reserve and Mystery Road Reserve.

**A7.2** Undertake strategic surveys to determine the distribution and abundance of pest animals (particularly wild dogs and foxes) within the reserves and review the history of control measures undertaken to ascertain their effectiveness.

**A7.3** Produce a pest animal control plan (PACP) for the planning area that identifies pest animals present and recommends and prioritises control and monitoring programs. This plan should include:
- triggers for initiating control strategies
- a set of criteria to establish priorities for non-native animal management
- control strategies that include multiple control methods, target multiple species and form part of an ecological restoration program
- integration with relevant Commonwealth and State threat abatement plans
- strategies for community and landholder involvement/cooperation
- monitoring techniques and regimes to help identify priority areas for feral animal control and to measure the effectiveness of control methodologies
- reporting protocols
- assignment of responsibility for tasks and activities

**A7.4** Implement a Pest Animal Control Program as per the Pest Animal Control Plan in Action 7.3

**A7.5** Work with proximate landholders, DERM and other land management agencies to develop and implement a coordinated approach to the management of pest animals within the planning area.

**A7.6** Maintain an up to date database of known pest animal movement routes, dens, trap sites and bait locations in the planning area. This database will be maintained in partnership with Council’s animal management staff.

**A7.7** Where necessary, coordinate the destruction of feral bee colonies with Council’s pest management officers.

### 4.7.4 Key monitoring priorities

- Monitoring to record the presence, distribution and abundance of pest animals in the planning area.
- Monitoring of the impacts of pest animal control programs on target and non target species.
4.8 Aboriginal cultural heritage

4.8.1 Current management situation

Aboriginal communities have an ongoing association and connection to country. Within a landscape, the biodiversity values of the land and water are central to Aboriginal spirituality and contribute to Aboriginal identity. Aboriginal communities associate natural resources with foods and medicines, caring for the land, passing on cultural knowledge and strengthening social bonds. Aboriginal heritage and nature are inseparable from each other and need to be managed in an integrated manner across the landscape. Partnerships with the local Aboriginal community are therefore considered a priority to ensure appropriate recognition, conservation and management of cultural values within the planning area.

On 23 September 2010, The Gold Coast Native Title Group registered a claim, which states "The application area lies south of Brisbane and covers much of the region known as the Gold Coast. The application falls predominantly within the State of Queensland, although a small area extends into New South Wales." (National Native Title Tribunal 2010). Allotments of land that are not held in freehold title may be subject to the Native Title Act.

Council has an obligation to manage its land in accordance with the Queensland Aboriginal Cultural Heritage Act 2003. This legislation places a duty of care upon Council to protect items and places of cultural heritage significance. As part of this duty of care, an assessment of cultural heritage values is required where construction or any other ground disturbance is proposed. Such assessments aim to identify cultural heritage values and prevent the inadvertent destruction of sites and values. Cultural heritage surveys carried out in accordance with Section 28 – duty of care guidelines of the Aboriginal Cultural Heritage Act 2003, may therefore be required prior to construction of tracks, recreational facilities or other necessary infrastructure.

To promote better cultural heritage management within the planning area further research may be required to identify and record sites of significance. To ensure protection of cultural heritage values and maintenance of cultural integrity, GCCC natural areas staff will consult with relevant Aboriginal groups before commencement of any development works, or identification and/or recording of significant sites. This consultation will be coordinated by GCCC’s indigenous cultural heritage liaison officer.

The Guanaba Indigenous Protected Area (IPA) is located in the southwest of the management cluster. Guanaba IPA is managed by the Ngarang-Wal Gold Coast Aboriginal Association Incorporated. Guanaba IPA is contiguous with Guanaba Creek Reserve and Mystery Road Reserve. Guanaba IPA is managed as a category IV International Union for the Conservation of Nature (IUCN) area, meaning it is managed to maintain, conserve and restore species and habitats. Guanaba Creek Reserve and Mystery Road Reserve are both managed mostly for their natural values, which complements the adjoining IUCN category IV land managed by the Ngarang-Wal Gold Coast Aboriginal Association Incorporated. Where management activities within Guanaba Creek Reserve or Mystery Road Reserve are likely to impact upon Guanaba IPA, GCCC natural areas management staff will consult with the Ngarang-Wal Gold Coast Aboriginal Association Incorporated via GCCC’s indigenous cultural heritage liaison officer.

4.8.2 Desired outcomes

- Integrated management of Aboriginal places and objects in cooperation with the Aboriginal community and relevant agencies.
- Aboriginal sites, places and landscapes of significance are identified, conserved and protected from damage.
Increased public appreciation and understanding of local Aboriginal cultural heritage values.

4.8.3 Management strategy

4.8.3.1 Guidelines

G8.1 Consult Aboriginal people with traditional affiliations to the planning area, GCCC’s indigenous cultural heritage officer, and relevant State and Commonwealth Aboriginal heritage authorities in decisions regarding the management of Aboriginal cultural heritage. This includes the identification of and protection of sites and landscape features.

G8.2 Consult with and seek agreement from local Aboriginal communities before providing interpretive information on the location of any Aboriginal sites and places.

G8.3 Ensure that Council staff working within the planning area undertake Council’s cultural heritage awareness training when this becomes available.

G8.4 Support Aboriginal community proposals to research Aboriginal cultural heritage values within the planning area.

G8.5 All works involving ground disturbance are to be carried out in accordance with Section 28 – duty of care guidelines of the Aboriginal Cultural Heritage Act 2003 and the Australia ICOMOS Burra Charter, 1999. This includes the preparation of a cultural heritage management plan or cultural heritage management agreement where recommended as the result of a cultural heritage assessment. Such assessments and documents should be prepared in partnership with the local Aboriginal community via GCCC’s indigenous cultural heritage officer. Where desktop research reveals the presence or likelihood of significant cultural heritage values, field surveys with the consent of appropriate Aboriginal people may be required.

G8.6 Seek guidance from GCCC’s indigenous cultural heritage liaison officer regarding the requirements for monitoring and assessment of Aboriginal sites and artefacts throughout the planning area.

4.8.3.2 Actions

A8.1 In consultation with the local Aboriginal community, provide interpretation/educational infrastructure and/or material to promote public appreciation and understanding of Aboriginal sites, landscape features and heritage values within the planning area.

4.8.4 Key monitoring priorities

- Scheduled assessments of the condition of sites of Aboriginal cultural significance to be undertaken.
- Regular ranger patrols to monitor disturbance/damage to known sites/areas of Aboriginal cultural heritage, as identified during the cultural heritage assessment.
- Monitoring to assess impacts of management actions on Aboriginal cultural heritage values.

4.9 European cultural heritage

4.9.1 Current management situation

The relics of early European settlement across the Gold Coast provide an insight into how the current identity of the region was forged. To promote better cultural heritage
management within the planning area a cultural heritage assessment may be required to identify and record sites of significance within the planning area.

Council actively assists in the preservation of European cultural heritage values by meeting its obligations under the *Queensland Heritage Act 1992* and protecting sites that are on the State’s Heritage Register. The *Queensland Heritage Act 1992* is written in the spirit of the Burra Charter and the Queensland Heritage Council has adopted this charter as a guide to decision making under the Heritage Act and to guide work in heritage registered places (DERM, 2010). The Burra Charter, or Australia ICOMOS *Charter for the Conservation of Places of Cultural Significance*, is a nationally accepted standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians (Australia ICOMOS Burra Charter, 1999), and defines the basic principles and procedures to be followed in the conservation of heritage places (DERM, 2010b). The Burra Charter advocates a cautious approach to change. It recommends that managers do as much as necessary to care for a place and to make it useable, but otherwise change it as little as possible so the history of the place can continue to be recognised in its physical material.

4.9.2 Desired outcomes

- Historic features are recorded, assessed for significance, and protected and conserved where appropriate.
- Increased public appreciation and understanding of local European cultural heritage values.

4.9.3 Management strategy

4.9.3.1 Guidelines

**G9.1** Ensure all operations are carried out in accordance with the Queensland *Heritage Act 1992* and the Australia ICOMOS Burra Charter, 1999.

**G9.2** Where appropriate, involve local historians/historical societies and other interested members of the community in the identification, assessment, planning and management of European cultural heritage values within the planning area.

4.9.3.2 Actions

**A9.1** Promote public understanding and appreciation of the planning area’s European cultural heritage values though the provision of interpretation and educational material.

4.9.4 Key monitoring priorities

- Scheduled assessments of the condition of sites of European cultural significance.
- Regular ranger patrols to monitor disturbance/damage to known sites of European cultural heritage, as identified during the cultural heritage assessment.
- Monitoring to assess for any management impacts on European cultural heritage values.

4.10 Recreation opportunities

4.10.1 Current management situation

Visitor use of the planning area will be managed to maintain a high-quality nature-based recreational experience that is consistent with nature conservation and threatened species
legislation and other conservation objectives outlined in this plan. For the purposes of this management plan, nature-based recreation is defined as activities that:

- are dependent on the natural environment (i.e. the natural environment is critical to the participation and satisfaction of the participants)
- have an appreciation of nature as a key motivational factor
- do not require substantial modification to the natural environment
- are environmentally sustainable, as determined by an ongoing monitoring program of impacts

The *South East Queensland Outdoor Recreation Demand Study 2007* (SEQORDS) (Queensland Government, 2007b) presents data on the types and participation rates of outdoor recreation activities undertaken by residents of South East Queensland. The 2007 SEQORDS study builds on two previous similar surveys conducted in 2001 and 1997. The study indicated that picnicking is the most popular outdoor recreational activity in South East Queensland and that bicycling, camping and driving other vehicles (i.e. trail bikes) are increasing in popularity. Other activities such as walking, nature study and horse riding showed a decline in participation when compared with earlier studies. The study found that overall, demand for outdoor recreation activities is likely to increase with population growth, and that this is likely to result in more pressure on natural areas (Queensland Government, 2007b).

Most people who participated in the SEQORDS studies prefer recreation settings that are slightly more natural than those that they currently use. The use of ‘totally natural’ settings is increasing despite constraints such as the need for fitness, specialist skills and equipment, and the travel time/distance required to access totally natural settings. Part of the SEQORDS studies asked participants what they perceived as constraints to outdoor recreation. Interestingly, participants in all outdoor recreation activities who identified ‘nowhere to go’ as a major constraint are more likely to prefer ‘totally natural settings’ to other more modified environments (Queensland Government, 2007a). This highlights the importance of the planning area in a recreational context.

Recreation opportunities in the planning area are generally not well defined or publicised. In order to minimise adverse impacts upon natural and cultural values, and to ensure that only appropriate recreation occurs, it will be necessary to provide coordinated opportunities across the planning area, with well defined access points and a clear intended use. As such, partnerships with other government land managers such as DERM should be pursued where recreation opportunities extend across tenures. Furthermore, in order to promote acceptable use and behaviour, it will be important to provide comprehensive information and education to residents and visitors across a number of easily accessible formats.

At present, the planning area is utilised for a range of different recreational activities including bushwalking, horse riding, bird watching, mountain biking, fishing, swimming and other types of nature appreciation. Whilst camping is not permitted in the planning area, it is permitted in the lease agreement with Scouts Australia over Hollindale Family Park.

Incidences of unauthorised recreational activities have been observed throughout the planning area. Unauthorised four wheel driving and trail bike riding is frequently observed in Eagle Heights Conservation Area and Caballo Road Reserve. Considerable resources have been invested in restricting access to the reserves by unauthorised vehicles. Trail bike riders and four wheel drivers are responsible for damage to infrastructure such as gates and barriers designed to restrict such access to the reserves.

There are two proposed motor sport facilities within driving distance of the planning area – one at Stapylton Jacobs Well Road in Stapylton and one at Wyaralong, near Beaudesert. Should these facilities proceed, they will offer an alternative, legal location for motor sport enthusiasts to undertake motor sports.
Bicycle riding is one of the outdoor recreational activities in which participation rates have steadily increased between 1997 and 2007 (Queensland Government, 2007a). Mountain biking is a reasonably popular activity in the planning area. High speed downhill mountain biking appears to be the main type of mountain biking taking place in the planning area. This occurs in Eagle Heights Conservation Area and the adjacent road reserve of Wongawallan Road. Whilst mountain biking is not an unauthorised use of a GCCC park, this type of mountain biking is having negative impacts on the reserve. Impacts include erosion to existing trails and damage to plants as a result of new track construction and use. This activity also poses an unacceptable risk to other recreational users of the area, as well as management staff, ecotour operators and the rural fire service. Other flow on effects are discussed in more detail in Section 4.10.1.4, and road closures are outlined in Section 4.12.

Population increases in the planning area are likely to place increasing pressure on reserves through corresponding increases in recreational demand; hence it is essential that future uses and demand are a major consideration in the planning process. The design and location of recreational nodes must incorporate thorough feasibility analyses that evaluate community and visitor requirements, recreational demand, site suitability, access, costs, threats, risks, safety, biodiversity impacts, and long-term management implications.

The submissions received in the first phase of public consultation for this management plan demonstrated that the planning area is valued highly by many local residents for its wildlife, visual amenity and natural values. Protection of these values and features can best be achieved if visitors to the area are aware of the significance of the reserves of the planning area and their surrounds. This appreciation will be promoted through the provision of interpretive material which will facilitate an understanding of the issues which impact upon conservation and management within the area.

Table 8. Summary of existing and proposed maintenance tracks (some suitable as recreational tracks) and their maintenance requirements for Tamborine Guanaba Conservation Reserves

<table>
<thead>
<tr>
<th>ID</th>
<th>Location, Description and Points of Interest</th>
<th>Specific Development and Maintenance Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Wongawallan Road. Dirt road with some aggregate and lots of whoa boys. Has good views to the Gold Coast in the east, and passes through good quality dry sclerophyll forest.</td>
<td>Close road to all vehicular traffic except management vehicles and other vehicles as per a permit (see action 12.1). Pedestrian, horse rider and mountain bike access permitted.</td>
</tr>
<tr>
<td>b</td>
<td>Management track linking Caballo Road and Wongawallan Road. Dirt road with some aggregate and lots of whoa boys. Passes through good quality forest including wet sclerophyll.</td>
<td>Close road to all vehicular traffic except management vehicles and other vehicles as per a permit (see action 12.1). Pedestrian, horse rider and mountain bike access permitted.</td>
</tr>
<tr>
<td>c</td>
<td>Caballo Road from Tamborine National Park to intersection with Tarata road</td>
<td>Close road to all vehicular traffic except management vehicles and other vehicles as per a permit (see action 12.1). Pedestrian, horse rider and mountain bike access permitted.</td>
</tr>
<tr>
<td>d</td>
<td>Unnamed 4WD track from Wongawallan Road southwest to Tamborine National Park</td>
<td>Maintain in accordance with the Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010.</td>
</tr>
<tr>
<td>e</td>
<td>Walking track in western Gladrose Reserve. Passes through some moist, degraded areas but also through some good quality dry sclerophyll forest in the northwest.</td>
<td>Maintain in accordance with the Australian Standards for Walking Tracks (AS 2156.1-2001 and AS 2156.2-2001) and the Gold Coast City Council’s Recreational Trail Design Guidelines (GCCC 2002)</td>
</tr>
<tr>
<td>f</td>
<td>Walking track in eastern Gladrose Reserve. Follows the creek line of Wongawallan Creek and offers opportunities to see riparian</td>
<td>Maintain as an informal walking track.</td>
</tr>
<tr>
<td>ID¹</td>
<td>Location, Description and Points of Interest</td>
<td>Specific Development and Maintenance Actions</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>g</td>
<td>Walking track through Guanaba Reserve along the creek.</td>
<td>Maintain as an informal track. Monitor the level of use of the track in the vicinity of the creek crossing.</td>
</tr>
<tr>
<td>h</td>
<td>Romana Court fire track. Extremely steep dirt road with some aggregate on surface. Offers sweeping views over the Gold Coast.</td>
<td>Maintain in accordance with the Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010.</td>
</tr>
<tr>
<td>i</td>
<td>Proposed priority infrastructure plan (PIP) track from Nerang National Park to Tamborine Mountain. Passes through good quality dry sclerophyll forest, but track has not yet been built and the proposed alignment is not practical.</td>
<td>The alignment of this track will need to be altered as there is no place to put a walking track up the steep escarpment of King Parrot Reserve in the west. A suggested alignment would be to utilise the Romana Court fire track instead.</td>
</tr>
</tbody>
</table>

¹ Tracks identified in accordance with access track identification given in Figure 2
Figure 2. Recreation map of Tamborine Guanaba Conservation Reserves.
4.10.1.1 Bushwalking

Bushwalking trends indicate that there is a growing preference for shorter walks that provide nature experiences without demanding too much time or fitness (QPWS, 1999). There has been a major decrease in walking activity rates in south east Queensland between 1997 and 2007 (Queensland Government, 2007b). This decline can be explained through increases in ‘health’ and ‘family’ constraints, and possibly also to the introduction of Sunday retail trading. Interestingly however, ‘somewhat natural’ settings are used for walking but increasingly ‘very natural’ settings are being used.

The planning area offers a limited range of bushwalking opportunities, the majority of which are along management tracks and which are poorly publicised.

