

Queensland Parks
and Wildlife Service
Department of Environment
and Resource Management

Taunton National Park (Scientific)

Management Plan
2011



Northern Brigalow Belt Bioregion

Prepared by:

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Department of Environment and Resource Management

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Front cover photograph: Taunton National Park (Scientific). Photo: John Augusteyn, DERM.

Top right photograph: Sunset at Taunton National Park (Scientific). Photo: John Augusteyn, DERM.

Centre right photograph: Releasing a bridled nailtail wallaby. Photo: John Augusteyn, DERM.

Bottom right photograph: Wild flower at Taunton National Park (Scientific). Photo: John Augusteyn, DERM.

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Vision statement

Taunton National Park (Scientific) is a park with features of state and national conservation significance. The park is rich in native plants and wildlife of the Northern Brigalow Belt, such as bridled naitail wallabies *Onychogalea fraenata*.

Bridled naitail wallabies are protected and their associated habitats continue to receive special protection to maintain viable populations. The management requirements for long-term conservation are carefully monitored and well understood.

Partnerships with the Traditional Owners, local community, neighbours, bridled naitail wallaby recovery team, research institutes and conservation groups are firmly established and make a considerable contribution to the park's ongoing management.

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1. Management intent

The Draft Taunton National Park (Scientific) Management Plan provides the proposed strategies to guide the park's management, to conserve and expand the endangered bridled naitail wallaby *Onychogalea fraenata* population and maintain representative examples of regional ecosystems in the Northern Brigalow Belt Bioregion. The purposes of management for Taunton National Park (Scientific) will be to:

- conserve and increase the population of bridled naitail wallabies, through manipulating their habitat and controlling predators
- control or minimise threatening processes to the bridled naitail wallaby and the park's values
- involve Traditional Owners in park management, including decision making, natural resource and cultural heritage management
- preserve and respect the integrity of cultural heritage values
- encourage scientific research, surveys and monitoring
- foster good community relationships for community participation in park management
- proactively communicate with special interest stakeholder groups.

2. Basis for management

National parks (scientific) are designed to protect places or species with exceptional scientific value. The Queensland Parks and Wildlife Service (QPWS), which is part of the Department of Environment and Resource Management (DERM), is responsible for the day-to-day management of Taunton National Park (Scientific). The park is managed in accordance with the *Nature Conservation Act 1992* and associated regulations to protect land, cultural values and wildlife, particularly endangered bridled naitail wallabies and their habitat, as well as a significant example of Northern Brigalow Belt plants and animals.

Entry to the park is by permit only, and limited to authorised persons undertaking scientific research, monitoring or management activities or filming/photography that promotes the park's scientific values. Manipulating the habitat of the bridled naitail wallaby and other threatened wildlife can occur as part of scientific research on Taunton National Park (Scientific) and management actions aimed at helping the species recover. In addition, threatening processes relating to the wildlife, including threatening processes caused by other wildlife, may be controlled.

As bridled naitail wallabies are listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, the provisions of this Act also apply. The park supports the only wild population of this species. As such, the recovery plan for the bridled naitail wallaby, *Onychogalea fraenata 2005–2009* (and subsequent editions), guides the species' management. The wild population of a threatened species has a special status on the International Union for Conservation of Nature (IUCN) Red List. Bridled naitail wallabies are listed as endangered because the area where they occur is less than 5000 km², all self-sustaining populations are in three locations, and there is a continuing decline in the quality of habitat due to introduced weeds. Populations might fluctuate naturally in response to rainfall or, alternatively, drought poses a statistically likely major threat along with extreme fire and disease (the latter is not a proven threat, but is a threat to small populations generally) (McKnight 2008).

The park supports migratory rainbow bee-eaters *Merops ornatus*, which are listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (that is, those species listed under the Bonn Convention, the China–Australia Migratory Bird Agreement, the Japan–Australia Migratory Bird Agreement and/or the Korea–Australia Migratory Bird Agreement).