- There are highly challenging walks available in Eagle Heights Conservation Area and along the road reserve adjacent to Caballo Road Reserve.
- There is an undefined walking area between the reserve gate at Guanaba Reserve and the creek to the west. This area is frequented by horse riders. Visitors also often walk through this area with their dogs.
- Gladrose Reserve has a flat mown grass area alongside the riparian vegetation in the eastern portion of the reserve. Whilst there is no defined walking track per se, it is a pleasant walking environment. There are also management tracks in the eastern section of Gladrose Reserve that offer a shorter walking experience than in other reserves, but that still sit within the ‘very natural’ recreational setting (Queensland Government, 2007b).
- There are parts of Pleasant Parklands that are suitable walking, but there are no defined walking tracks. This reserve is located on the urban/rural interface and it consists of well hidden pockets of parkland often at the back of residential housing – thus, pedestrian safety needs to be considered.

Council’s Recreational Priority Infrastructure Planning (PIP) identifies a proposed recreational track in the planning area. This is the Tamborine Mountain to Nerang National Park track, which passes through Heritage Drive Reserve, and King Parrot Reserve. Ultimately, this track would link Nerang National Park to Tamborine Mountain. The track surface would be earth for some sections and concrete for other sections. The current route of this proposed track is not practical, as it traverses exceptionally steep terrain in King Parrot Reserve. It is recommended that the alignment be rerouted to utilise the Romana Court fire track and parts of the road reserve along Stewarts Road. Recent land development along Stewarts Road will increase the population density in this area and this will have a corresponding impact on outdoor recreational demand.

With the exception of Gladrose Reserve, there are few short easy bushwalking experiences available in the planning area. The planning area is limited by very steep terrain in the west and by small reserve size in the east. As Gladrose Reserve does offer a shorter walking experience that is in a ‘very natural’ setting, it is recommended that the track entry be publicised as a walking destination.

The “Drummley Walk” is an annual walking event which commemorates the life of the late Billy Drummley, who was an Aboriginal man born in Nerang around 1853. The walk takes place over three days, starting in Beaudesert and finishing in Southport. Participants cross through the management cluster when they leave Tamborine National Park and enter Eagle Heights Conservation Area. They walk along Caballo Road past Caballo Road Reserve and Caballo Road Little Reserve to Tarata Road. The walkers then utilise road reserve to make their way to Hollindale Family Park where accommodation is available for the night. The following day, walkers proceed along Guanaba Creek Road and Maudsland Road as they make their way to Southport. The Drummley Walk is supported by the ‘special events’ section of GCCC. It is recommended that Natural Areas Officers be consulted before and
after this event so as to monitor its impact on the planning area. GCCC has a parks booking website which allows the organisers of such events to make bookings to utilise the parks. When such a booking is made, natural areas management staff are able to prepare accordingly.

4.10.1.2 Day use

The management cluster is in a rural area with a predominance of large rural allotments. The demand for day use areas is somewhat less than that in more densely populated areas where open space for day use is at a premium. Picnicking however, attracts the highest proportion of South East Queensland residents to outdoor recreation areas, and the highest use of reserves for picnicking are in ‘somewhat natural’ category (as opposed to the ‘very natural’ category for example). As the population of south east Queensland increases, there is likely to be an increase in the demand for outdoor day use sites.

The development of day use facilities within the planning area will be based upon a demonstrated need for such facilities and the location will be influenced by factors such as access, environmental sensitivity, safety and topography.

At present, there is a table, chairs and shade structure in Guanaba Reserve adjacent to Guanaba Creek. These facilities are in a poor state of repair. There are also horse hitching rails and a horse step over present. Should future demand dictate the need for a day use facility in the planning area, the infrastructure present in this reserve could be improved and expanded upon to cater for greater day use. Of all of the reserves discussed in this management plan, Guanaba Reserve is the most appropriate for a day use area. It has good road access, a cleared area for more active recreational activities, a deep, shaded section of the creek and attractive riparian vegetation. Possible day use facilities could include an upgraded table and chairs with some sort of shade structure or strategic plantings to offer shade. Some visitors to Guanaba Reserve swim in the creek, as there is a deep section of water easily accessible from this park. Horse riders also cross the creek so as to utilise both the northern and eastern arms of this reserve. The impacts on the creek presently appear to be minimal. If however, the park is upgraded or if visitor levels increase significantly, the creek access and crossing may need to be formalised. There is often rubbish present around the creek at Guanaba Reserve.

There is a children’s playground and electric barbeque located in Charlies Crossing Park. This small section of the park is actually located outside of the planning area, and is managed by parks and recreation officers of GCCC as a formal park. Whilst no study of visitor use in this area has been undertaken, the barbeque facilities appear to be underutilised. The children’s playground, however appears to be used reasonably regularly.

Depending on the type of population growth and the future demand for day use areas in the planning area, the western portion of Heritage Drive Reserve could be an alternative or additional site to Guanaba Reserve as a day use area. Heritage Drive Reserve is reasonably flat, shady and adjoins the Coomera River. A small number of visitors already utilise Heritage Drive Reserve for day use activities.

There is a strong need for an assessment of the level of usage of potential day use areas in the planning area.

4.10.1.3 Horse riding

The level of horse rider use of tracks in the management cluster is largely unknown. An assessment of the recreational demand posed by horse riders is needed (see action 10.2). However, feedback received during the first phase of community consultation for this management plan indicated that horse riding is a popular activity in the Guanaba area,
including the suggestion that longer bridle paths be made available, and that the closure of horse tracks and fencing of horse accessible gates be stopped.

Impacts of horse riding in bushland areas can include soil compaction, erosion, bank erosion at stream crossings, introduction of weeds through faecal content, transmission of vegetative material or seeds, damage to vegetation and edge effects, trampling and grazing impacts, disturbance and displacement of fauna, damage to cultural sites and conflicts with other users (Environmental Protection Agency 2008). Therefore, horse riding needs to be managed well.

Horse riding tracks within the planning area should be wide enough to operate as shared use tracks with bushwalkers and maintenance vehicles. All tracks accessible to riders will be clearly demarcated, with gates and fences established at the commencement of the track, to prevent access into environmentally sensitive and/or dangerous parts of the site (e.g. creek crossings, track sections with steep gradients, and damp areas vulnerable to erosion, weed colonisation, and fungal invasion). Such infrastructure should be commensurate with the GCCC Natural Areas Management Unit Strategic Park Furniture Suite (EDAW/AECOM, 2008) and GCCC Natural Areas Management Unit Fencing Styles.

Horse riding is classified as a “moderate impact outdoor recreation activity” by the Gold Coast City Outdoor Recreation Strategy – Draft Policy Discussion Paper (Wood, 2004). This document calls for significant regional tracks linking Beaudesert Shire Council LGA (now Scenic Rim Regional Council) to Gold Coast City Council LGA as a matter of priority. At present, Caballo Road and Wongawallan Road are public roads that horse riders are able to utilise to cross from Gold Coast LGA through to Scenic Rim Regional Council LGA. The level of horse riding use on these roads is unknown, but incidental field observations by natural areas officers would suggest that the usage is reasonably low. Whilst these roads are to be gated to prevent unauthorised trail bike and four wheel drive access, it is recommended that horse riding access be maintained. This might involve the use of horse step overs at each of these gates to allow horses to continue to access these tracks (see action 12.1).

There are a number of shorter horse riding experiences available in the planning area. Horse riding infrastructure including horse step overs and hitching rails are present in Pleasant Parklands, Gladrose Reserve and Guanaba Reserve. Large areas of these reserves are cleared of vegetation and are suitable for horse riding. All of these reserves have been subject to bushland restoration works, so it is important that horses are excluded from these restoration areas. Should conflicts occur between these two uses, it may be necessary to erect barriers to segregate horse riders from the restoration areas.

At the time of preparation of this management plan, Charlies Crossing Park was being considered as the new club grounds of the Oxenford Pony Club. Preliminary plans indicate that these new grounds would incorporate a number of horse riding arenas, a club house, float parking, round yard and warm up areas.

4.10.1.4 Mountain biking

Mountain biking has become a popular recreational activity since its development in the 1980s. Riding opportunities are generally poorly catered for in Australia, including Queensland (QPWS 2010). There are a number of different styles of mountain biking including ‘cross country’, ‘track riding’, ‘dirt jumping’ and ‘free riding’, ‘all mountain’ and ‘downhill riding’. Cross country mountain bikers will typically utilise a combination of off road trails including fire trails and ‘singletrack’ (a narrow track following natural surface levels). On the other hand, downhill tracks are short and steep, and riders normally get to the head of the track using a car or other motor vehicle.
There are only a small number of tracks in the planning area suitable for mountain bike riding. The section of Wongawallan Road between the GCCC LGA boundary and the intersection with Welches Road is currently being utilised for high speed, downhill mountain biking. Four wheel drive ecotour vehicles, GCCC management vehicles and rural fire brigade vehicles also utilise this section of Wongawallan Road and there is a very real possibility of collisions between the bikes and vehicles. The incidental erosion and damage to the track and trackside vegetation caused by the mountain bikes is also significant. Beyond that, there is a lot of unauthorised track construction work occurring such as removal of vegetation, construction of jumps and clearing of new tracks adjacent to the main track. Track counters were installed on this track between January and May 2010. These counters found that approximately 290 bikes per month were crossing the counting points on a one way trip down Wongawallan Road. Approximately three times the number of bikes utilise the track on weekends as opposed to week days. At present there is an unacceptable risk of a collision for which Council might be held responsible. Therefore, Council will investigate whether this track can effectively be rerouted to remove some of the hazards such as jumps that cross the road reserve. If the level of risk can be reduced to an acceptable level this track will remain open for mountain biking. (see action 12.1 and action 12.2).

The bike counters that were installed at Wongawallan Road appear to indicate that there is a demand for this kind of outdoor recreational experience. There are mountain biking venues close to the management cluster, including Nerang National Park and the Reserve Road cross country track. Both of these venues offer cross country type experiences. Nerang National Park has 22 kilometres of tracks suitable for mountain biking, including two ‘mountain bike only’ tracks. These venues do not however, provide the opportunity for extreme downhill mountain biking. Downhill mountain biking is likely to already be occurring at various locations across the city and should be catered for in a strategic manner, not in ad hoc tracks constructed in conservation reserves with conflicting recreational and environmental demands. Due to the impacts this activity is having upon the planning area, it is recommended that downhill mountain biking be considered in GCCCs upcoming nature based recreation study (see action 10.2).

4.10.1.5 Other nature-based recreation activities

There is a range of nature observation activities available throughout the planning area, with a number of interesting plant and animal species able to be observed. Platypus can be observed at a number of the reserves with waterway access including Stewart Road Parklands and Charlies Crossing Park. Koalas can be seen in Eagle Heights Conservation Area, Mystery Road Reserve, King Parrot Reserve and probably many of the other reserves.

The Tamborine Guanaba conservation reserves are a popular destination for bird watching enthusiasts. In particular, Eagle Heights Conservation Area is an interesting place for bird watchers due to the presence of the Albert’s lyrebird (Menura albertii). Eagle Heights Conservation Area also has large areas of good quality eucalypt forest and striking views east through the forest back out to the ocean and the Gold Coast city skyline. Eagle Heights Conservation Area also has a number of creek crossings and a waterfall that are places where visitors can observe and interact with the natural environment.

Guanaba Reserve is a notable point at which visitors can access Guanaba Creek and see attractive riparian vegetation adjacent to a flowing creek. Some visitors to the reserves swim and paddle in Guanaba Creek at Guanaba Reserve and in the Coomera River at Heritage Drive Reserve.

One four wheel drive touring company conducts tours along Wongawallan Road and Caballo Road and through Eagle Heights Conservation Area. These tours incorporate a range of nature observation activities with commentary on the local flora, fauna and indigenous local history. The environmental education outcomes of these kinds of activities and the nature
appreciation that participants receive is considered a valuable way to allow people to interact with the natural environment. These types of ecotours will be permitted to continue using Wongawallan Road following its closure to other vehicles (action 12.1).

4.10.2 Desired outcomes

- Low impact, nature-based recreational opportunities are provided which are consistent with the protection, appreciation, and understanding of natural and cultural values and ecological processes within the planning area.
- New nature-based recreation opportunities are complementary and designed within the context of existing opportunities within the locality and region.
- Community support is generated for the protection of the planning area’s values through the provision of appropriately designed recreational infrastructure.
- Facilities are designed and managed to provide a satisfying and safe visitor experience while minimising environmental and social impacts.

4.10.3 Management strategy

4.10.3.1 Guidelines

**G10.1** Develop any new walking tracks with the aim of minimising disturbance to geological features and reducing impacts on native plant and animal communities by utilising existing access and management trails and/or by avoiding ecologically significant areas. To further reduce potential impacts, new tracks should be designed to follow natural contours and should be constructed at the minimum width necessary to facilitate access requirements.

**G10.2** Install signage (in accordance with the signage plan) to indicate a change of use where walking/riding tracks connect with management tracks or private property.

**G10.3** Construct walking tracks in accordance with the Australian Standards for Walking Tracks (AS 2156.1-2001 and AS 2156.2-2001) and the Gold Coast City Council’s Recreational Trail Design Guidelines (GCCC 2002) which incorporates the Natural Areas Management Unit walking track construction specifications. These have now been incorporated into the GCCC Land Development Guidelines.

**G10.4** Tracks and other recreational facilities shall be closed during times in which repairs are required and/or where safety risks are identified.

**G10.5** Where new infrastructure or embellishments are proposed, conduct a feasibility assessment to assess site constraints, costs, environmental and cultural impacts, community demand, compliance with local and state environmental legislation and consistency with other objectives of this plan.

**G10.6** Rubbish bins will not be provided at day use areas.

**G10.7** Ensure that all infrastructure retained and installed within the planning area is handed over to Council’s engineering maintenance staff for scheduled and reactive maintenance.

**G10.8** Commission regular arboricultural assessments of trees within the vicinity of all visitor infrastructure. Prune or, where no alternative exists, remove trees which have been identified as posing an unacceptable safety risk.

**G10.9** Principles of equitable access are to be incorporated into the design of recreational facilities where possible.
G10.10 Facilities are to be planned and constructed in accordance with crime prevention through environmental design (CPTED) principles wherever possible.

G10.11 Four wheel driving, hunting, trail bike riding and camping will not be permitted within the planning area. An exception to this is camping which is permitted under the lease conditions of the Scouts Australia lease over Hollindale Family Park.

G10.12 Ensure that access points are easy to locate and tracks are well coordinated within the planning area.

G10.13 Liaise with DERM and other government agencies to ensure coordinated nature-based recreation planning throughout the planning area and broader region.

G10.14 Should a conflict between horse riders and the restoration plantings in Gladrose Reserve and Guanaba Reserve occur, exclusion fencing will be erected.

4.10.3.2 Actions

A10.1 Design and implement a visitor impact assessment program to monitor the impact of recreational use on the natural condition of the planning area.

A10.2 Undertake a nature based recreational demand study to identify the future need for additional nature-based recreational facilities within the planning area. This study should include bushwalking, horse riding, mountain biking, day use and other nature based recreation activities that are appropriate in the planning area. Where demand is identified, undertake a feasibility assessment to identify suitable locations within the planning area or opportunities on adjacent private properties.

A10.3 Monitor the level and type of recreational use of Guanaba Reserve prior to investigating the possibility of establishing a day use area within this reserve.

A10.4 Investigate the possibility of scoping potential sites for sustainable mountain biking tracks (including downhill mountain biking) within GCCC land.

A10.5 Analyse recreational usage data to inform future development and consolidation of the recreational track network within the planning area. Where a high level of use is identified, formalise tracks and implement design solutions to minimise erosion and degradation. Where a low level of use is identified, consider track closure and rehabilitation (within the context of recreational demand in the planning area).

A10.6 Before and after the annual “Drummley Walk”, natural areas management officers to check the condition of the walking route. This information is to be used to inform future management of the reserves and the Drummley Walk.

A10.7 Natural areas officers to refer recreational and other user groups to the GCCC parks bookings website where bookings can be made to utilise the Tamborine Guanaba Conservation Reserves.

A10.8 Provide information (including downloadable maps) on Council's website relating to recreational opportunities within the planning area. This should include: 1) adding Gladrose Reserve, Guanaba Reserve and Eagle heights Conservation Area to the list of parks found in the 'Exploring nature' category of the Gold Coast Parks – 'park finder' internet search tool, and 2) adding a list of reserves that contain tracks suitable for bushwalking to the Gold Coast Parks 'Bushwalking' webpage, along with a short description of the walks and natural features that can be observed.
A10.9 Undertake regular weekday and weekend patrols of the planning area to encourage safe behaviour and to control prohibited activities. Action 12.1 of this plan proposes closing Wongawallan Road to all vehicles except management and specially authorised vehicles. Regular, periodic patrols by natural areas staff and local law officers will be required to enforce this action.

A10.10 Maintain records of safety incidents, hazards and inappropriate use observed during ranger patrols or by the public, to inform future planning and risk management.

A10.11 Natural areas officers are to provide all information required to assist in the undertaking of a risk assessment and a communication program (in response to the findings against Tweed Shire Council regarding the death of a toddler in a water body). This risk assessment is identified as a way to mitigate risk on the Community Services Directorate Risk Register.

4.10.4 Key monitoring priorities

- Undertake visitor use and demand studies to assess variables such as: visitor numbers, levels of recreational use, preferred activities, visitor demographics, conflicts between different recreational uses, and public demand for new or different nature-based recreational opportunities.
- Conduct visitor impact monitoring to assess environmental impacts associated with specified recreational activities. Impact thresholds and appropriate management responses should be established in conjunction with this monitoring program.
- Undertake regular monitoring of recreational facilities to ensure that they are being used appropriately, and are maintained in a safe and operational condition.

4.11 Built Infrastructure

4.11.1 Current management situation

The planning area contains various types of built infrastructure ranging from minor items like gates, culverts, fences, and signs through to major infrastructure such as overhead powerlines. The majority of infrastructure within the planning area comprises a network of management and fire trails which are gated where necessary to prevent unauthorised vehicle access. These are discussed further in Section 4.12.

Apart from the kinds of infrastructure listed above, there is also more formal park infrastructure:

- a fixed table and chair set with a small shade structure in Guanaba Reserve. These are in a poor state of repair. This reserve also has horse step overs and horse hitching rails
- a horse step over in Gladrose Reserve
- a small ‘colourbond’ shed in the southern section of Eagle Heights Conservation Area. This shed was present on the allotment at the time of purchase by Council. The shed is not new, but is in an acceptable state of repair and can be locked. As this allotment of land is subject to bushland restoration work, the shed is to be retained for bushland restoration operations
- a playground in Pleasant parklands

Derelict infrastructure and related debris such as fences, wire, old timber, rubbish piles etc are scattered throughout the reserves. These are to be removed unless they are deemed to be of significant cultural value as a result of a cultural heritage assessment.

Very large infrastructure in the form of high voltage overhead electrical transmission lines is present in Gladrose Reserve, Birds Road Reserve and Stewart Road Parklands. This
infrastructure is owned by Powerlink Queensland (formerly the Queensland Electricity Transmission Corporation) and is located on easements burdening the land that Gold Coast City owns or manages as reserves on behalf of the State of Queensland. There are also smaller (11 kilovolt) overhead powerlines present in a number of the reserves including Pleasant Parklands, Gladrose Reserve, Guanaba Reserve, Hollindale Family Park, Mystery Road Reserve, King Parrot Reserve, Heritage Drive Reserve and Stewart Road Parklands. This infrastructure is owned by Energex Limited.

The current *Priority Infrastructure Plan* in the GCCC Planning Scheme does not indicate any proposed road upgrades or new roads within the planning area. There are however, two bridge upgrades proposed along Tamborine Oxenford Road within the management cluster. These projects are discussed in Section 4.2.

### 4.11.2 Desired outcomes

- The location, operation and maintenance of built infrastructure is consistent with and designed to complement and enhance planning area values.
- Built infrastructure is safe, sustainable and cost effective to operate and maintain.
- Built infrastructure (and where practicable, utilities) supports the management and conservation of the planning areas biodiversity, natural systems and processes.

### 4.11.3 Management strategy

#### 4.11.3.1 Guidelines

**G11.1** Locate new infrastructure and facilities on disturbed or degraded sites wherever possible.

**G11.2** Ensure that all relevant planning approvals are sought from appropriate local and state government departments prior to the commencement of any works on-site.

**G11.3** Design and install all new infrastructure with due consideration to the whole of life costs associated with the asset. Where practical, select durable, low-maintenance materials that are easy to source and replace, and positioned in locations that will not expose them to unnecessary impacts or wear.

**G11.4** The design, construction, and appearance of all infrastructure and visitor facilities is to be of a high standard that is commensurate with the natural significance of the planning area. These facilities should create a signature appearance that is reflected across all forms of visitor infrastructure. Furthermore, they are to be constructed and designed in accordance with all GCCC guidelines, manuals and policies relevant to the provision of embellishments and infrastructure within public open space natural areas (e.g. *Natural Areas Management Unit Infrastructure Design Guidelines*).

**G11.5** Ensure that all park infrastructure installed and retained in the planning area as per this management plan is placed on a regular maintenance roster involving provision for scheduled and reactive maintenance inspections and activities.

**G11.6** The western portion of the planning area sits within the Darlington Range bioregional corridor (state level significance), whilst those reserves on the Coomera River form part of a regionally significant bioregional corridor. The reserves on Guanaba Creek form part of a bioregional corridor of local significance. Fencing for management purposes should be fauna friendly so as to permit the movement of and minimise harm to fauna.

#### 4.11.3.2 Actions
A11.1 Remove or dispose of derelict structures not identified as being of significant cultural or practical value within the planning area. This includes unsightly rubbish and derelict infrastructure such as internal fence lines, wire, building remnants, pipes, rubbish piles, concrete rubble and debris associated with past commercial/pastoral/private operations within the reserves. This is especially important prior to formalising and promoting public access to a site.

A11.2 Retain the small ‘Colourbond’ shed in Eagle Heights Conservation Area for use during restoration activities. This shed may be removed in the future if it is no longer of use to management activities.

A11.3 Where infrastructure has been removed, assess sites for suitability as a location for recreational or other management purposes requiring infrastructure development. Alternatively, rehabilitate degraded areas in accordance with the provisions of the relevant ecological restoration plan or restoration action plan (Section 4.6).

A11.4 Regularly monitor the condition of boundary fencing to ensure it remains effective as a barrier to unauthorised access and neighbouring stock. These assessments may be undertaken during routine ranger patrols within the planning area. Where fencing has been compromised, ensure that it is reinstated as a priority (and in consultation with neighbours where necessary).

A11.5 Where required, install fauna-friendly, stock-proof fencing along the boundary of the reserves of the planning area to facilitate the unimpeded movement of native fauna species. This may necessitate the modification of existing fencing to provide fauna movement capabilities.

A11.6 Replace the table, chair and shade shelter in Guanaba Reserve. The replacement infrastructure should adhere to Australian Standards and should be in a style sympathetic to the natural environmental setting.

4.11.4 Key monitoring priorities

- Monitor for impacts and/or changes in environmental conditions in areas adjacent to the location of infrastructure.
- Monitor the recovery of degraded or modified sites after cessation of undesirable uses.
- Regularly assess the maintenance requirements of infrastructure within the planning area and use this information to inform future decisions relating to design and construction materials.

4.12 Access

4.12.1 Current management situation

There is a network of management tracks and fire trails throughout the planning area. Some of these tracks are suitable for two wheel drive vehicle access whilst others are only suitable for four wheel drive access. The network of access tracks in the planning area is shown in Figure 3.

Some of the reserves contain old logging tracks and informal walking tracks which have developed over time. Some of these informal tracks have the potential to be upgraded to provide improved access, greater connectivity between residential areas and enhanced recreational experiences. There are for example some old logging tracks in King Parrot Reserve that whilst currently unsuitable for public access could be upgraded at some point in the future for public pedestrian use.
The access tracks are utilised for fire management, ecological restoration work, feral animal control work, site assessments and ranger patrols. Members of the general public also utilise these tracks for recreational purposes such as bushwalking, nature appreciation and cycling. A number of the tracks are no longer utilised however, and will be closed. Proposed track closures are shown in Figure 3. Council will undertake restoration and rehabilitation work on these tracks following closure.

Figure 3. Proposed Infrastructure and existing management tracks within the Tamborine Guanaba Conservation Reserves
The following public road reserves are either located within reserves, or they directly bisect reserves:

- Wongawallan Road stretches from Welches Road in the north of the management cluster south into Eagle Heights Conservation Area where it continues west into Scenic Rim Regional Council Area
- Caballo Road stretches from within Eagle Heights Conservation Reserve east into Caballo Road Reserve
- Mystery Road bisects Mystery Road Reserve
- Stewart Road bisects Stewart Road Parklands
- Heritage Drive bisects Heritage Drive Reserve
- Clagiraba Road bisects Clagiraba Road Causeway Reserve
- Gladrose Reserve Lots 900 SP 113748 and 901 SP 113748 are bisected by an easement ASP 11378 (See Table 9)
- There is an area of road reserve at the southern end of Gladrose Reserve. GCCC natural areas management officers maintain much of this road reserve although no formal arrangement to manage this area of road reserve has been entered into.

Roads and tracks within the planning area will be rationalised to provide appropriate levels of access for essential management purposes as outlined in this management plan. An analysis of access needs should be revisited once the detailed ecological restoration and recreation management plans have been completed. No new management tracks will be constructed unless this analysis reveals a need for more tracks. Management tracks to be maintained are shown in Figure 3.

There are a number of access issues in the reserves, including the ongoing access by unauthorised motorbikes and 4WD vehicles. This is a problem in Eagle Heights Conservation Area, Caballo Road Reserve and Pleasant Parklands. These vehicles cause erosion problems, ecological degradation and are a hazard to recreational walkers using the reserves. Where vehicles deviate from formed tracks, they cause significant environmental damage including long term erosion problems. The tracks also offer a route into the reserves for people to dump and burn vehicles. Such fires are a hazard, and the burnt out vehicles are a maintenance burden. These tracks can also be utilised by feral predators for easy access to prey (Leiper et al, 2001). The noise made by motorbike riders is also a nuisance to neighbouring landholders. To combat such unauthorised access, a number of temporary road closures (under the Local Government Act) are to be undertaken at strategic locations as follows:

- Wongawallan Road will be closed from where the Powerlink easement crosses the road close to Welches Road right through to its intersection with Caballo Road (within Eagle Heights Conservation Area). Figure 3 shows the location of the proposed locked gate that will be the physical barrier to close this road.
- Caballo Road will be closed adjacent to Caballo Road Reserve west towards Eagle Heights Conservation Area). Figure 3 shows the locations of the two proposed locked gates that are required to close this road.
- GCCC will continue to liaise with Scenic Rim Regional Council to erect a gate at the end of Romana Court (within Scenic Rim LGA) as showing in Figure 3. This is to deter trail bike access to the Romana Court management track
- GCCC will continue to liaise with Scenic Rim Council to erect a gate at the boundary of Mystery road Reserve and Scenic Rim LGA boundary on the dormant track shown in Figure 3. This is to deter the ongoing illegal rubbish dumping that occurs on the track.

There are a number of gates and barriers designed to prevent unauthorised vehicular access to the reserves that are constantly vandalised. These gates and other barriers have to be repaired and replaced periodically. To minimise such infrastructure damage, a number of solutions will be implemented. In addition to the formal road closures discussed above, it is
recommended that local law be informed of the road closures so that additional patrols can be undertaken. At present, the gate at the intersection of Wongawallan Road and Caballo Road is not locked. When Wongawallan and Caballo Roads are formally closed however, it is recommended that Council lock these gates and keys be issued to authorised vehicle users only. Pedestrians and horse riders will still be able to access this area freely. Authorised users will have gate keys made available to them and include GCCC staff, Energex, the Rural Fire Brigade and other vehicles given specific permission by GCCC.

At present, there is an unauthorised steep downhill mountain bike track adjacent to Wongawallan Road. This track stretches from the border of Scenic Rim Regional Council/Gold Coast City Council through to Welches Road. The track has been constructed without any approvals and causes significant erosion damage by redirecting the flow of surface water. There is also direct vegetation damage caused whenever the track is being built, altered and maintained. Mountain bike riders pose a significant risk to themselves, other users and management vehicles by their high speed downhill use of this track which crosses back and forth over Wongawallan Road multiple times. This track also offers feral animal predators yet another pathway for easy access to prey. To reduce the level of risk and the amount of damage occurring as a result of unauthorised track building, Council will look at the feasibility of formalising and maintaining this track. This formalisation will focus on reducing the number of road crossings in the track, and making the track environmentally and financially sustainable. If the formalisation of this track is not possible, an alternative location for downhill mountain biking may have to be considered. The use of the management tracks by mountain bike riders is discussed further in section 4.10.

There are a number of easements throughout the reserves, the most significant of which are Powerlink easements. A summary of the easements relevant to management planning is shown in Table 9
Table 9. Summary of easements located within the Tamborine Guanaba Conservation Reserves

<table>
<thead>
<tr>
<th>Location</th>
<th>Details on Title</th>
<th>Easement Description</th>
<th>Easement Grantee</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleasant Parklands Lot 123, 124 &amp; 125 WD 5296; Lot 130 WD 5472; Lot 4 RP 230753; Lot 13 RP 885094; Lot 800 118342</td>
<td>Easement in Gross No 601721050 (G594813) burdening the land to council of the Shire of Albert over Easement C on RP181904</td>
<td>Easement C on RP181904</td>
<td>Shire of Albert</td>
<td>Access</td>
</tr>
<tr>
<td></td>
<td>Easement in Gross No 712851056 burdening the land Energex Limited over Easement A on SP 197903 in Lot 123 on WD5296</td>
<td>Easement A on SP197903</td>
<td>Energex</td>
<td>Electrical purposes</td>
</tr>
<tr>
<td>Gladrose Reserve Lot 902 SP 113756</td>
<td>Easement in gross No 601273073 (D937226) burdening the land to Queensland Electricity commission over easements A on RP126775</td>
<td>Easements A on RP126775</td>
<td>Queensland Electricity Transmission Corporation</td>
<td>Electrical purposes</td>
</tr>
<tr>
<td></td>
<td>Easement in gross No 602656807 (D937228) burdening the land to Queensland Electricity Commission over Easements A on RP 126777</td>
<td>Easements A on RP 126777</td>
<td>Queensland Electricity Transmission Corporation</td>
<td>Electrical purposes</td>
</tr>
<tr>
<td></td>
<td>Easement in gross No 601273074 (K317890G) burdening the land to Queensland Electricity Commission over Easements P and S on RP 227202</td>
<td>Easements P and S on RP 227202</td>
<td>Queensland Electricity Transmission Corporation</td>
<td>Electrical works</td>
</tr>
<tr>
<td>Gladrose Reserve (still formally known as Yallanbee Court Reserve Lot 901 SP 207478 until the adoption of this management plan)</td>
<td>Easement in gross 602368803 (K311921V) burdening the land to Queensland Electricity Transmission Corporation over Easement M on RP 227200</td>
<td>Easement M on RP 227200</td>
<td>Queensland Electricity Transmission Corporation</td>
<td>Electrical works</td>
</tr>
<tr>
<td>Caballo Road Reserve Lot 992 RP 813811 and Lot 22 RP818977</td>
<td>Easement in grow No 702259070 burdening the land South East Queensland Electricity Corporation over Easement Y on CP 892742</td>
<td>Easement Y on CP 892742</td>
<td>Queensland Electricity Transmission Corporation</td>
<td>Electrical purposes</td>
</tr>
<tr>
<td>Birds Road Reserve Lot 31 RP 143324</td>
<td>Easement in gross No 701387597 burdening the land to Queensland Electricity Transmission Corporation over Lot 31 RP 143324</td>
<td>Easement over entire property described as Lot 31 RP 143324</td>
<td>Queensland Electricity Transmission Corporation</td>
<td>Electrical works</td>
</tr>
<tr>
<td>Caballo Road Little Reserve Lot 24 RP</td>
<td>Easement in gross No 702259068 burdening the land South East Queensland Electricity Corporation over Easement X on CP899482</td>
<td>Easement X on CP899482</td>
<td>South Queensland East</td>
<td>Electrical purposes</td>
</tr>
<tr>
<td>Location</td>
<td>Details on Title</td>
<td>Easement Description</td>
<td>Easement Grantee</td>
<td>Purpose</td>
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<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>818979</td>
<td>Easement X on CP899482</td>
<td>Easement K and Easement L on SP 17464</td>
<td>Electricity Corporation</td>
<td></td>
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<tr>
<td>Easement in gross No 708324118 burdening the land Council of the City of Gold Coast over Easement K and Easement L on SP 17464</td>
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<td>Council of the City of Gold Coast</td>
<td>Sewerage and Drainage</td>
<td></td>
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<tr>
<td>Easement in gross No 602282527 (D927220) burdening the land to Queensland Electricity Commission over Easement B on RP126770</td>
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<tr>
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<td>Queensland Electricity Transmission Corporation</td>
<td>Electrical purposes</td>
<td></td>
</tr>
</tbody>
</table>
4.12.2 Desired outcomes

- Maintenance access is facilitated in appropriate and necessary locations only.
- Safe access is maintained for public, management and emergency response vehicles.
- The environmental impact of management vehicles is kept to a minimum, with sensitive and significant areas protected from inappropriate vehicle access.

4.12.3 Management strategy

4.12.3.1 Guidelines

G12.1 Ensure that access to reserves in the planning area is in accordance with GCCC’s Parks Usage Policy – Temporary Park Occupation and Traverse for Construction Purpose, with the relevant applications made where required prior to access.

G12.2 Exclude all conventional vehicle access from environmentally sensitive areas.

G12.3 To minimise impacts on sensitive areas, management activities within these areas will be undertaken on foot where possible and in consultation with a Council natural areas ranger.

G12.4 All GCCC staff and contractors required to access management tracks within the planning area for management purposes are to be briefed by the relevant natural areas ranger on their responsibilities as outlined in this management plan.

G12.5 Restrict speed limits to 20 kilometres per hour on all public vehicle tracks, and 10 kilometres per hour on all other management tracks.

G12.6 Construct and maintain fire trails to appropriate standards as defined by the Tamborine Guanaba Conservation Reserves Bushfire Management Plan (Section 4.5).

G12.7 Walking tracks are to be constructed generally in accordance with the “Walking track construction guidelines Natural Areas Management Unit” contained within the Gold Coast City Council Trail Design Guidelines (GCC, 2002) which are part of Policy 11 of the GCCC Planning Scheme (Land Development Guidelines).

G12.8 Liaise with Powerlink (formerly the Queensland Electricity Transmission Corporation) and Energex about environmental protection during maintenance of their easements over the reserves.