Traditional Owners have affiliations with this park and their involvement is an important part of management. Cultural resources are managed in accordance with the Burra Charter and the Charter for the Protection and Management of the Archaeological Heritage, which provides detailed guidelines for managing cultural heritage places. The *Queensland Heritage Act 1992* and the *Aboriginal Cultural Heritage Act 2003* provide the legislative framework for managing shared cultural heritage places on the park. In addition, all Indigenous places of historic or prehistoric significance, whether or not previously known or assessed, are protected under the provisions of the *Cultural Record (Landscapes and Queensland Estate) Act 1987*. Commonwealth and Queensland Government legislation provides for the recognition and protection of native title.

Taunton National Park (Scientific) is included in an area considered to be the traditional country of the Ghungalu and Kangoulu people. This plan does not affect any future native title claims over the area.

3. Location and regional context

In 1973, bridled naitail wallabies were rediscovered on Taunton, then a grazing property. Prior to this, the species had been thought to be extinct, with no confirmed sightings since 1937. Taunton was subsequently bought by the Queensland Government in 1979 and declared a scientific reserve under the *Land Act 1994*, with the aim of protecting bridled naitail wallabies. In 1984, the adjoining grazing property, Red Hill, was also bought and added to the reserve. With the advent of the Nature Conservation Act, the reserve became Taunton National Park (Scientific).

Taunton National Park (Scientific) is 150 km west of Rockhampton near the small township of Dingo in Central Queensland. The park is accessed via the Capricorn Highway, west of Dingo or north of Dingo along the Fitzroy Development Road (Appendix A Map 1). Public access to the park is restricted.

Taunton National Park (Scientific) lies in both the Isaac–Comet Downs and Woorabinda sub-regions of the Northern Brigalow Belt Bioregion. The park’s property description is Lot 25 on Plan 655 in the Parish of Walton. The 11 626 ha park is in the Central Highlands Shire.

The park contains dense brigalow *Acacia harpophylla* forest, which is characteristic of the bioregion. Open grassy eucalypt woodland, dominated by poplar box *Eucalyptus populnea*, covers a significant portion of the park and represents a vegetation type once widespread throughout Queensland, but now found only in isolated pockets. Wide-scale clearing has occurred since about 1950, with the bioregion becoming a major agricultural and pastoral area. Taunton National Park (Scientific) contains a significant representation of vegetation communities that have been otherwise extensively cleared, making the park regionally significant, as it is completely surrounded by cattle grazing properties.

Droughts are frequent and inevitable in Central Queensland. Therefore, it is vitally important to understand the consequences of drought for population dynamics and long-term persistence of bridled naitail wallabies in the wild.

4. Protecting and presenting the park’s values

4.1 Landscape

4.1.1 Geology and landscape

The park consists of a relatively flat landscape, which gently slopes from the highest points on the northern and western boundaries to the lowest on the southern and eastern boundaries. Cracking clay soils predominate on the Taunton (northern) sector, resulting in vegetation communities dominated by brigalow species. Texture-contrast soils predominate on the Red Hill (western) sector, resulting in vegetation communities dominated by eucalypt species.

Prior to gazettal, the park was used as a grazing property, with large areas of land cleared. Clearing and fire have changed the landscape, particularly the structure and extent of some vegetation communities, including significantly reducing the dense brigalow scrub. The park is completely surrounded by cleared grazing properties.

Desired outcomes 2021	Actions and guidelines
Natural geological processes are maintained.	A1. Restore areas of erosion or degradation caused by human activity to naturally functioning ecosystems that support natural processes.

4.1.2 Freshwater systems

Taunton has small seasonal creeks and 14 dams which were part of the original property. Most of these dams sustain water throughout the year, but three have silted up and are dry for nine months of the year. The average annual rainfall is approximately 800 mm, the majority received in summer.

As artificial waters are not part of the natural environment, the QPWS policy is to decommission water bodies not considered crucial for bridled naitail wallaby survival or necessary for park management. Before this occurs, further research is required to determine the importance of artificial waters and surrounding vegetation to bridled naitail wallabies and other wildlife, as the value of the dams as a permanent water source during drought events is unclear.

A permanent water supply on the park is required for domestic use at the barracks accommodation as well as for other requirements, such as vehicle wash-down, pest plant spraying and fire fighting. Domestic water supply is sourced both from rainwater tanks and ‘dam one’. Domestic demand can be quite high for short periods throughout the year, particularly at times when large numbers of people are using the barracks accommodation for workshops, university studies, fire management exercises and the like.

Desired outcomes 2021	Actions and guidelines
<p>The value of permanent water sources for the bridled naitail wallaby and other wildlife is understood.</p> <p>Dams necessary for the ongoing viability of the bridled naitail wallaby populations or park management are retained.</p>	<p>A2. Research, identify and monitor the significance of dams and associated vegetation for sustaining bridled naitail wallabies.</p> <p>A3. Based on the results of monitoring, dams considered necessary for the ongoing viability of the bridled naitail wallaby populations or park management will be retained. All others will be decommissioned.</p>
<p>The catchment of Taunton National Park (Scientific) provides good quality surface waters, with impacts from erosion, sediment and other pollutants minimised.</p>	<p>A4. Ensure that management actions do not compromise local surface hydrology and or values.</p>

4.2 Native plants and animals

4.2.1 Native plants

‘Brigalow’ can refer to a species of acacia *Acacia harpophylla*, or an ecological community dominated by *Acacia harpophylla* with the inclusion of other species, such as false sandalwood *Eremophila mitchelli*. It can also refer to an entire region where these species and communities occur, such as the Northern Brigalow Belt. Individually and as a complex community all have significant value, providing food and shelter to a host of animal species.

Plant species that form a dense, low scrub adjacent to open grasslands, such as brigalow, yellowwood *Terminalia oblongata* and currantbush *Carissa ovata*, provide ideal habitat for bridled naitail wallabies (Tierney 1986, Evans 1992).

The park contains a mosaic of vegetation communities characteristic of the bioregion, including 12 regional ecosystems ranging from open eucalypt woodland to mature brigalow forest and softwood scrub. These communities contain critical habitat for the only naturally occurring population of endangered bridled naitail wallabies. Four regional ecosystems found on the park are listed as endangered and two regional ecosystems are listed as of concern under DERM’s biodiversity status (Appendix C).

In these diverse ecosystems, more than 190 plant species have been recorded on the park. Of these, two species, *Solanum adenophorum* and *Solanum elachophyllum*, are endangered; two species are vulnerable and two other species are listed as near threatened under the Nature Conservation (Wildlife) Regulation 2006 (Appendix C).

Desired outcomes 2021	Actions and guidelines
<p>Vegetation monitoring improves existing knowledge and informs management decisions.</p>	<p>A5. Undertake a vegetation survey of the park to accurately map regional ecosystems and distributions of species of conservation significance to improve knowledge and management of these species.</p> <p>A6. Contribute data collected on the park’s native plants into WildNet, other DERM databases and the ParkInfo geographic information system.</p>

4.2.2 Native animals

The park is rich in wildlife typical of the brigalow belt, with at least four species of significant conservation value under state legislation and one species, the bridled naitail wallaby *Onychogalea fraenata*, listed as endangered under the Commonwealth Environmental Protection and Biodiversity Conservation Act (Appendix C).

A Recovery Plan for the Bridled Naitail Wallaby, *Onychogalea fraenata* 2005–2009 details the ecological requirements of the wallaby and the actions needed to conserve the species in Taunton National Park (Scientific), other protected areas and off the park estate. It contains initiatives aimed at restoring healthy populations of bridled naitail wallabies in the wild, including captive breeding, translocation, and community extension and education programs.

The core population of bridled nailtail wallabies on Taunton National Park (Scientific) exists in the steel yards paddock (Appendix A Map 2) with smaller numbers of wallabies possibly distributed in suitable habitat throughout the park. Currently, the twice-yearly survey of the steel yards paddock uses trapping and spotlighting to estimate wallaby numbers and the general health of this main population. Fisher et al. (2001) found that mark-recapture methods had a limited ability to detect moderate changes in the population size particularly when food is more abundant, due to large statistical confidence intervals. It is vital that census methods accurately reveal any significant changes in the bridled nailtail wallaby population, allowing management intervention such as supplementary feeding, treatment for parasites or more intensive predator control, where appropriate. Therefore estimating the bridled nailtail wallaby's population size using other methods, such as hair-trapping and camera-trapping, should be considered where appropriate and cost-effective.