G12.9 All other new management tracks are to be constructed in accordance with the relevant track construction standards along an alignment that has the least environmental impact possible.

G12.10 Retain only those roads and tracks that are essential for public and management vehicle access, and rehabilitate those that are not required.

G12.11 Where necessary, install bollards or other vehicle exclusion devices at entry points of publicly accessible environmentally sensitive areas to restrict vehicular incursion. Ensure these structures are constructed of sustainable materials and are commensurate with the natural landscape and GCCC Natural Areas Management Unit Fencing Styles.

4.12.3.2 Actions
A12.1 Close and gate Wongawallan Road and Caballo Road to all vehicular traffic except management and specially authorised vehicles. Such closures will be temporary road closures under the *Local Government Act* and will take effect over tracks labelled a, b and c on Figure 2. The locations of locked gates is shown in Figure 3. Mountain biking, horse riding and bush walking will remain permitted uses following road closure. Horse step-overs will be provided and gate keys will be issued to management and other authorised personnel.

A12.2 Investigate the feasibility of modifying the existing downhill mountain bike track in Eagle Heights Conservation Area. This mountain bike track roughly follows Wongawallan Road from the border of Scenic Rim Regional Council through Eagle Heights Conservation Area and down to the bitumen surface of Welches Road. At present the track criss crosses Wongawallan Road and needs to be rerouted off the road to mitigate the risk of a collision between a mountain bike and other vehicle. If the track can be effectively rerouted, it will be left open for mountain biking. If not, an alternative location may have to be considered.

A12.3 GCCC will continue to liaise with Scenic Rim Regional Council with the objective of erecting gates at Romana Court management track and Mystery Road management track as shown in Figure 3.

A12.4 Determine whether the management track network can be efficiently improved by purchasing land or easements over private land.

A12.5 Maintain all weather vehicle access to visitor facilities and fire fighting infrastructure.

A12.6 During routine ranger patrols of the planning area undertake regular monitoring for unauthorised access to reserves and decommission such access points as necessary.

A12.7 Liaise with GCCC’s law enforcement officers to monitor and manage illegal vehicle access, including trail bike and four-wheel drive access to relevant reserves, but particularly targeting Eagle Heights Conservation Area and Caballo Road Reserve.

A12.8 Ensure that all reserve management tracks and access points are mapped and added to GCCC’s Geographic Information Systems (GIS) database.

A12.9 Monitor management tracks to ensure that they are safe and that drainage is functioning effectively. Undertake repairs to avoid ponding of water, erosion and other unsafe conditions as necessary.

A12.10 Close and rehabilitate existing management tracks that are no longer utilised and minimise the construction of new tracks, and the surface hardening or widening of existing tracks.

4.12.4 Key monitoring priorities

- Undertake regular monitoring of the condition and safety of maintenance tracks within the planning area.
- During ranger patrols monitor reserves of the planning area for newly created unauthorised trails.
- Monitor access associated with management activities to ensure that unacceptable environmental impacts are not incurred.
4.13 Leased areas

4.13.1 Current management situation

There is one current lease and three state permits held within the planning area. Another lease was being negotiated at the time of preparation of this management plan.

The one current lease is held by the Scout Association of Australia (Guanaba Creek) over approximately 75% of the area of Hollindale Family Park. The leased area includes a Scout Hall and associated infrastructure. The permitted purpose for the lease is camping and associated activities ‘in pursuit of the objects for which the lessee was incorporated’. This is a 15 year lease which commenced 1 October 1996 and is due to expire on the 30 September 2011. The lease requires that the Scout Association of Australia (Guanaba Creek) accept members in a reasonably open manner, and that the leased park be made available to such members for them to undertake appropriate activities in ‘quiet enjoyment’. The leased area incorporates ‘endangered’ remnant vegetation. The lease over the site predates the introduction of the Vegetation Management Act 1999, which protects the ‘endangered’ regional ecosystem. It is recommended that natural areas rangers monitor the site on routine patrols to determine whether the ‘endangered’ regional ecosystem is being compromised by the leasehold use of the site.

In the past, the scout hall has been sub-let by Scouts Australia to private individuals wishing to hold social gatherings there. Due to complaints about the nature of such social gatherings, the scout hall is no longer made available for such gatherings. The hall is however, made available as an election polling booth and for events such as the annual Drummley Walk (Section 2.3.6).

In addition to the lease discussed above, there are a number of state permits registered on the titles of land in the planning area. These are:

- State Permit over Lot 23 on CP 853665; Lot 239 on WD 6420 and Lot 268 on WD 6420 (which comprises King Parrot Reserve). This permit has been cancelled, despite the fact that it appears on the current title of these allotments of land.
- State Permit over Lot 160 on CP WD4447 (part of Gladrose Reserve). This permit allows for a private landholder to use the area known as Lot A AP7145 for a water facility, namely a pump site. Lot A AP7145 has an area of 25 square metres and sits wholly within Lot 160 on CP WD4447.
- State Permit over 132 on WD 5509 (part of Clagiraba Causeway Reserve). This permit allows for a private landholder to harvest and extract water over Lot 1 AP1705, which has an area of 25 square metres and sits wholly within Lot 132 on WD 5509.

4.13.2 Desired outcomes

- Lease arrangements do not compromise conservation values of reserves.
- New or existing leases should provide for the appreciation and interpretation of the planning areas natural values and foster community support for conservation values.

4.13.3 Management strategy

4.13.3.1 Guidelines

G13.1 Activities allowed on leased land are ecologically sustainable and for purposes consistent with sound conservation, social and recreational outcomes.

G13.2 Where an existing lease has little or no nexus with conservation it should be phased out and moved to an alternative location.
G13.3 Where a new lease or new lease use is proposed within the planning area, conduct an assessment of the potential environmental impacts of the proposal prior to granting approval. No activities or leases deemed to pose an unacceptable environmental impact are to be permitted within the planning area.

4.13.3.2 Actions

A13.1 Keep a register of all leases and their renewal date.

A13.2 Review lease arrangements prior to lease renewal, including a review of lease conditions for ecologically sustainability.

A13.3 Report all breaches of lease conditions pertinent to natural areas management to Council’s property management officers.

A13.4 Monitor the condition of the ‘endangered’ regional ecosystem within the leasehold area of Hollindale Family Park. Should the leasehold use of the reserve be found to be compromising the integrity of the regional ecosystem, undertake appropriate management action to rectify this.

4.13.4 Key monitoring priorities

- Monitoring by GCCC’s natural areas officers to assess compliance by lessees with lease conditions.
- The impacts associated with the use of the conservation estate are to be assessed and monitored in order to determine long term sustainability of the designated use under the lease agreement.

4.14 Commercial activities

4.14.1 Current management situation

When managed appropriately, commercial operators can enhance the diversity of recreational, interpretive and educational opportunities available for visitors and can assist reserve management through encouraging appropriate visitor use and an understanding of reserve values.

Temporary commercial recreation activities within Council parks are currently regulated through Council’s Parks Usage Policy for Temporary Commercial Recreation Activities on Council Parks; GCCC Local Law 9 and Council Local Law 9.1. In addition, Council’s Special Events Unit utilise the Gold Coast City Events Strategy when organising special events within the network of GCCC Parks.

GCCC Local Law 9, Section 14, outlines what sort of business can be operated in a GCCC Park. It states "A person (other than the local government) must not carry on business in a park or reserve unless - (a) the business is of a type specified in a subordinate local law; and (b) authorised by a permit." Subordinate Local Law 9.1 (S14) gives assessment criteria for a permitted business, and criterion (f) states "the permitted business will be operated on a temporary basis". Local Law 9, therefore does not allow for regulation of long term commercial use of parks.

Four wheel drive tours are currently conducted by a private operator who drives through Eagle Heights Conservation Area, Caballo Road and Wongawallan Road. Whilst Council is aware of these tours, they are not currently regulated by a permit system. Such operators are regulated on a case by cases basis. Council should consider investigating a commercial operators licensing system for long term commercial use of natural areas parks.
The Scout Hall in Hollindale Family Park is available for bookings from Scout and Girl Guide groups from throughout Queensland. As the Scout Hall is available for bookings it may at times provide a potential venue for commercial operators. The Scout Hall is also utilised by participants in the annual Drummley Walk for overnight camping. The Drummley Walk is assisted by Council’s Special Events Unit, as per the Gold Coast City Events Strategy 2009 - 2011.

The film industry represents another commercial activity that is periodically undertaken in Council reserves. Film project requirements may not always be consistent with the conservation objectives for the reserves outlined in this plan. Film project proposals should be carefully assessed on a case by case basis to ensure there are no negative impacts on the environmental values of the planning area.

Commercial activities have the potential to impact upon the reserves in both a positive and a negative manner. Negative impacts may include increased user numbers in ecologically sensitive areas, erosion from vehicular traffic, rubbish in parks, soil compaction and vegetation damage. With appropriate management, these potential impacts can be kept to a minimum, and positive outcomes can still be achieved. It is recommended that a permit system be developed to allow commercial organisations operating within natural areas to be regulated.

4.14.2 Desired outcomes

- Commercial tourism activities are conducted in a sustainable, safe, environmentally sensitive and culturally appropriate manner, and are compatible with other visitor uses.
- Cooperative working relationships with adjacent landholders to ensure long term sustainability of the ecological values of the planning area.

4.14.3 Management strategy

4.14.3.1 Guidelines

G14.1 Ensure that access to reserves in the planning area is in accordance with Councils Parks Usage Policy – Temporary Commercial Recreation Activities on Council Parks, and Local Laws 9 and 9.1.

G14.2 Applications made for the use of the planning area for filming will be approved at the discretion of natural areas management officers based on an assessment of the ecological impacts of a proposal. Only those proposals which are considered low-impact, of short duration and unlikely to be detrimental to the values of the planning area will be considered. Filming will generally be restricted to grassland and disturbed areas and where appropriate will require an Environmental Assessment to ensure minimal impact to the surrounding landscape.

G14.3 Only permit commercial ecotourism operators that provide passive, nature-based recreational opportunities to conduct activities within the planning area.

G14.4 Work with commercial operators in the planning area to promote environmentally sensitive and sustainable economic activities on lands within and/or adjacent to the planning area.

4.14.3.2 Actions

A14.1 Develop and implement a commercial usage policy to allow for the regulation of commercial users of natural areas (e.g. ecotours). Such a policy will need to be endorsed by
GCCC prior to implementation. Commercial activities in the planning area will be conducted in a manner that:

- is consistent with conservation of natural and cultural resources
- ensures the activities are nature based and provide appropriate interpretation of park values
- involves local Aboriginal input where there is a cultural heritage component
- avoids conflict with other reserve users
- does not incur high public liability risks
- is appropriate for the level of existing infrastructure or resources
- incorporates appropriate monitoring mechanisms to assess sustainability of ecological and amenity values.

A14.2 Maintain a database of commercial operations within the planning area, including records of frequency, location, type/s and levels of use.

4.14.4 Key monitoring priorities

- Monitor the effects of commercial activities for signs of unacceptable levels of environmental impact.
- Monitor commercial activities for non-compliance with permit conditions.

4.15 Community involvement, education and interpretation

4.15.1 Current management situation

Education and information can promote environmental awareness in local residents and can greatly enhance a visit to a natural area by orientating visitors with the natural values around them. This in turn fosters an understanding and appreciation of the planning area’s features and values, encourages appropriate public behaviour, reduces potential management problems and contributes to a broader understanding of natural environments and management objectives.

One method of informing the community is via signage at the reserves. The level of interpretive signage in the planning area is currently very low and only a few of the reserves have signposted names. The management guidelines for sites acquired with funds from the open space preservation levy specify that signs must be displayed at prominent and visible locations saying:

“The …(name) Conservation Area, purchased for the people of the Gold Coast, with the Open Space Preservation Levy”.

It is recommended that a signage plan be developed for the planning area, with the objective of determining the type and location of signs required across the planning area.

With its proximity to the Gold Coast and Brisbane, the planning area has the potential to play a role in environmental education for school, university and other educational groups. Encouraging community interest and fostering an awareness of the environmental values of the planning area can contribute to the success of land management activities. Community groups, volunteers and the empowered public can contribute to natural area management through involvement in conservation and monitoring projects, public education, community development, and the promotion of GCCC’s conservation objectives.

The vast majority of the planning area is located away from the urban footprint, so there is less potential for community involvement by way of reduced population numbers in the vicinity of the reserves. A number of community groups however, have been, and continue to remain active within the planning area. These include:

- An ‘individual carer’ under the ‘beaches to bushland’ program has been undertaking bushland regeneration work in Pleasant Parklands and is occasionally assisted by
Community restoration and regeneration groups are generally coordinated under the Beaches to Bushland program. This program has a standard operating procedure to guide the formation and activities of such groups. It is recommended that this standard operating procedure continue to be used until such time as a wider, integrated volunteer management strategy is developed. The GCCC Nature Conservation Strategy 2009-2019 has two key actions relating to volunteer groups.

- Undertake a review of existing volunteer groups and design an integrated approach that reflects best practice.
- Implement the integrated volunteer program.

These actions are due for completion in 2009/10+ and 2010/11+ respectively. The GCCC Nature Conservation Strategy 2009-2019 specifies the GCCC Natural Areas Management Unit as the lead agency for both of these actions.

Voluntary conservation agreements (VCAs) are conservation agreements over private allotments of land that are designed to assist the property owner in conserving the natural values on their land. Benefits offered to residents include concessions on rates notices, cash reimbursements and the provision of a management plan for the property. VCAs include the option of having a covenant that appears on the property title and this covenant remains in place when a property changes hands. This type of VCA is therefore a way to increase the level of protection present over private land. At present there are no VCAs in the management cluster. There are however, a large number of landholders in the management cluster who have entered into the ‘land for wildlife’ program facilitated by South East Queensland Catchments. The land for wildlife program offers landholders benefits such as the provision of free native plants for regeneration, free workshops, a ‘bushland health check’ of the property and the provision of various publications to assist with conservation objectives. 30 allotments of land, owned by 29 different landholders are mapped as Land for Wildlife within the management cluster. This demonstrates a commitment to conservation by the residents in the local area surrounding the reserves.

4.15.2 Desired outcomes

- The local community and visitors have appreciation, enjoyment and an understanding of the values of the Tamborine Guanaba Conservation Reserves and support their ongoing protection.
- Where appropriate, community and visitor involvement in conservation and management of the planning area is encouraged.
- Good relationships are established with residents and landowners neighbouring the reserves of the planning area, and with community groups with an interest in the planning area.
4.15.3 Management strategy

4.15.3.1 Guidelines

G15.1 Continue to support approved individuals and community groups in the delivery of management plan objectives, including revegetation and ecological restoration.

G15.2 Continue to utilise the Standard Operating Procedure for the Beaches to Bushland program until such time as the integrated volunteer program is produced and implemented for Council as per actions 6.1 and 6.2 of the GCCC Nature Conservation Strategy 2009-2019.

G15.3 Continue to support Brisbane Bird Observers Club of Australia; Gold Coast Branch in undertaking systematic bird surveys and field days within the planning area, and in particular Eagle Heights Conservation Area.

G15.4 Manage the educational use of the planning area according to permitted visitor uses (refer to Section 4.10 and 4.14).

G15.5 Improve visitor behaviour, understanding and support of reserve management initiatives through increased ranger patrols on weekends and holiday periods, and signage encouraging environmentally responsible recreation. Signage is to be in accordance with the signage plan.

G15.6 Groups of park users such as school/university and nature conservation groups are to use the GCCC online park booking system.

4.15.3.2 Actions

A15.1 Prepare and implement a communication and interpretation plan. Together with the signage plan, the communication and interpretation plan will ensure that all reserve activities and facilities are well coordinated, of consistent quality and are effective in communicating with visitors. It will include:
- objectives for reserve communication activities and priorities
- strategies for the development of information, interpretation, education and public relations products
- themes relating to the planning area’s values – for example, flora and fauna (in particular threatened or otherwise significant species and communities), contribution to wildlife corridors, cultural heritage, scenic amenity, and biological diversity.

A15.2 Prepare and implement a signage plan. The primary aim of the signage plan will be to determine the type and location of signage including:
- naming and regulatory signage at all formal and publicly used entrances to reserves
- signage regulating swimming in parks (Section 4.10)
- signs at the entrances of reserves purchased with OSPL funds (Section 4.15).
- signs indicating where track use changes from recreational to management (Section 4.10)
- applicable fire management signs (Section 4.5)
- signs warning of hazards such as unstable slopes (Section 4.1)
- interpretive signage to educate visitors about restoration activities, pest control programs and the values of the planning area (Sections 4.6, 4.7, 4.15)
- temporary signs required to indicate track and reserve closures (Section 4.12)
- regulatory signage in dog exclusion zones, and accompanying signs showing the location of nearby dog exercise/dog on leash areas (see Section 4.7)
- signs advising the public to take rubbish with them (Section 4.10)
- signs to regulate unauthorised entry where vehicular access is restricted (Section 4.12)
A15.3 Provide opportunities for visitors to learn and appreciate the natural and cultural values of the planning area through any of the following that may be applicable:
- interpretive programs by GCCC rangers and volunteers
- interpretive signage in accordance with the signage plan
- visitor information pamphlets
- maps and guides
- self guided interpretive walking tracks
- information shelters
- information on the GCCC website
- regular input into local media

Such materials are to be reviewed and updated on a regular basis to ensure information is current and relevant.