While wallaby populations may respond to seasonal rainfall events, the success of these responses may be compromised by predation by wild dogs, dingoes and cats, hydatid infestation and buffel grass invasion (G. Lundie-Jenkins, pers. comm., 2008). Monitoring methodologies will continue to provide valuable data on carnivore numbers on Taunton, enabling a comparison of non-baiting and baiting periods as well as seasonal influences. This will be critical to understanding the influence of predation. It may also help determine how significant habitat change and condition might be to the population's viability.

More than 70 bird species have been recorded on the park, about one-quarter of these are aquatic. The southern sub-species of squatter pigeon *Geophaps scripta scripta* has been recorded on the park and is particularly noteworthy due to its listing as vulnerable under both the Commonwealth Environmental Protection and Biodiversity Conservation Act and the Nature Conservation Act.

The park also supports populations of black-striped wallabies *Macropus dorsalis* and eastern grey kangaroos *Macropus giganteus*. Park management may need to consider macropod population manipulation or feed supplementation if managing wild dogs and dingoes results in increased herbivore competition, particularly when herbage is scarce, such as during drought or after fire.

Koalas *Phascolarctos cinereus* have been recorded on the park but are not regularly seen. Taunton's brigalow communities provide habitat for a host of reptiles. The brigalow scaly-foot *Paradelma orientalis*, a flap-footed lizard listed as vulnerable under Queensland, Commonwealth and international legislation, appears to require relatively undisturbed forest or regrowth and has difficulty crossing broad cleared areas. The near threatened tree-dwelling golden-tailed gecko *Strophurus taenicauda* is also found on the park.

Four of the six Australian snake families are found on Taunton. Tree snakes, pythons, venomous snakes and blind snakes are all found in brigalow communities.

Desired outcomes 2021	Actions and guidelines
A viable and resilient population of bridled nailtail wallabies persists in the park and on adjacent lands.	A7. Continue to implement the bridled nailtail wallaby recovery plan to guide management of the species and enhance its habitat on Taunton National Park (Scientific). A8. Develop and implement an appropriate monitoring protocol to determine and monitor the abundance and distribution of bridled nailtail wallabies over the whole park.
Self sustaining and expanding wild populations of bridled nailtail wallabies exist remotely to Taunton National Park (Scientific).	A9. Further translocation of wallabies from wild population on Taunton National Park (Scientific) should occur only where the viability of the Taunton population is assured.
The integrity of native animal communities is maintained and adequate information is available to aid management decisions.	A10. Maintain and contribute to DERM's geographic information systems and databases as the basis for recording and storing data relating to the monitoring of native wildlife.

4.2.3 Habitat manipulation

Maximising habitat condition by promoting fodder species is a key strategy to increase and sustain the bridled nailtail wallaby population in the buffel grass-dominated grasslands on Taunton National Park (Scientific). In the early 1990s, 27 feed strips were trialled with different treatments aimed at promoting fodder growth for bridled nailtail wallabies over winter. Some of these strips are now naturally regenerating with dense brigalow regrowth and little or no buffel grass. Various techniques have been employed on the remaining feed strips in an effort to reduce buffel grass dominance and encourage the forbs and succulents favoured by the wallabies, particularly over the winter months. Manipulation techniques have included ploughing and discing several patches to break up large tussocks of buffel grass and burning to reduce the shading effect produced by large buffel grass plants and to

promote forb germination. Slashing provides the shortest period of ideal vegetation condition; however, it is obviously effective in removing buffel grass biomass. Research is currently being conducted to determine if burning or slashing at different times of year is more effective in controlling buffel grass.

Feed strip vegetation is monitored regularly to determine buffel grass dominance and the presence of desirable fodder species. Open feed strips also provide an opportunity to easily monitor bridled naitail wallabies and other macropod species with spotlight surveys.

In addition, Central Queensland University in conjunction with DERM, is conducting a study on several protected areas including Taunton National Park (Scientific) to examine techniques for managing buffel grass in central Queensland conservation reserves and to minimise or mitigate its impact on biodiversity values such as brigalow regrowth (Melzer, 2007). On Taunton National Park (Scientific), this involves manipulating brigalow suckering to increase the rate and extent of recovery of brigalow ecosystems and suppress buffel grass dominance.

Internal fencing and water supply has been built in some sections of the park for cattle grazing trials that may be used as a tool to manage buffel grass in future years.

Building and demolishing structures and roads on the park may change the current distribution of, and have an effect on, bridled naitail wallaby food, shelter and safety. These factors should be considered before building or removing any infrastructure. Hollow logs and concrete pipes have been strategically placed in suitable habitat throughout the park to give additional shelter and protection for bridled naitail wallabies.

Desired outcomes 2021	Actions and guidelines
Feed strip manipulations provide additional browse for bridled naitail wallabies in winter and drought.	A11. Continue to trial and assess manipulation strategies to provide guidance for future feed strip management.
Brigalow and eucalypt woodland habitats are managed to promote suitable habitat for bridled naitail wallabies.	A12. Continue trials to manipulate and restore brigalow ecosystems and bridled naitail wallaby habitat. A13. Conduct controlled cattle grazing trials on the park to determine its value in reducing or minimising the impact of buffel grass in particular bridled naitail habitat on the park.

4.3 Indigenous culture

Taunton National Park (Scientific) is part of an area under native title claim by the Kangoulu and Ghungalu people. The relationship of Traditional Owners with their traditional country is a special one, and the whole landscape has important value to them.

Current and past management activities on Taunton National Park (Scientific) generally present a low risk to Indigenous cultural heritage values. Continued consultation and advice should be sought from the Traditional Owners on managing and protecting their heritage on the park, consistent with the Aboriginal Cultural Heritage Act. No formal assessments of Indigenous cultural heritage values for the park are recorded in the Aboriginal and Torres Strait Islander Cultural Heritage Database, but some areas of cultural significance exist.

At the time of writing this draft plan, the Kangoulu and Ghungalu people were developing a cultural heritage management plan for their country. It is hoped that Traditional Owners will continue to work cooperatively with QPWS to develop strategies and guidelines to conserve and manage the park's Indigenous cultural heritage.

Desired outcomes 2021	Actions and guidelines
The integrity of the Indigenous culture is preserved and respected and the park is cooperatively managed with Traditional Owners.	A14. Continue to develop and maintain working relationships with Traditional Owners on the joint management of protected areas in their country. A15. Ensure cultural heritage is managed in accordance with legislation. A16. Help develop a cultural heritage management plan for Taunton National Park (Scientific). A17. Record known cultural places in DERM databases. A18. In collaboration with the Traditional Owners, develop protocols and procedures to identify and maintain the integrity of cultural places, material and information.

4.4 Shared-history culture

Pastoral activity began in the district in the mid 1800s. Farming of the land in Taunton National Park (Scientific) boundaries dates at least as far back as the 1860s, when a pastoral lease, known as the Walton Run, was granted over the area. At some point between 1867 and 1883 the Red Hill lease, encompassing 19 166 hectares, was excised from the Walton Run. The original Red Hill lease occupied all of what is now the Taunton National Park (Scientific) as well as some adjacent land. A blazed shield tree located near the Dam Road on the park was possibly used as a survey point for a plan completed in 1884, which defines the watercourses on the property. This survey plan indicates that only half the lease area was available for grazing due to the dense brigalow scrub (Cameron, 2005).

The Red Hill lease was situated between the two major dray routes running west from Rockhampton: the Barcoo and Peak Downs roads. A connection road ran north from the Barcoo Road at Charlevue Creek following Lagoon Creek through Red Hill to the Peak Downs Road. Sections of this old road appear to have survived in the line of the track called the Old Road that follows the eastern side of the Lagoon Creek north of the Red Hill ranger base.