A15.4 Implement a good neighbour program tailored towards neighbouring residences. This program should address issues such as: planting of suitable native species, responsible disposal of household and garden waste, native alternatives to problem garden species, responsible pet ownership, a coordinated approach to pest plant and animal control, and bushfire hazard reduction strategies.

A15.5 Develop and evaluate a long-term volunteer program that incorporates the skills and interests of volunteer groups in a range of management activities in accordance with key actions 6.1 and 6.2 of the GCCC Nature Conservation Strategy 2009-2019.

A15.6 Provide education and training to new and existing community bushcare and other volunteer groups. Works should be in accordance with the standard operating procedure for the Beaches to Bushland program until such time as an integrated volunteer program is implemented by GCCC as per actions 6.1 and 6.2 of the GCCC Nature Conservation Strategy 2009 – 2019.

4.15.4 Key monitoring priorities

- Conduct visitor surveys to ascertain whether educational and interpretive material is leading to improved knowledge and understanding of conservation and land management issues.
- Conduct ongoing monitoring to assess the effectiveness of the good neighbour program and other neighbour-based education initiatives.
- Monitor levels of community participation and satisfaction in conservation projects and their effectiveness within the planning area.

4.16 Research and monitoring

4.16.1 Current management situation

The purpose of undertaking scientific research and monitoring is to provide Council with a comprehensive understanding of the natural and cultural values, as well as ecological processes of the planning area over time. Ongoing monitoring of management actions is also necessary to determine whether such actions are effective and are achieving desired conservation objectives.

Management of these important reserves must be based on sound scientific information and continued monitoring of ecosystem conditions. Experimental design and data collection methodologies should be consistent throughout all Council managed natural areas. Research and monitoring of this nature will ensure that the ecological dynamics of the area are well understood, thereby enabling land managers to make informed decisions at both the reserve and landscape scale.
The flora and fauna records of the planning area are reasonably up to date. The fauna records however, only indicate the presence of a species and an estimated density at the time of survey. What isn’t accurately known is the abundance of fauna species, especially feral species including wild dogs, foxes and cats. Designing an effective pest animal control program without knowing how many feral animals are present is problematic. Similarly, abundance records of native fauna species are required to determine whether the feral predators are impacting significantly upon the native fauna population over time. This kind of research into the density of the pest animals and native fauna would be a useful management tool.

There will be a continuing need to monitor the impact of recreational use of the planning area over time. While usage may be low to begin with, it is expected that population growth in the area will place increased pressure on the planning area.

The objective of this management plan is to achieve sustainable management of a range of values associated with the planning area. Monitoring and evaluation will allow for the identification of developing management issues and will highlight when changes in existing management practices are necessary.

A number of institutions, management agencies and research groups potentially have an interest in ecological and threatened species research within or adjacent to the planning area, including: GCCC’s Catchment Management Unit, Griffith University Centre for Innovative Conservation Strategies, DERM, the Southeast Queensland Fire and Biodiversity Consortium, South East Queensland Catchments, the Glossy Black Cockatoo Conservancy and the Richmond Birdwing Recovery Network. These groups may be able to identify critical gaps in current knowledge and provide direction for research priorities.

There are a number of recommendations for ongoing monitoring and research contained within this management plan. Some of these may be potential research projects and are listed below.

- Monitoring of vegetated ridgelines and elevated areas adjoining private property to assist in identifying unauthorised clearing of vegetation for improved views.
- Water quality monitoring in conjunction with GCCC’s catchment management officers.
- Impacts of ongoing visitor access to the waterway in Guanaba Creek Reserve.
- Systematic flora surveys (particularly in ‘endangered’ and ‘of concern’ vegetation communities) to assess changes in ecological condition, floristic diversity, and rare or threatened plant populations.
- Systematic flora surveys in areas that are subject to ecological restoration works.
- Changes in carbon sequestration and capture when weed infested areas are subject to ecological restoration works.
- Ongoing recovery of the trees within Eagle Heights Conservation that were previously impacted by dieback.
- Systematic fauna surveys to monitor population changes of rare, threatened and/or locally significant fauna species within the planning area.
- Changes in fauna habitat availability and fauna richness and diversity in areas subject to restoration works.
- Vegetation and fuel hazard and fuel load monitoring.
- Vegetation recovery, habitat condition and plant species composition (including weeds) at all sites burnt during planned or accidental fires.
- Long-term monitoring of unburnt and burnt areas to assess the impact of fire frequency on species composition, diversity, habitat condition and vegetation health, and to assist future decision making regarding the use of fire as an ecological management tool within the planning area.
• Establish baseline data on the presence, distribution and abundance of pest animals within the reserves and review the history of control measures undertaken to ascertain their effectiveness.
• Impacts of pest animal control programs on target and non target species.
• Dog pack structure and behaviour to determine whether wild dogs assist in keeping controlling numbers of other pest species.
• Management impacts on Aboriginal and European cultural heritage values.
• Visitor use and demand studies to assess variables such as: visitor numbers, levels of recreational use, preferred activities, visitor demographics, conflicts between different recreational uses, and public demand for new or different nature-based recreational opportunities.
• Visitor surveys to ascertain whether educational and interpretive material is leading to improved knowledge and understanding of conservation and land management issues.
• Assess how the location of new natural area acquisitions contributes to the functionality and connectivity of Council’s natural area estate.
• Research the impacts of European honey bees on the ecology of conservation areas. This research should determine population densities and assess potentially detrimental environmental and public safety impacts

Whilst research is important for guiding management, the planning area can be sensitive and research itself may have an impact. It is important that research activities within the area are managed appropriately. Under Local Law 9 (Parks and Reserves) 2008, scientific research is classed as regulated conduct. Regulated conduct means that the individual or organisation undertaking the research must obtain a permit from GCCC.

4.16.2 Desired outcomes

• Monitoring and research contributes to improved management of the planning area.
• Impacts of management are rapidly assessed through targeted monitoring.
• Management is adapted to effectively manage trends identified during monitoring.
• No unacceptable environmental impacts result from research and monitoring.
• Research is coordinated and integrated with strategic regional biodiversity management priorities.

4.16.3 Management strategy

4.16.3.1 Guidelines

G16.1 Undertake and support research and monitoring in the planning area which aims to:
• increase knowledge of planning area values and conservation significance
• understand the nature and rate of any change in these values
• improve knowledge about visitor demand, satisfaction, use, characteristics and impacts
• improve management practices for natural and cultural resources
• provide information that contributes to Council’s strategic planning functions in the broader (e.g. regional, state, national etc) body of scientific knowledge

G16.2 Ensure that data collection and experimental design are scientifically rigorous and produce results that are statistically robust.

G16.3 All research in the planning area will be subject to a permit system implemented by GCCC’s natural areas management officers. Permits will be issued in accordance with the provisions of Gold Coast City Council Local Law No. 9 (Parks and Reserves) and Local Law
Policy No. 9.1 (Parks and Reserves). This means that researchers must book parks using the GCCC parks bookings website.

G16.4 Researchers working in the planning area must liaise with GCCC’s natural areas management officers regarding access, safety, compliance with management plan objectives and sharing of research findings.

G16.5 Research activities involving the taking, use, or keeping of protected wildlife (includes animal and plant species) for scientific purposes must demonstrate sustainability and will require a permit under the Nature Conservation (Wildlife) Regulation 2006.

G16.6 Where research and monitoring activities result in environmental disturbance or degradation within the reserve, researchers will be required to pay for the rehabilitation of the affected areas and/or cease the project if the impact is deemed by GCCC’s natural areas management officers to be unacceptable.

G16.7 Ensure that the results of research conducted within or relevant to the planning area inform the review of this management plan.

G6.8 Regularly update GCCC’s Natural Areas Monitoring Projects Database when new monitoring and research projects for the planning area are identified.

G16.9 Collaborate with research institutions and other relevant organisations where opportunities exist to develop a strategic approach to addressing key management questions within the region.

G16.10 Liaise with other GCCC sections regarding current and planned strategic research programs within the planning area

G16.11 All proposed monitoring projects will be subject to the availability of resources and funding.

4.16.3.2 Actions

A16.1 Using GCCC’s natural areas monitoring projects database, prepare and update a prospectus of priority research projects to be distributed to research organisations and/or tertiary institutions as a guide to preferred research projects within the reserve.

A16.2 Develop and implement a monitoring strategy to assess the overall effectiveness of this management plan. This will be a high level monitoring strategy that will monitor and assess the overall performance of the plan and the performance of the specific management strategies included within.

4.16.4 Key monitoring priorities

- Monitor the number and type of research programs undertaken each year to ensure that an adequate suite of data is being collected to inform major management decisions.
- Monitor all research and monitoring programs to ensure that they do not result in unsustainable impacts upon the values of the planning area.
- Review on-ground management actions against desired outcomes and timelines at least once every 5 years to assess the effectiveness of this management plan.
4.17 Consolidation of estate and management of isolated reserves

4.17.1 Current management situation

At present, a portion of Eagle Heights Conservation Area and the western portion of Gladrose Reserve are located in the rural domain. A portion of Charlies Crossing Park West (700SP170053) is within the detached dwelling domain. A more appropriate domain for these reserves is the public open space domain (or an equivalent conservation domain should such a domain arise in a future revision of the GCCC Planning Scheme).

As shown in Table 1, most of the reserves that are State land for which GCCC is trustee are designated for ‘park’ and/or ‘park and recreation’. Due to the diversity of parks within the park and recreation designation, a strategic review of reserves purposes under the Land Act 1994 is needed. Where reserves are acknowledged to have exceptionally high ecological significance, consideration should be given to changing the reserve designation from ‘park and recreation’ to ‘environmental purposes’. King Parrot Reserve and Mystery Road Reserve are identified as such reserves.

Guanaba Creek Reserve has a designation of ‘water’ under the Land Act 1994, and due to the high ecological values of this reserve, consideration should be given to changing the designation to ‘environmental purposes’.

The planning area contains a number of small, isolated reserves that receive little attention because of their inaccessibility, small patch size, and lack of infrastructure or amenity. Examples of such reserves include Candy Creek Reserve, Birds Road Reserve, Caballo Road Little Reserve and Piggott’s Road Reserve. Some of these reserves are freehold allotments owned by GCCC, whilst others are State-owned and are managed by GCCC as the trustee. A number of these reserves may be of strategic importance if they are consolidated through future acquisitions or if the demand for public open space increases in the future. Some of these smaller reserves also offer valuable protection to riparian zones.

### Table 10. Status and management recommendations for reserves requiring consolidation within the Tamborine Guanaba Conservation Reserves.

<table>
<thead>
<tr>
<th>Reserve name</th>
<th>Lot and Plan</th>
<th>Future management recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagle Heights Conservation Area</td>
<td>78WD687, 92WD801, 60W311182</td>
<td>Revise GCCC Planning Scheme domain from rural to public open space (or equivalent conservation domain)</td>
</tr>
<tr>
<td>Gladrose Reserve</td>
<td>901SP207478, 902SP113756, 900SP113748, 160WD4447 and 901SP113478</td>
<td>Revise GCCC Planning Scheme domain from rural to public open space (or equivalent conservation domain)</td>
</tr>
<tr>
<td>Charlies Crossing Road West Park</td>
<td>19RP845082, 900SP174763, 700SP170053 and 98RP854392</td>
<td>Revise GCCC Planning Scheme domain of 700SP170053 and 900SP174763 from detached dwelling to public open space (or equivalent conservation domain)</td>
</tr>
<tr>
<td>King Parrot Reserve</td>
<td>268WD6420 and 239WD6420</td>
<td>Change reserve designation under the land Act 1994 from ‘Parks and Recreation’ to ‘Environmental Purposes’</td>
</tr>
<tr>
<td>Mystery Road Reserve</td>
<td>3RP807905, 2WD5889, 3SP105554, 27WD6302 and 2RP890495</td>
<td>Change reserve designation under the land Act 1994 from ‘Parks and Recreation’ to ‘Environmental Purposes’</td>
</tr>
<tr>
<td>Guanaba Creek Reserve</td>
<td>170WD811798</td>
<td>Change reserve designation under the land Act 1994 from ‘Water’ to ‘Environmental Purposes’</td>
</tr>
</tbody>
</table>
A number of recent developments in the management cluster have resulted in new reserves that are due to be dedicated to Council in the near future. These new land dedications adjoin existing reserves.

- Portions of 74WD547, 31WD411 and 74WD547 are to be dedicated as park as part of the Welches Road Development (Welches Road). It is recommended that when these allotments of land are dedicated, they be known as a part of Gladrose Reserve which they directly adjoin. It is also recommended that they be transferred from the rural domain to the public open space domain.
- A portion of 57WD420 and 150M332380, which is to be dedicated as park as part of the ‘Woodrange’ Estate Development (Stewarts Road). It is recommended that when this land is dedicated to Council it be known as part of King Parrot Reserve, which it directly adjoins. It is also recommended that it be transferred from the rural domain to the public open space domain.
- A portion of 507SP19213, which is to be dedicated as park as part of the Riverstone Crossing Development (Otmoor Road). It is recommended that when this land is dedicated to Council it be known as part of Pleasant Parklands, which it directly adjoins. It is recommended that this land be transferred from the detached dwelling domain to the public open space domain.

These future park dedications will consolidate existing reserves and provide a good linkage between Gladrose Reserve and Eagle Heights Conservation Area. Future acquisitions should seek to further strengthen this linkage. King Parrot Reserve will also become larger, and will have a better connection between the eastern and western portions of the reserve. As this linkage is a key component of a proposed PIP recreational track, it should be expanded upon if the opportunity becomes available.

4.17.2 Desired outcomes

- Ensure that the planning area’s values are adequately protected by appropriate land tenure and Domain or Local Area Plan designation within the Gold Coast Planning Scheme.
- Pursue the acquisition of strategically positioned allotments, or portions of allotments, to improve the functionality and connectivity of Council’s natural area estate within the planning area.

4.17.3 Management strategy

4.17.3.1 Guidelines

G17.1 Support the incorporation, acquisition or protection of lands adjacent to the planning area by GCCC’s development assessment, land acquisition and voluntary conservation agreement officers. The objective of this guideline is to improve the representation and connectivity of vegetation communities, particularly habitat areas located adjacent to Eagle Heights Conservation Area, and riparian zones along Guanaba Creek and the Coomera River.

G17.2 Liaise with Council’s development assessment officers and environmental and recreational planners to deliver reserves that are compatible with the management intent of the planning area.

G17.3 Investigate the possibility of covenanting appropriate reserves for the purposes of inclusion within the National Reserve System.

4.17.3.2 Actions

A17.1 Implement reserve designation and domain changes recommended in Table 10.
A17.2 Provide advice to GCCC’s environmental planning officers regarding the acquisition of suitable parcels of land through the Open Space Preservation Levy.

A17.3 Investigate funding for acquisitions through external funding partners, for example the National Reserves System and Eco Fund Queensland.

4.17.4 Key monitoring priorities

- Undertake periodic assessments to ensure that all new GCCC managed natural areas are designated within either the Public Open Space Domain or a conservation-based local area plan (LAP) designation.
- Regularly review the location of new natural area acquisitions to assess whether their position in the landscape contributes to the functionality and connectivity of Council’s natural area estate.
- Regularly review how the location of new natural area acquisitions (OSPL, developer contributions, or other) contributes to the functionality and connectivity of Council’s natural area estate.

4.18 Coordinated reserve management

4.18.1 Current management situation

There are a number of other conservation/protected reserves within the management cluster. These include the Guanaba Indigenous Protected area, part of Tamborine National Park, and part of the Canungra Land Warfare Centre – all of which are shown on Figure 1. Guanaba Indigenous Protected Area is approximately 100 hectares in size and is managed as an IUCN category IV protected area i.e. it is managed mainly for conservation through management intervention. Tamborine National Park is managed as a category II protected area i.e. it is managed to protect natural biodiversity along with its underlying ecological structure and supporting environmental processes, and to promote education and recreation. Canungra Land Warfare Centre is approximately 5300 hectares in size, although only a portion of the land is located within the management cluster. It is utilised as an army training ground, and is recognised on the Register of the National Estate as “one of the largest eucalypt forest areas in reasonable to good condition in the southern Moreton Region” (Department of Sustainability, Environment, Water, Population and Communities, 2010f).

Guanaba Indigenous Protected Area, Tamborine National Park and Canungra Land Warfare Centre are located within the Darlington Range bioregional corridor, and all of them share at least one boundary with the planning area. This large area of mainly forested land is of great conservation significance. Guanaba Indigenous Protected Area is managed by the Ngarang-Wal Land Council with some advice from DERM. Tamborine National Park is managed by DERM and the Canungra Land Warfare Centre is managed by the Commonwealth Department of Defence. Some management actions such as bushfire planning and pest animal management will need to be dealt with in a coordinated manner with these neighbouring landholders. Other work such as flora and fauna surveying should ideally be undertaken in partnership with these organisations.

A number of private allotments adjacent to the planning area also provide connectivity between conserved remnants and are strategically important in maintaining a viable conservation network throughout the planning area and broader city-wide landscape. Within the planning area 29 allotments of land are listed in GCCC’s land for wildlife program (Section 4.15). The potential exists for an expansion in the number of participants in the land for wildlife program, and/or higher level conservation agreements such as voluntary conservation agreements (Section 4.15) or nature refuges in order to enhance viability of fragmented ecological corridors. Support should be provided to GCCC’s strategic environmental planning officers to promote such outcomes.
A number of encroachments into the reserves have been noted during fieldwork. These vary in nature and extent from easily remediated encroachments such as mown areas, through to built infrastructure extending well into the reserves. GCCC will need to prioritise encroachments according to their level of impact and facilitate site remediation where appropriate. Alternative solutions will need to be devised where encroachments incorporate fixed structures that cannot be removed due to physical or legal constraints.