Some archaeological evidence of the pastoral operations that occurred on the park still remains. The oldest structure on the park is the current ranger's house, which is believed to have been built around 1932. The only remains of the original Red Hill homestead site is an ant bed floor from the old hut, located about 2 km north of the present house. Other relics associated with the park's shared-history include blazed survey trees marking access roads and boundaries, shallow coal pits, a timber-lined well and a timber-framed iron water trough, stockyards, old fences and windmills.

Some earlier buildings and structures associated with the Red Hill leasehold, including the meat house, stockmen's quarters, garage, machinery shed, tool and saddle shed, hen house and pig pens, were deemed a health and safety concern and subsequently demolished during the 1980s. Current management activities on the park generally present a low risk to what remains of the shared-history cultural heritage values.

Desired outcomes 2021	Actions and guidelines
Sites and materials of cultural significance are protected.	A19. Maintain and protect buildings and other structures of shared-history cultural significance for park management where appropriate, and otherwise allow natural degeneration of cultural sites and materials.

4.5 Education and science

4.5.1 Education

University and community groups frequently visit Taunton National Park (Scientific) to undertake permitted activities such as research because of the park's conservation values and location. It is an ideal site to present sound and innovative pest management practices to the broader community, and offers further study opportunities for post-graduate students. However, appropriate permits must be obtained prior to access.

Taunton is the focus of research and adaptive management programs that can be used to inform threatened species and pest management, particularly on protected estates. On-ground monitoring and the evaluation of results is an important part of the program.

Desired outcomes 2021	Actions and guidelines
Results from research and monitoring projects are communicated to park neighbours and the broader community.	A20. Liaise with neighbouring landholders and the broader community to provide awareness and updates on research and park management activities.

4.5.2 Science

Taunton National Park (Scientific) provides plentiful opportunities for scientific research and monitoring programs. Research has been undertaken by DERM staff and people from various institutions in the fields of ecology, zoology, and genetics, mostly relating to bridled naitail wallabies and other species such as spotted bowerbirds. This valuable information helps inform park management decisions. On-park research programs conducted by external bodies require a permit to take, use, keep or interfere with a cultural or natural resource for scientific purposes. Information from completed research projects is not well collated and, in its current form, has limited value for management. Monitoring data from pest and fire management programs is collected, analysed and stored by DERM.

Monitoring, currently conducted by DERM staff, includes mark-recapture surveys of bridled nailtail wallabies, activity indices to monitor pest animal activity, pest plant monitoring, vegetation surveys and wildlife surveys. The results of these and other external studies will improve the body of knowledge used to guide park management locally. However, the research may also have uses in other areas both on and off-park at regional, state and national levels and should be communicated as such.

Ongoing research is critical to identify factors constraining bridled nailtail wallaby recovery and to guide strategies to increase the park’s population.

Desired outcomes 2021	Actions and guidelines
Existing research findings are collated and interpreted to provide specific management recommendations.	A21. Continue to collate and communicate information from previous research projects to guide park management decisions and future research on the park.
Research and monitoring provides direction for park and species management and creates and strengthens networks and partnerships to share knowledge and skills in species and habitat management.	<p>A22. Maintain and contribute to DERM’s information systems as the basis for recording and storing data relating to the monitoring of native plant and animal populations, pest and fire management activities.</p> <p>A23. Build networks and actively encourage researchers and staff from universities, museums and the herbarium to undertake research into specific areas identified from gaps in existing information. Key areas for further research include:</p> <ul style="list-style-type: none"> • identifying and monitoring the variables regulating bridled nailtail wallaby density and distribution on the park • determining the distribution of bridled nailtail wallabies across Taunton and abundance and population trends in each area of occurrence • monitoring the population structure of the bridled nailtail wallaby • determining the occurrence and impacts of hydatids (parasitic tapeworms) on bridled nailtail wallabies • reviewing dietary analysis data and diet shift of bridled nailtail wallabies • assessing populations of other macropod species and their interactions with bridled nailtail wallabies • assessing the interaction of predator populations • assessing habitat structure, composition and condition (including fodder) in past and present areas of occurrence or abundance of bridled nailtail wallabies • determining brigalow regrowth or succession • managing buffel grass (including controlled cattle grazing trials) • determining the importance of artificial surface waters and associated vegetation to bridled nailtail wallabies and other wildlife, particularly during drought periods • monitoring and assessing cultural heritage places.

4.6 Partnerships

Taunton National Park (Scientific) was created to help the bridled nailtail wallaby population recover. The recovery process is constantly evolving as new information emerges and research programs are refined. An adaptive management approach is therefore essential for Taunton National Park (Scientific) to ensure management strategies reflect the best available information. This is best facilitated through a partnership approach to management that incorporates all the available experts in the field of bridled nailtail conservation, research and management.

A bridled naitail recovery team was established in 1993 and currently comprises representatives from the Fitzroy Basin Association, Central Queensland University, the University of Queensland, QPWS, Wildlife Preservation Society of Queensland, Capricorn Conservation Council, Australian Animals Care and Education and landholders. The team was responsible for coordinating and overseeing the management and programs or projects related to bridled naitail wallaby recovery, and communicating research results and management issues. Collectively, the team identified gaps in resources and their implications, and sought to redress them. As such, the recovery team played a crucial part in ensuring the actions of the bridled naitail wallaby recovery plan and the park’s management plan were implemented and their success monitored. However, for a range of reasons, the team has not met for several years.

Fostering and maintaining open, positive and respectful relationships with neighbours and local communities is an important priority for DERM. Nine properties share a common boundary with Taunton National Park (Scientific) and cooperation with these landholders is vital to effectively and efficiently managing the park, as the natural elements do not recognise park boundaries.

Shared management issues include fire, pest plant and animal control, water quality and boundary maintenance. DERM participates in community baiting programs to control wild dogs on Taunton National Park (Scientific) and adjoining lands, a practice that may continue if research indicates baiting is the most effective control option for combating predation of bridled naitail wallabies. Communicating baiting activities with neighbours is particularly important to avoid working dogs accidentally taking baits.

The hunting and conservation division of the Sporting Shooters Association of Australia regularly helps control predators both on Taunton National Park (Scientific) and on neighbouring properties. This may be particularly valuable in removing pest animals with an aversion to meat baits.

In areas of significant conservation value, QPWS should continue to encourage nature refuge agreements with neighbouring landholders, sharing the benefits of funding assistance and protecting habitat for wildlife, in particular bridled naitail wallabies.

Desired outcomes 2021	Actions and guidelines
An adaptive approach to management of Taunton National Park (Scientific) and bridled naitail wallabies is guided by an expert panel, supported by ongoing research and monitoring.	A24. Establish a bridled naitail wallaby advisory committee comprised of a broad range of stakeholders to coordinate and oversee research and management programs for the recovery of the species.
Good working relationships are maintained with neighbouring landholders, natural resource management groups, other government agencies, local rural fire brigade and fire wardens, and research organisations.	A25. Consider issues and problems faced by neighbouring landholders in managing the park and establish or maintain co-operative management arrangements with adjacent landholders. A26. Continue to inform the community about the habitat requirements to conserve the bridled naitail wallaby population. A27. Encourage landholders to participate in perpetual conservation agreements, such as the nature refuge program, to conserve areas that provide suitable habitat for bridled naitail wallabies. A28. Encourage the Sporting Shooters Association of Australia to continue to help control park predators. A29. Encourage neighbouring landholders to report sightings of bridled naitail wallabies to park staff. A30. Work cooperatively with the rural fire brigade and help with adjacent planned burning activities or wildfires, where requested.

4.7 Site-specific management

4.7.1 Park access

As Taunton National Park (Scientific) was gazetted for scientific purposes, public access to the park is restricted to authorised personnel. The main road through the park links the Red Hill (western) section to the Taunton park base. The park is further divided into a network of service roads and firebreaks to allow for fire control and other general park management operations. Most firebreaks are maintained as passable to service vehicles year-round, in accordance with the QPWS road classification system, with more intensive maintenance (flat blading) preceding planned burns and the wildfire season.

The ability to traverse some roads is hindered in wet weather with access throughout the park impossible for short periods of the year.