4.18.2 Desired outcomes

- Integrated and collaborative management between GCCC, DERM, the Ngarang-Wal Land Council, the Commonwealth Department of Defence and neighbouring landholders.
- Effective and efficient use of Council’s resources in managing priority reserves within the planning area.

4.18.3 Management strategy

4.18.3.1 Guidelines

G18.1 Collaborate with DERM, the Ngarang-Wal Land Council and the Commonwealth Department of Defence in the management of threatened species, fire, catchments, pest control, access and recreation in the management of Council, State and Commonwealth managed conservation reserves and the Guanaba Indigenous Protected Area.

G18.2 Liaise with local owners of land for wildlife properties and GCCC’s environmental planning and conservation officers regarding the coordination of management activities and operations.

G18.3 Ensure that GCCC’s natural areas management officers are a key stakeholder in strategic land use planning in the area. A natural areas management officer is to be consulted regarding all development applications on properties adjacent to conservation reserves.

4.18.3.2 Actions

A18.1 Continue to monitor for encroachments into the planning area through ranger patrols, examination of aerial photography, and community feedback. Report new encroachments to the coordinator of the GCCC natural areas management unit for appropriate action.

4.18.4 Key monitoring priorities

- Undertake a review of the success of each collaborative management program to determine whether outcomes have been achieved and to provide feedback for the improvement of future programs.

4.19 Naming of reserves within the planning area

4.19.1 Current management situation

The reserves have been named in accordance with GCCC’s Naming of Parks and Community Facilities Policy. Council adopts a general practice of naming parks and facilities after their street, suburb or a nearby geographical feature so that parks are readily identifiable to GCCC staff, emergency services and the public. Applications to name or rename parks and community facilities after individuals, families, service clubs or community organisations may be suitable in some circumstances and must be assessed against the criteria outlined in Attachment A of the policy.
The GCCC’s *Naming of Parks and Community Facilities Policy* includes a general principle relevant to lands bought with the OSPL, and requires that such sites are named at the time of the preparation of the management plan. The policy states that these acquisitions must be given a name which describes the general location and key natural values for which the area was purchased, followed by the term ‘Conservation Area’. The policy also acknowledges the importance of identifying any cultural and natural heritage, indicating that it is appropriate to name interpretive or recreational infrastructure after historical affiliations or individual families who have made a contribution to the city or locality.

In light of the above, the following names are proposed for the OSPL acquired properties covered in this management plan:

- 78WD687, which is directly adjacent to Eagle Heights Conservation Area and is informally known as ‘188 Hollindale Road’ will be integrated into and renamed as part of Eagle Heights Conservation Area. All of this land has been purchased with OSPL funds.

The opportunity exists to amalgamate a number of reserves within the planning area that occur immediately adjacent to each other. The following consolidation is recommended:

- The land known as ‘Yallanbee Court Reserve’ (901SP207478) will be integrated into and renamed as part of Gladrose Reserve (902SP113756, 900SP113748, 160WD4447, 901SP113478).

It is further recommended that future OSPL acquisitions or developer contributions located adjacent to existing natural area public open space be amalgamated into existing reserves for ease of identification and management (See section 4.17.1).

### 4.19.2 Desired outcomes

- The names of all OSPL acquisitions within the planning area are formalised.
- Reserve nomenclature is consistent within the planning area and identifies geographic location or cultural history, and management intent for the reserves.

### 4.19.3 Management strategy

#### 4.19.3.1 Guidelines

**G19.1** Naming or renaming other non-OSPL reserves within the planning area is carried out in accordance with Council’s *Naming of Parks and Community Facilities Policy*.

**G19.2** Ensure that the naming of all reserves within the planning area adequately reflects their conservation status and general management intent.

**G19.3** All future communication materials should reflect reserve names adopted in this management plan.

#### 4.19.3.2 Actions

**A19.1** 188 Hollindale Road (78WD687), which is directly adjacent to Eagle Heights Conservation Area will now be incorporated into Eagle Heights Conservation Area. The name Eagle Heights Conservation Area will be formalised for 78WD687 upon the adoption of this management plan.

**A19.2** Yallanbee Court Reserve (901SP207478) will be incorporated into and known as Gladrose Reserve (902SP113756, 900SP113748, 160WD4447, 901SP113478). The name
Gladrose Reserve will be formalised for 901SP207478 upon adoption of this management plan.

4.19.4 Key monitoring priorities

- Undertake periodic assessments to ensure that all new natural areas reserves added to the planning area are named in accordance with the *Naming of Parks and Community Facilities Policy*. 
5 Summary of management priorities and timeframes

Table 11 (Management priorities and timeframes for Tamborine Guanaba Conservation Reserves) provides a prioritised list of all management actions given in Section 4 of this plan, for incorporation into strategic and operational works programs for NAMU. Management actions are listed reserve by reserve to facilitate easy identification of priority actions for each reserve within the planning area. Actions that apply to the entire planning area are listed first.

High priority activities are those imperative to achievement of the objectives and desired outcomes. It is expected that they will be achieved within five years of the approval of this plan in order to avoid significant deterioration in natural, cultural or management resources. Medium priority activities are those that are necessary to achieve the objectives and desired outcomes but are not urgent. They should be completed within the lifetime of the plan (i.e. 10 years), unless otherwise specified (e.g. many high and medium priority actions have ongoing relevance throughout and beyond the lifetime of the plan). Low priority activities are desirable to achieve management objectives and should be implemented within the lifetime of the plan, but will be contingent upon the availability of resources.

Table 11. Summary of management actions, timeframes and priorities for Tamborine Guanaba Conservation Reserves.

<table>
<thead>
<tr>
<th>Location</th>
<th>Theme</th>
<th>Action number</th>
<th>Action</th>
<th>Priority</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Planning Area</td>
<td>Landscape protection</td>
<td>A1.1</td>
<td>As part of the restoration work outlined in Section 4.6, liaise with other land managers (e.g. adjacent land owners and DERM) to encourage restoration of native vegetation and generate support for a collaborative approach to vegetation management along the Guanaba Creek and Coomera River bioregional corridors.</td>
<td>L</td>
<td>ongoing</td>
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<tr>
<td></td>
<td></td>
<td>A1.2</td>
<td>Work with GCCC’s implementation and assessment, recreational planning and engineering services officers to ensure that future developments complement the natural character of the area, and protect significant scenic and landscape features adjoining or in proximity to the planning area.</td>
<td>L</td>
<td>ongoing</td>
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<td></td>
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<td>A1.3</td>
<td>Undertake periodic site visits to monitor illegal vegetation clearing in the reserves. This may include photo monitoring over time at high risk sites. Illegal clearing will be reported to GCCC’s local law officers for investigation and where illegal clearing has occurred, replanting will be undertaken.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td>Catchment management</td>
<td></td>
<td>A2.1</td>
<td>Within Charles Crossing Park, and in other parks where ongoing monitoring reveals significant erosion along the banks of waterways, implement mitigation and remediation management strategies. This is to be carried out in conjunction with GCCC’s catchment management officers. Areas in which bank stability may compromise public safety should be assigned the highest priority.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td>Location</td>
<td>Theme</td>
<td>Action number</td>
<td>Action</td>
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<td>A2.2</td>
<td>Monitor the level of use of informal waterway access in Guanaba Reserve and other parts of the planning area as necessary. Where unacceptable damage is occurring to riparian communities, repair or formalise such access points.</td>
<td>L</td>
<td>annually</td>
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<tr>
<td></td>
<td></td>
<td>A2.3</td>
<td>Repair vehicular creek crossings in Eagle Heights Conservation Area at the locations shown in Figure 3.</td>
<td>H</td>
<td>2-3 years</td>
</tr>
<tr>
<td></td>
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<td>A2.4</td>
<td>Where livestock are present in reserves, install or maintain stock proof fencing or other barriers to prevent unmanaged livestock access to waterways.</td>
<td>M</td>
<td>ongoing</td>
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<tr>
<td></td>
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<td>A2.5</td>
<td>As part of the Communication and Interpretation Plan and the Signage Plan (refer to Section 4.15), provide the community with educational and interpretational materials and opportunities to promote responsible attitudes and support for catchment management initiatives.</td>
<td>L</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td>Native flora</td>
<td>A3.1</td>
<td>Conduct systematic flora surveys at regular intervals (e.g. every 3-5 years) in conjunction with GCCC’s environmental planning officers.</td>
<td>M</td>
<td>5 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A3.2</td>
<td>Forward the results of all new flora surveys and incidental flora records to GCCC’s environmental planning officers to be incorporated into the GCCC Nature Conservation Strategy database.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A3.3</td>
<td>Cease the slashing/brushcutting in the ‘endangered’/‘of concern’ regional ecosystem adjacent to the creek line in Guanaba Creek Reserve.</td>
<td>M</td>
<td>2 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A3.4</td>
<td>Actively promote vegetation retention and planting locally native plants in the management cluster. Additionally, through ranger patrols and interpretive material, provide information about environmental weeds, and the impacts of garden and dumping and illegal track creation.</td>
<td>L</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td>Native fauna</td>
<td>A4.1</td>
<td>Provide information to landholders near the reserves about the importance of practices that can contribute to koala and native fauna conservation including:</td>
<td>L</td>
<td>ongoing</td>
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<tr>
<td></td>
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<td>x not clearing/felling large hollow bearing trees</td>
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<td>x domestic dog control measures particularly for night and dusk/dawn periods</td>
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<td>x maintaining less than 30 centimetre gaps under property boundary fences to minimise restrictions to koala movement</td>
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<td></td>
<td>x ensuring that swimming pool fencing is designed and positioned to keep both children and koalas safely out</td>
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<td>x use of barb-free fencing</td>
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<td></td>
<td>x increased driver diligence for ground-crossing koalas during dusk, night-time and dawn periods</td>
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<td>A4.2</td>
<td>Consolidate and increase the total area of reserves and the linkages between the Eagle Heights Conservation Area, Caballo Road Reserve and Gladrose Reserve.</td>
<td>M</td>
<td>5-10 years</td>
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<tr>
<td>Location</td>
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<td>Action number</td>
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<td></td>
<td></td>
<td>A4.3</td>
<td>Conduct systematic fauna surveys at regular intervals (e.g. every 3-5 years) in conjunction with GCCC’s environmental planning officers.</td>
<td>M</td>
<td>5 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A4.4</td>
<td>Forward the results of all new fauna studies and incidental records to Council’s environmental planning officers to be incorporated into the GCCC Nature Conservation Strategy database.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A4.5</td>
<td>Where incidences of infectious fauna diseases such as amphibian Chytridiomycosis, Cryptococciosis, Toxoplasma gondii, Koala Chlamydiosis, and other diseases spread by pest animals are recorded within the planning area, assess the level of risk to fauna and where appropriate, undertake measures based on current best practice guidelines to control their spread.</td>
<td>H</td>
<td>ongoing</td>
</tr>
<tr>
<td>Fire</td>
<td></td>
<td>A5.1</td>
<td>Review the Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010 every five years, in consultation with relevant stakeholders.</td>
<td>H</td>
<td>3-5 years</td>
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<tr>
<td></td>
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<td>A5.2</td>
<td>Maintain management tracks in accordance with the Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010.</td>
<td>H</td>
<td>annually</td>
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<td>A5.3</td>
<td>Develop operational procedures for implementing the Tamborine Guanaba Conservation Reserves Bushfire Management Plan 2010, including the delivery of hazard reduction burns, conservation burns, all necessary ground truthing and the preparation, assessment and approval of burn proposals by Council’s natural areas management officers.</td>
<td>H</td>
<td>ongoing</td>
</tr>
</tbody>
</table>
|          |       | A5.4          | Develop and maintain GIS mapping layers to inform fire planning, including:  
- basic topographic attributes  
- vegetation communities, including information on age classes  
- threatened and significant plant species and communities  
- the habitats of rare and threatened native animal species  
- fire histories, including ignition sources and firepath information  
- fuel load attributes  
- management tracks and fire breaks  
- water points  
- infrastructure and assets  
- restoration zones                                                                                                                                                                                                                       | M        | ongoing   |
<p>|          |       | A5.5          | Exclude public access to all or part of the planning area during periods of extreme or catastrophic fire danger rating days, or during and immediately after hazard reduction burning operations. Ensure that signage in accordance with the signage plan is provided at all entry points advising the public of these closures and associated risk.                  | H        | ongoing   |</p>
<table>
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<tr>
<th>Location</th>
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<tr>
<td></td>
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<td>A5.6</td>
<td>Provide incident control support at wildfire events to maximise opportunities for the protection of fire-sensitive ecosystems.</td>
<td>H</td>
<td>ongoing</td>
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<td>A5.7</td>
<td>Keep neighbours and the general public informed of fire management activities through local media, GCCC’s website and signage at entry points to the planning area</td>
<td>M</td>
<td>ongoing</td>
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<td>A5.8</td>
<td>Improve bushfire preparedness in high potential bushfire hazard areas through community education programs in consultation / cooperation with QFRS. Such programs will also educate residents about the threats posed by accidental fire and by dumping combustible garden waste in the reserves.</td>
<td>H</td>
<td>ongoing</td>
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<td>A5.9</td>
<td>Continue with vegetation and fuel hazard monitoring currently being undertaken in strategic reserves across the planning area. Where feasible, undertake such monitoring before and after fires and establish fire-exclusion areas to provide benchmarks for fire management research and monitoring.</td>
<td>M</td>
<td>ongoing</td>
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<td></td>
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<td>A5.10</td>
<td>Ensure that adequate asset protection zones and buffers are identified for all recreational infrastructure, embellishments, and neighbouring residences.</td>
<td>M</td>
<td>ongoing</td>
</tr>
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<td></td>
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<td>A5.11</td>
<td>A record of hazard reduction burns and wildfires in reserves will be established in cooperation with the Rural Fire Brigade in order to assist with interpretation of subsequent flora and fauna survey results</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td>Pest plants and ecological restoration</td>
<td>A6.1</td>
<td>Regularly update the GCCC Natural Areas Management Unit database with restoration methodology, area covered, hours worked, weed species observed, weeds treated during restoration work and other significant observations.</td>
<td>H</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A6.2</td>
<td>Develop and implement ecological restoration plans or restoration action plans for Eagle Heights Conservation Area, King Parrot Reserve, Guanaba Reserve and Charles Crossing Park. As resources become available, develop restoration action plans for other reserves in the planning area requiring restoration works.</td>
<td>M</td>
<td>5-10 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A6.3</td>
<td>Continue expanding the area undergoing ecological restoration and maintenance work at Eagle Heights Conservation Area, Gladrose Reserve and Pleasant Parklands, ensuring that adequate resources are provided for follow-up management.</td>
<td>H</td>
<td>ongoing</td>
</tr>
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<td></td>
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<td>A6.4</td>
<td>As resources become available, establish vegetated buffers along the banks of waterways in the planning area in accordance with The Natural Wetland Areas and Natural Waterways Code of the GCCC Planning Scheme. This will be carried out by GCCC’s natural areas management officers in partnership with GCCC’s catchment management officers and may utilise the resources of appropriately trained and experienced community groups or contractors. This action will need to be sympathetic to any asset protection zones in the Tamborine Guanaba Bushfire Management Plan.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td>Location</td>
<td>Theme</td>
<td>Action number</td>
<td>Action</td>
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<td>A6.5</td>
<td>Undertake restoration work along the riparian section of Guanaba Creek Reserve with the aim of re-establishing the ‘endangered’/‘of concern’ mapped remnant vegetation.</td>
<td>L</td>
<td>5 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A6.6</td>
<td>Conduct regular inspections of the planning area to assess weed recolonisation following bushfires. Carry out follow-up weed control where necessary.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A6.7</td>
<td>In accordance with the signage plan, install interpretive signage adjacent to restoration areas to educate visitors about the restoration process, how restoration affects ecological values, and how individual residents and neighbours can help.</td>
<td>L</td>
<td>5-10 years</td>
</tr>
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<td></td>
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<td>A6.8</td>
<td>Participate in the development and implementation of coordinated regional pest plant control initiatives with neighbours, community groups, and other land management agencies. Where feasible, pursue partnerships with DERM and Scenic Rim Regional Council to facilitate collaborative pest plant management and ecological restoration between Council reserves managed by the State and neighbouring Councils. This is particularly important where pest plant species are located upstream of sites recently restored by Council.</td>
<td>L</td>
<td>ongoing</td>
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<td></td>
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<td>A6.9</td>
<td>Incorporate natural areas management staff field observations of Class 1 and 2 declared plants into the GCCC Natural Areas Management Unit ‘incidental records database’. Ensure that this information is regularly fed into the GCCC NCS flora and fauna database.</td>
<td>L</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
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<td>A6.10</td>
<td>Provide timely notification to Council’s Pest Management Unit of new infestations of Class 1 and 2 declared plants to enable better integration of control and monitoring activities.</td>
<td>H</td>
<td>ongoing</td>
</tr>
<tr>
<td>Pest animals</td>
<td></td>
<td>A7.1</td>
<td>Prohibit domestic dogs under Local law 12 Part 9 (55) within Eagle Heights Conservation Area, King Parrot Reserve and Mystery Road Reserve.</td>
<td>L</td>
<td>5 years</td>
</tr>
<tr>
<td>Pest animals</td>
<td></td>
<td>A7.2</td>
<td>Undertake strategic surveys to determine the distribution and abundance of pest animals (particularly wild dogs and foxes) within the reserves and review the history of control measures undertaken to ascertain their effectiveness.</td>
<td>H</td>
<td>10 years</td>
</tr>
<tr>
<td>Pest animals</td>
<td></td>
<td>A7.3</td>
<td>Produce a pest animal control plan (PACP) for the planning area that identifies pest animals present and recommends and prioritises control and monitoring programs. This plan should include:</td>
<td>M</td>
<td>5 years</td>
</tr>
<tr>
<td>Pest animals</td>
<td></td>
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</table>
|           |       |               | • triggers for initiating control strategies  
|           |       |               | • a set of criteria to establish priorities for non-native animal management  
|           |       |               | • control strategies that include multiple control methods, target multiple species and form part of an ecological restoration program  
|           |       |               | • integration with relevant Commonwealth and State threat abatement plans  
|           |       |               | • strategies for community and landholder involvement/cooperation  
<p>|           |       |               | • monitoring techniques and regimes to help identify priority areas for feral animal control and to measure the effectiveness of control methodologies |</p>
<table>
<thead>
<tr>
<th>Location</th>
<th>Theme</th>
<th>Action number</th>
<th>Action</th>
<th>Priority</th>
<th>Timeframe</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Aboriginal cultural heritage</td>
<td>A8.1</td>
<td>In consultation with the local Aboriginal community, provide interpretation/educational infrastructure and/or material to promote public appreciation and understanding of Aboriginal sites, landscape features and heritage values within the planning area.</td>
<td>L</td>
<td>5-10 years</td>
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<tr>
<td></td>
<td>European cultural heritage</td>
<td>A9.1</td>
<td>Promote public understanding and appreciation of the planning area’s European cultural heritage values through the provision of interpretation and educational material.</td>
<td>L</td>
<td>5-10 years</td>
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<td></td>
<td>Recreation opportunities</td>
<td>A10.1</td>
<td>Design and implement a visitor impact assessment program to monitor the impact of recreational use on the natural condition of the planning area.</td>
<td>H</td>
<td>5-10 years</td>
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<td></td>
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<td>A10.2</td>
<td>Undertake a nature based recreational demand study to identify the future need for additional nature-based recreational facilities within the planning area. This study should include bushwalking, horse riding, mountain biking, day use and other nature based recreation activities that are appropriate in the planning area. Where demand is identified, undertake a feasibility assessment to identify suitable locations within the planning area or opportunities on adjacent private properties.</td>
<td>H</td>
<td>5 years</td>
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<td></td>
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<td>A10.3</td>
<td>Monitor the level and type of recreational use of Guanaba Reserve prior to investigating the possibility of establishing a day use area within this reserve.</td>
<td>M</td>
<td>annually</td>
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<td>A10.4</td>
<td>Investigate the possibility of scoping potential sites for sustainable mountain biking tracks (including downhill mountain biking) within GCCC land.</td>
<td>M</td>
<td>2-3 years</td>
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<td>A10.5</td>
<td>Analyse recreational usage data to inform future development and consolidation of the recreational track network within the planning area. Where a high level of use is identified,</td>
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<td>Location</td>
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<td>A10.6</td>
<td>formalise tracks and implement design solutions to minimise erosion and degradation. Where a low level of use is identified, consider track closure and rehabilitation (within the context of recreational demand in the planning area). Before and after the annual “Drummley Walk”, natural areas management officers to check the condition of the walking route. This information is to be used to inform future management of the reserves and the Drummley Walk.</td>
<td>M</td>
<td>annually</td>
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<tr>
<td></td>
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<td>A10.7</td>
<td>Natural areas officers to refer recreational and other user groups to the GCCC parks bookings website where bookings can be made to utilise the Tamborine Guanaba Conservation Reserves.</td>
<td>H</td>
<td>ongoing</td>
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<td></td>
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<td>A10.8</td>
<td>Provide information (including downloadable maps) on Council’s website relating to recreational opportunities within the planning area. This should include: 1) adding Gladrose Reserve, Guanaba Reserve and Eagle heights Conservation Area to the list of parks found in the ‘Exploring nature’ category of the Gold Coast Parks – ‘park finder’ internet search tool, and 2) adding a list of reserves that contain tracks suitable for bushwalking to the Gold Coast Parks ‘Bushwalking’ webpage, along with a short description of the walks and natural features that can be observed.</td>
<td>M</td>
<td>2 years</td>
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<td></td>
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<td>A10.9</td>
<td>Undertake regular weekday and weekend patrols of the planning area to encourage safe behaviour and to control prohibited activities. Action 12.1 of this plan proposes closing Wongawallan Road to all vehicles except management and specially authorised vehicles. Regular, periodic patrols by natural areas staff and local law officers will be required to enforce this action.</td>
<td>H</td>
<td>ongoing</td>
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<td></td>
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<td>A10.10</td>
<td>Maintain records of safety incidents, hazards and inappropriate use observed during ranger patrols or by the public, to inform future planning and risk management.</td>
<td>H</td>
<td>ongoing</td>
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<tr>
<td></td>
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<td>A10.11</td>
<td>Natural areas officers are to provide all information required to assist in the undertaking of a risk assessment and a communication program (in response to the findings against Tweed Shire Council regarding the death of a toddler in a water body). This risk assessment is identified as a way to mitigate risk on the Community Services Directorate Risk Register.</td>
<td>H</td>
<td>ongoing</td>
</tr>
<tr>
<td>Built</td>
<td>Infrastructure</td>
<td>A11.1</td>
<td>Remove or dispose of derelict structures not identified as being of significant cultural or practical value within the planning area. This includes unsightly rubbish and derelict infrastructure such as internal fence lines, wire, building remnants, pipes, rubbish piles, concrete rubble and debris associated with past commercial/pastoral/private operations within the reserves. This is especially important prior to formalising and promoting public access to a site.</td>
<td>M</td>
<td>2-5 years</td>
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<td>Location</td>
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<td>A11.2</td>
<td>Retain the small ‘Colourbond’ shed in Eagle Heights Conservation Area for use during restoration activities. This shed may be removed in the future if it is no longer of use to management activities.</td>
<td>L</td>
<td>10 years</td>
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<tr>
<td></td>
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<td>A11.3</td>
<td>Where infrastructure has been removed, assess sites for suitability as a location for recreational or other management purposes requiring infrastructure development. Alternatively, rehabilitate degraded areas in accordance with the provisions of the relevant ecological restoration plan or restoration action plan (Section 4.6).</td>
<td>L</td>
<td>ongoing</td>
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<td></td>
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<td>A11.4</td>
<td>Regularly monitor the condition of boundary fencing to ensure it remains effective as a barrier to unauthorised access and neighbouring stock. These assessments may be undertaken during routine ranger patrols within the planning area. Where fencing has been compromised, ensure that it is reinstated as a priority (and in consultation with neighbours where necessary).</td>
<td>H</td>
<td>ongoing</td>
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<td></td>
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<td>A11.5</td>
<td>Where required, install fauna-friendly, stock-proof fencing along the boundary of the reserves of the planning area to facilitate the unimpeded movement of native fauna species. This may necessitate the modification of existing fencing to provide fauna movement capabilities.</td>
<td>M</td>
<td>5-10 years</td>
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<tr>
<td></td>
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<td>A11.6</td>
<td>Replace the table, chair and shade shelter in Guanaba Reserve. The replacement infrastructure should adhere to Australian Standards and should be in a style sympathetic to the natural environmental setting.</td>
<td>M</td>
<td>2-3 years</td>
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<tr>
<td>Access</td>
<td></td>
<td>A12.1</td>
<td>Close and gate Wongawallan Road and Caballo Road to all vehicular traffic except management and specially authorised vehicles. Such closures will be temporary road closures under the Local Government Act and will take effect over tracks labelled a, b and c on Figure 2. The locations of locked gates is shown in Figure 3. Mountain biking, horse riding and bush walking will remain permitted uses following road closure. Horse step-overs will be provided and gate keys will be issued to management and other authorised personnel.</td>
<td>H</td>
<td>1 year</td>
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<td></td>
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<td>A12.2</td>
<td>Investigate the feasibility of modifying the existing downhill mountain bike track in Eagle Heights Conservation Area. This mountain bike track roughly follows Wongawallan Road from the border of Scenic Rim Regional Council through Eagle Heights Conservation Area and down to the bitumen surface of Welches Road. At present the track criss crosses Wongawallan Road and needs to be rerouted off the road to mitigate the risk of a collision between a mountain bike and other vehicle. If the track can be effectively rerouted, it will be left open for mountain biking. If not, an alternative location may have to be considered.</td>
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<td>1 year</td>
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<td>A12.3</td>
<td>GCCCC will continue to liaise with Scenic Rim Regional Council with the objective of erecting gates at Romana Court management track and Mystery Road management track as shown in Figure 3.</td>
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<td>2 years</td>
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<td></td>
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<td>A12.4</td>
<td>Determine whether the management track network can be efficiently improved by purchasing land or easements over private land.</td>
<td>M</td>
<td>3-5 years</td>
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<tr>
<td></td>
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<td>A12.5</td>
<td>Maintain all weather vehicle access to visitor facilities and fire fighting infrastructure.</td>
<td>H</td>
<td>ongoing</td>
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<td></td>
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<td>A12.6</td>
<td>During routine ranger patrols of the planning area undertake regular monitoring for unauthorised access to reserves and decommission such access points as necessary</td>
<td>H</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A12.7</td>
<td>Liaise with GCCC’s law enforcement officers to monitor and manage illegal vehicle access, including trail bike and four-wheel drive access to relevant reserves, but particularly targeting Eagle Heights Conservation Area and Caballo Road Reserve.</td>
<td>H</td>
<td>ongoing</td>
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<td></td>
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<td>A12.8</td>
<td>Ensure that all reserve management tracks and access points are mapped and added to GCCC’s Geographic Information Systems (GIS) database.</td>
<td>L</td>
<td>5 years</td>
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<td></td>
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<td>A12.9</td>
<td>Monitor management tracks to ensure that they are safe and that drainage is functioning effectively. Undertake repairs to avoid ponding of water, erosion and other unsafe conditions as necessary.</td>
<td>M</td>
<td>ongoing</td>
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<tr>
<td></td>
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<td>A12.10</td>
<td>Close and rehabilitate existing management tracks that are no longer utilised and minimise the construction of new tracks, and the surface hardening or widening of existing tracks.</td>
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<td><strong>Leased areas</strong></td>
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<td>A13.1</td>
<td>Keep a register of all leases and their renewal date.</td>
<td>L</td>
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<td></td>
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<td>A13.2</td>
<td>Review lease arrangements prior to lease renewal, including a review of lease conditions for ecologically sustainability.</td>
<td>M</td>
<td>ongoing</td>
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<td>A13.3</td>
<td>Report all breaches of lease conditions pertinent to natural areas management to Council’s property management officers.</td>
<td>M</td>
<td>ongoing</td>
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<td></td>
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<td>A13.4</td>
<td>Monitor the condition of the ‘endangered’ regional ecosystem within the leasehold area of Hollindale Family Park. Should the leasehold use of the reserve be found to be compromising the integrity of the regional ecosystem, undertake appropriate management action to rectify this.</td>
<td>H</td>
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<td></td>
<td><strong>Commercial activities</strong></td>
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<td>A14.1</td>
<td>Develop and implement a commercial usage policy to allow for the regulation of commercial users of natural areas (e.g. ecotours). Such a policy will need to be endorsed by GCCC prior to implementation. Commercial activities in the planning area will be conducted in a manner that: · is consistent with conservation of natural and cultural resources</td>
<td>H</td>
<td>5 years</td>
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|          |       |               | • ensures the activities are nature based and provide appropriate interpretation of park values  
• involves local Aboriginal input where there is a cultural heritage component  
• avoids conflict with other reserve users  
• does not incur high public liability risks  
• is appropriate for the level of existing infrastructure or resources  
• incorporates appropriate monitoring mechanisms to assess sustainability of ecological and amenity values. |            |           |
|          |       | A14.2         | Maintain a database of commercial operations within the planning area, including records of frequency, location, type/s and levels of use. | M         | ongoing   |
|          | Community involvement, education and interpretation | A15.1 | Prepare and implement a communication and interpretation plan. Together with the signage plan, the communication and interpretation plan will ensure that all reserve activities and facilities are well coordinated, of consistent quality and are effective in communicating with visitors. It will include:  
• objectives for reserve communication activities and priorities  
• strategies for the development of information, interpretation, education and public relations products  
• themes relating to the planning area’s values – for example, flora and fauna (in particular threatened or otherwise significant species and communities), contribution to wildlife corridors, cultural heritage, scenic amenity, and biological diversity. | M | 5 years |
|          |       | A15.2         | Prepare and implement a signage plan. The primary aim of the signage plan will be to determine the type and location of signage including:  
• naming and regulatory signage at all formal and publicly used entrances to reserves  
• signage regulating swimming in parks (Section 4.10)  
• signs at the entrances of reserves purchased with OSPL funds (Section 4.15)  
• signs indicating where track use changes from recreational to management (Section 4.10)  
• applicable fire management signs (Section 4.5)  
• signs warning of hazards such as unstable slopes (Section 4.1)  
• interpretive signage to educate visitors about restoration activities, pest control programs and the values of the planning area (Sections 4.6, 4.7, 4.15)  
• temporary signs required to indicate track and reserve closures (Section 4.12)  
• regulatory signage in dog exclusion zones, and accompanying signs showing the | M | 5 years |
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<td>location of nearby dog exercise/dog on leash areas (see Section 4.7) • signs advising the public to take rubbish with them (Section 4.10) • signs to regulate unauthorised entry where vehicular access is restricted (Section 4.12)</td>
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<td>A15.3</td>
<td>Provide opportunities for visitors to learn and appreciate the natural and cultural values of the planning area through any of the following that may be applicable: • interpretive programs by GCCC rangers and volunteers • interpretive signage in accordance with the signage plan • visitor information pamphlets • maps and guides • self guided interpretive walking tracks • information shelters • information on the GCCC website • regular input into local media Such materials are to be reviewed and updated on a regular basis to ensure information is current and relevant.</td>
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<td>ongoing</td>
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<td>A15.4</td>
<td>Implement a good neighbour program tailored towards neighbouring residences. This program should address issues such as: planting of suitable native species, responsible disposal of household and garden waste, native alternatives to problem garden species, responsible pet ownership, a coordinated approach to pest plant and animal control, and bushfire hazard reduction strategies.</td>
<td>L</td>
<td>5-10 years</td>
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<td>A15.5</td>
<td>Develop and evaluate a long-term volunteer program that incorporates the skills and interests of volunteer groups in a range of management activities in accordance with key actions 6.1 and 6.2 of the GCCC Nature Conservation Strategy 2009-2019.</td>
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<td>5 years</td>
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<td>A15.6</td>
<td>Provide education and training to new and existing community bushcare and other volunteer groups. Works should be in accordance with the standard operating procedure for the Beaches to Bushland program until such time as an integrated volunteer program is implemented by GCCC as per actions 6.1 and 6.2 of the GCCC Nature Conservation Strategy 2009 – 2019.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td>Research and monitoring</td>
<td></td>
<td>A16.1</td>
<td>Using GCCC’s natural areas monitoring projects database, prepare and update a prospectus of priority research projects to be distributed to research organisations and/or tertiary institutions as a guide to preferred research projects within the reserve.</td>
<td>L</td>
<td>5-10 years</td>
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<td>A16.2</td>
<td>Develop and implement a monitoring strategy to assess the overall effectiveness of this management plan. This will be a high level monitoring strategy that will monitor and assess the overall performance of the plan and the performance of the specific management</td>
<td>H</td>
<td>3-5 years</td>
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<td>strategies included within.</td>
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<td>Consolidation of estate</td>
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<td>A17.1</td>
<td>Implement reserve designation and domain changes recommended in Table 10.</td>
<td>M</td>
<td>5 years</td>
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<td>and management of isolated reserves</td>
<td></td>
<td>A17.2</td>
<td>Provide advice to GCCC’s environmental planning officers regarding the acquisition of suitable parcels of land through the Open Space Preservation Levy.</td>
<td>H</td>
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<td>A17.3</td>
<td>Investigate funding for acquisitions through external funding partners, for example the National Reserves System and Eco Fund Queensland.</td>
<td>M</td>
<td>ongoing</td>
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<tr>
<td>Coordinated reserve</td>
<td></td>
<td>A18.1</td>
<td>Continue to monitor for encroachments into the planning area through ranger patrols, examination of aerial photography, and community feedback. Report new encroachments to the coordinator of the GCCC natural areas management unit for appropriate action.</td>
<td>M</td>
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<td>management</td>
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<td></td>
<td>Naming of reserves</td>
<td>A19.1</td>
<td>188 Hollindale Road (78WD687), which is directly adjacent to Eagle Heights Conservation Area will now be incorporated into Eagle Heights Conservation Area. The name Eagle Heights Conservation Area will be formalised for 78WD687 upon the adoption of this management plan.</td>
<td>L</td>
<td>1 year</td>
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<td>within the planning area</td>
<td></td>
<td>A19.2</td>
<td>Yallanbee Court Reserve (901SP207478) will be incorporated into and known as Gladrose Reserve (902SP113756, 900SP113748, 160WD4447, 901SP113478). The name Gladrose Reserve will be formalised for 901SP207478 upon adoption of this management plan.</td>
<td>L</td>
<td>1 year</td>
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<td></td>
<td>Caballo Road</td>
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<td>Little Reserve</td>
<td>Native fauna</td>
<td>A4.2</td>
<td>Consolidate and increase the total area of reserves and the linkages between the Eagle Heights Conservation Area, Caballo Road Reserve and Gladrose Reserve.</td>
<td>M</td>
<td>5-10 years</td>
</tr>
<tr>
<td>Recreation opportunities</td>
<td></td>
<td>A10.6</td>
<td>Before and after the annual “Drummley Walk”, natural areas management officers to check the condition of the walking route. This information is to be used to inform future management of the reserves and the Drummley Walk.</td>
<td>M</td>
<td>annually</td>
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<td></td>
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<td>A10.7</td>
<td>Natural areas officers to refer recreational and other user groups to the GCCC parks bookings website where bookings can be made to utilise the Tamborine Guanaba Conservation Reserves.</td>
<td>H</td>
<td>ongoing</td>
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<tr>
<td>Commercial activities</td>
<td></td>
<td>A14.2</td>
<td>Maintain a database of commercial operations within the planning area, including records of frequency, location, type/s and levels of use.</td>
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<td></td>
<td>Caballo Road</td>
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<tr>
<td>Reserve</td>
<td>Native fauna</td>
<td>A4.2</td>
<td>Consolidate and increase the total area of reserves and the linkages between the Eagle Heights Conservation Area, Caballo Road Reserve and Gladrose Reserve.</td>
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<tr>
<td>Recreation</td>
<td></td>
<td>A10.6</td>
<td>Before and after the annual “Drummley Walk”, natural areas management officers to check the condition of the walking route. This information is to be used to inform future management of the reserves and the Drummley Walk.</td>
<td>M</td>
<td>annually</td>
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<tr>
<td>Candy Creek Road Reserve</td>
<td>opportunities</td>
<td>A10.7</td>
<td>Natural areas officers to refer recreational and other user groups to the GCCC parks bookings website where bookings can be made to utilise the Tamborine Guanaba Conservation Reserves.</td>
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<td>Commercial activities</td>
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<td>A14.2</td>
<td>Maintain a database of commercial operations within the planning area, including records of frequency, location, type/s and levels of use.</td>
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<td>Access</td>
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<td>A12.7</td>
<td>Liaise with GCCC’s law enforcement officers to monitor and manage illegal vehicle access, including trail bike and four-wheel drive access to relevant reserves, but particularly targeting Eagle Heights Conservation Area and Caballo Road Reserve.</td>
<td>H</td>
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<td>Native fauna</td>
<td></td>
<td>A4.2</td>
<td>Consolidate and increase the total area of reserves and the linkages between the Eagle Heights Conservation Area, Caballo Road Reserve and Gladrose Reserve.</td>
<td>M</td>
<td>5-10 years</td>
</tr>
<tr>
<td>Charlies Crossing Park</td>
<td>Landscape protection</td>
<td>A1.1</td>
<td>As part of the restoration work outlined in Section 4.6, liaise with other land managers (e.g. adjacent land owners and DERM) to encourage restoration of native vegetation and generate support for a collaborative approach to vegetation management along the Guanaba Creek and Coomera River bioregional corridors.</td>
<td>L</td>
<td>ongoing</td>
</tr>
<tr>
<td>Catchment management</td>
<td></td>
<td>A2.1</td>
<td>Within Charlies Crossing Park, and in other parks where ongoing monitoring reveals significant erosion along the banks of waterways, implement mitigation and remediation management strategies. This is to be carried out in conjunction with GCCC’s catchment management officers. Areas in which bank stability may compromise public safety should be assigned the highest priority.</td>
<td>M</td>
<td>ongoing</td>
</tr>
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<td></td>
<td></td>
<td>A2.4</td>
<td>Where livestock are present in reserves, install or maintain stock proof fencing or other barriers to prevent unmanaged livestock access to waterways.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td>Pest plants and ecological restoration</td>
<td></td>
<td>A6.2</td>
<td>Develop and implement ecological restoration plans or restoration action plans for Eagle Heights Conservation Area, King Parrot Reserve, Guanaba Reserve and Charlies Crossing Park. As resources become available, develop restoration action plans for other reserves in the planning area requiring restoration works.</td>
<td>M</td>
<td>5-10 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A6.4</td>
<td>As resources become available, establish vegetated buffers along the banks of waterways in the planning area in accordance with The Natural Wetland Areas and Natural Waterways Code of the GCCC Planning Scheme. This will be carried out by GCCC’s natural areas management officers in partnership with GCCC’s catchment management officers and may utilise the resources of appropriately trained and experienced community groups or contractors. This action will need to be sympathetic to any asset protection zones in the Tamborine Guanaba Bushfire Management Plan.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td>Location</td>
<td>Theme</td>
<td>Action number</td>
<td>Action</td>
<td>Priority</td>
<td>Timeframe</td>
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<tr>
<td>Leased areas</td>
<td></td>
<td>A13.1</td>
<td>Keep a register of all leases and their renewal date.</td>
<td>L</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A13.2</td>
<td>Review lease arrangements prior to lease renewal, including a review of lease conditions for ecologically sustainability.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A13.3</td>
<td>Report all breaches of lease conditions pertinent to natural areas management to Council’s property management officers.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td>Charlies Crossing Road West Park</td>
<td>Landscape protection</td>
<td>A6.4</td>
<td>As resources become available, establish vegetated buffers along the banks of waterways in the planning area in accordance with The Natural Wetland Areas and Natural Waterways Code of the GCCC Planning Scheme. This will be carried out by GCCC’s natural areas management officers in partnership with GCCC’s catchment management officers and may utilise the resources of appropriately trained and experienced community groups or contractors. This action will need to be sympathetic to any asset protection zones in the Tamborine Guanaba Bushfire Management Plan.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td>Consolidation of estate and management of isolated reserves</td>
<td>A17.1</td>
<td>Implement reserve designation and domain changes recommended in Table 10.</td>
<td>M</td>
<td>5 years</td>
</tr>
<tr>
<td>Eagle Heights Conservation Area</td>
<td>Catchment management</td>
<td>A2.3</td>
<td>Repair vehicular creek crossings in Eagle Heights Conservation Area at the locations shown in Figure 3</td>
<td>M</td>
<td>5 years</td>
</tr>
<tr>
<td></td>
<td>Native flora</td>
<td>A3.1</td>
<td>Conduct systematic flora surveys at regular intervals (e.g. every 3-5 years) in conjunction with GCCC’s environmental planning officers.</td>
<td>M</td>
<td>5 years</td>
</tr>
<tr>
<td></td>
<td>Native fauna</td>
<td>A4.2</td>
<td>Consolidate and increase the total area of reserves and the linkages between the Eagle Heights Conservation Area, Caballo Road Reserve and Gladrose Reserve.</td>
<td>M</td>
<td>5-10 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A6.2</td>
<td>Develop and implement ecological restoration plans or restoration action plans for Eagle Heights Conservation Area, King Parrot Reserve, Guanaba Reserve and Charlies Crossing Park. As resources become available, develop restoration action plans for other reserves in the planning area requiring restoration works.</td>
<td>M</td>
<td>5-10 years</td>
</tr>
<tr>
<td></td>
<td>Pest animals</td>
<td>A7.1</td>
<td>Prohibit domestic dogs under Local law 12 Part 9 (55) within Eagle Heights Conservation Area, King Parrot Reserve and Mystery Road Reserve.</td>
<td>L</td>
<td>5 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A12.10</td>
<td>Close and rehabilitate existing management tracks that are no longer utilised and minimise the construction of new tracks, and the surface hardening or widening of existing tracks.</td>
<td>M</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td>Recreation</td>
<td>A10.6</td>
<td>Before and after the annual “Drummley Walk”, natural areas management officers to check the condition of the walking route. This information is to be used to inform future</td>
<td>M</td>
<td>annually</td>
</tr>
<tr>
<td>Location</td>
<td>Theme</td>
<td>Action number</td>
<td>Action</td>
<td>Priority</td>
<td>Timeframe</td>
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<tr>
<td>opportunities</td>
<td>management of the reserves and the Drummley Walk.</td>
<td>A10.7</td>
<td>Natural areas officers to refer recreational and other user groups to the GCCC parks bookings website where bookings can be made to utilise the Tamborine Guanaba Conservation Reserves.</td>
<td>H</td>
<td>ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A10.8</td>
<td>Provide information (including downloadable maps) on Council’s website relating to recreational opportunities within the planning area. This should include: 1) adding Gladrose Reserve, Guanaba Reserve and Eagle heights Conservation Area to the list of parks found in the ‘Exploring nature’ category of the Gold Coast Parks – ‘park finder’ internet search tool, and 2) adding a list of reserves that contain tracks suitable for bushwalking to the Gold Coast Parks ‘Bushwalking’ webpage, along with a short description of the walks and natural features that can be observed.</td>
<td>M</td>
<td>2 years</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Retain the small ‘Colourbond’ shed in Eagle Heights Conservation Area for use during restoration activities. This shed may be removed in the future if it is no longer of use to management activities.</td>
<td>A11.2</td>
<td></td>
<td>L</td>
<td>10 years</td>
</tr>
<tr>
<td>Access</td>
<td>Close and gate Wongawallan Road and Caballo Road to all vehicular traffic except management and specially authorised vehicles. Such closures will be temporary road closures under the Local Government Act and will take effect over tracks labelled a, b and c on Figure 2. The locations of locked gates is shown in Figure 3. Mountain biking, horse riding and bush walking will remain permitted uses following road closure. Horse step-overs will be provided and gate keys will be issued to management and other authorised personnel.</td>
<td>A12.1</td>
<td></td>
<td>H</td>
<td>1 year</td>
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<td></td>
<td>Investigate the feasibility of modifying the existing downhill mountain bike track in Eagle Heights Conservation Area. This mountain bike track roughly follows Wongawallan Road from the border of Scenic Rim Regional Council through Eagle Heights Conservation Area and down to the bitumen surface of Welches Road. At present the track criss crosses Wongawallan Road and needs to be rerouted off the road to mitigate the risk of a collision between a mountain bike and other vehicle. If the track can be effectively rerouted, it will be left open for mountain biking. If not, an alternative location may have to be considered.</td>
<td>A12.2</td>
<td></td>
<td>H</td>
<td>1 year</td>
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<td></td>
<td>Liaise with GCCC’s law enforcement officers to monitor and manage illegal vehicle access, including trail bike and four-wheel drive access to relevant reserves, but particularly targeting Eagle Heights Conservation Area and Caballo Road Reserve.</td>
<td>A12.7</td>
<td></td>
<td>H</td>
<td>ongoing</td>
</tr>
<tr>
<td>Commercial activities</td>
<td>Maintain a database of commercial operations within the planning area, including records of frequency, location, type/s and levels of use.</td>
<td>A14.2</td>
<td></td>
<td>M</td>
<td>ongoing</td>
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<tr>
<td>Location</td>
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<tr>
<td>Consolidation of estate and management of isolated reserves</td>
<td></td>
<td>A17.1</td>
<td>Implement reserve designation and domain changes recommended in Table 10.</td>
<td>M</td>
<td>5 years</td>
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<tr>
<td>Gladrose Reserve</td>
<td>Landscape protection</td>
<td>A4.2</td>
<td>Consolidate and increase the total area of reserves and the linkages between the Eagle Heights Conservation Area, Caballo Road Reserve and Gladrose Reserve.</td>
<td>M</td>
<td>5-10 years</td>
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<tr>
<td></td>
<td>Pest plants and ecological restoration</td>
<td>A6.3</td>
<td>Continue expanding the area undergoing ecological restoration and maintenance work at Eagle Heights Conservation Area, Gladrose Reserve and Pleasant Parklands, ensuring that adequate resources are provided for follow-up management.</td>
<td>H</td>
<td>ongoing</td>
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<td></td>
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<td>A6.4</td>
<td>As resources become available, establish vegetated buffers along the banks of waterways in the planning area in accordance with The Natural Wetland Areas and Natural Waterways Code of the GCCC Planning Scheme. This will be carried out by GCCC’s natural areas management officers in partnership with GCCC’s catchment management officers and may utilise the resources of appropriately trained and experienced community groups or contractors. This action will need to be sympathetic to any asset protection zones in the Tamborine Guanaba Bushfire Management Plan.</td>
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<tr>
<td>Recreation opportunities</td>
<td></td>
<td>A10.8</td>
<td>Provide information (including downloadable maps) on Council’s website relating to recreational opportunities within the planning area. This should include: 1) adding Gladrose Reserve, Guanaba Reserve and Eagle heights Conservation Area to the list of parks found in the ‘Exploring nature’ category of the Gold Coast Parks – ‘park finder’ internet search tool, and 2) adding a list of reserves that contain tracks suitable for bushwalking to the Gold Coast Parks 'Bushwalking' webpage, along with a short description of the walks and natural features that can be observed.</td>
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<td>Consolidation of estate and management of isolated reserves</td>
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<td>A17.1</td>
<td>Implement reserve designation and domain changes recommended in Table 10.</td>
<td>M</td>
<td>5 years</td>
</tr>
</tbody>
</table>

Naming of reserves within the planning area

A19.1

188 Hollindale Road (78WD687), which is directly adjacent to Eagle Heights Conservation Area will now be incorporated into Eagle Heights Conservation Area. The name Eagle Heights Conservation Area will be formalised for 78WD687 upon the adoption of this management plan.

<table>
<thead>
<tr>
<th>Priority</th>
<th>Timeframe</th>
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<tbody>
<tr>
<td>M</td>
<td>5 years</td>
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<tr>
<td>L</td>
<td>1 year</td>
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<tr>
<td>Location</td>
<td>Theme</td>
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<tr>
<td>Guanaba Creek Reserve</td>
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<td>Native flora</td>
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<tr>
<td>Pest plants and ecological restoration</td>
<td>A2.2</td>
</tr>
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<td>A6.4</td>
<td>As resources become available, establish vegetated buffers along the banks of waterways in the planning area in accordance with The Natural Wetland Areas and Natural Waterways Code of the GCCC Planning Scheme. This will be carried out by GCCC’s natural areas management officers in partnership with GCCC’s catchment management officers and may utilise the resources of appropriately trained and experienced community groups or contractors. This action will need to be sympathetic to any asset protection zones in the Tamborine Guanaba Bushfire Management Plan.</td>
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<tr>
<td>Recreation opportunities</td>
<td>A10.3</td>
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<td>Heritage Drive Reserve</td>
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<td>Hollindale Family Park</td>
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<td>Pest plants and ecological restoration</td>
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<td>A10.6</td>
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<td>A13.1</td>
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<td>Built Infrastructure</td>
<td>A11.6</td>
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<td>Consolidation of estate and management of isolated reserves</td>
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<td>King Parrot Reserve</td>
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<td>Pest plants and ecological restoration</td>
<td>A6.2</td>
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<tr>
<td>Pest animals</td>
<td>A7.1</td>
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<td>Mystery Road Reserve</td>
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<td>Stewart Road Parklands</td>
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<td>Pest plants and ecological</td>
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6 References


Chenoweth Environmental Planning and Landscape Architecture, 2009. Clagiraba to Southern Moreton Bay Bioregional Corridor Study. Gold Coast City Council, Queensland.


Department of Environment and Climate Change (NSW), 2007, Spotted-tail Quoll Den and Latrine Sites, Private native Forestry Advisory Note 15, Department of Environment and Climate Change, NSW.

Department of Environment and Climate Change (NSW), 2008, Preliminary Draft Border Ranges Rainforest Biodiversity Management Plan (NSW & QLD) National Recovery Plan for the Border Ranges Hotspot Region, Department of Environment and Climate Change (NSW), Sydney.


Gold Coast City Council, 2004a, *Management Guidelines for sites acquired with funds from the Open Space Preservation Levy (Phase 1 and 2 Acquisition Programs)*, November 2004, GCCC, Gold Coast.

Gold Coast City Council, 2004b, *Our Natural Playground: A parks and recreation plan for the Gold Coast*. GCCC, Gold Coast.

Gold Coast City Council 2005a, *Gold Coast City Council Corporate Plan 2005-09*, GCCC, Gold Coast.


Gold Coast City Council, 2009d, *Gold Coast City Vegetation Community Representation Report 2009*, GCCC, Gold Coast.


Queensland Herbarium, 2009 Regional Ecosystem Description Database (REDD) Version 6.0b Updated November 2009, Department of Environment and Resource Management, Brisbane.


Smith, G. and Tran, C. 2008, Revised ecological fire intervals for the South East Queensland Bioregion. A report prepared for the EPA, Griffith University and SEQ Fire and Biodiversity Consortium, Australia.


Watson, F.J. 1944, *Vocabularies of Four Representative Tribes of South Eastern Queensland with grammatical notes thereof and some notes on manners and customs, also, a list of Aboriginal place names and their derivations*. Supplement to Journal of the Royal Geographical Society of Australasia (Queensland) no. 34, vol. XLVII.

Watson, P. 2001, *The role and use of fire for biodiversity conservation in Southeast Queensland*: Fire management guidelines derived from ecological research. SEQ Fire and Biodiversity Consortium, Griffith University Gold Coast, Queensland.