Desired outcomes 2021	Actions and guidelines
Park roads are maintained to standards as described in the QPWS road classification, as appropriate for the park.	A31. Restrict use of internal roads during wet weather to avoid unnecessary deterioration.
Permitted access and use is consistent with the management principles for national parks (scientific) under the Nature Conservation Act.	A32. Ensure that permits to enter are obtained from DERM prior to entry to the park. Permits will only be granted to people entering the park for scientific research, monitoring, management activities or filming/photography that promotes the park's scientific values.

5. Other key issues and responses

5.1 Pest management

Pest plants in the park and on adjoining lands are of concern because they have, or could have, detrimental effects on ecological values. Under the *Land Protection (Pest and Stock Route Management) Act 2002* DERM is also responsible for controlling declared pests on protected areas. Class 2 Queensland declared plant species found on the park include mother of millions *Bryophyllum* spp, parthenium *Parthenium hysterophorus*, rubber vine *Cryptostegia grandiflora*, giant rats tail grass *Sporobolus* spp. and harissia cactus *Eriocereus martini*. Much effort has been made to significantly reduce populations of these species on Taunton National Park (Scientific) and this should continue, guided by a pest management strategy.

Buffel grass *Pennisetum ciliare* has rapidly spread throughout the park in the past decade. It poses a serious threat to the survival of the bridled naitail wallaby population because it out-competes native fodder species, creates an impenetrable sward that may restrict their dispersal and inhibits accurate data collection (Lundie-Jenkins et al 2005). It also alters the structure of vegetation communities. The biomass and density of a buffel grass sward is greater than that of the local native species and this typically increases the extent, intensity and frequency of fires (Melzer et al 2006). Buffel grass is a difficult species to control because it reaches maturity rapidly, flowers and fruits for long periods, produces large quantities of seed that are readily dispersed, is tolerant of sustained grazing, is one of the most drought resistant of the introduced grasses and is

encouraged by burning (Franks and Hannah, 2002). In general, buffel infestation is highest in non-remnant areas of the park while remnant *Acacia* spp. dominated communities have lower levels of buffel infestation. In particular, those communities dominated by bendee *Acacia catenulata* with an understorey of *Aristida* spp. have the lowest level of buffel grass infestation (D Beard, pers. comm., 2009).

Vehicle and machinery wash-down procedures should be an integral component of pest plant control efforts on Taunton National Park (Scientific). A wash-down bay should be built at the Taunton base to stop the spread of pest plants.

Dingoes *Canis lupus dingo*, wild dogs *Canis familiaris* and cats *Felis catus* are common in the park. They are regularly seen or heard and are known to prey on small macropods, including bridled naitail wallabies. Bridled naitail wallabies are also in the prey range of foxes *Vulpes vulpes* but to date, foxes have not been recorded on park. However, they are occasionally seen in the district. An incursion of foxes can have a rapid and serious effect on bridled naitail wallabies; the impacts will depend on how quickly the incursion is detected (G. Lundie-Jenkins, pers. comm., 2008).

Cats prey on bridled naitail wallabies, especially juveniles that are often concealed in dense vegetation for long periods by their mothers (Fisher, 1998). This threat may be worse during drought when there is limited ground cover. Monitoring data will help determine if and when additional control is required.

Baiting of wild dogs has occurred regularly on the park, including before acquisition. At times, park neighbours have participated in joint boundary baiting programs. Research involving collaring and tracking of wild dogs has helped refine baiting strategies.

Predator control strategies will reduce numbers but will not eliminate all pests from the area, so ongoing commitment to management programs is still needed. The critical periods of predation for bridled nailtail wallabies are likely to be when the population is recovering from drought and numbers are low (G. Lundie-Jenkins, pers. comm., 2008). The aim must be to control predation, allowing the population of bridled nailtail wallabies to recover to a level able to persist through another drought or statistically likely climatic disturbance (D. Fisher, pers. comm., 2008). The program should correlate with seasonal predator behaviour and places that give the greatest conservation outcomes and pose minimal threat to park neighbours, park staff, native wildlife or natural ecosystems.

Small numbers of pigs *Sus scrofa* are found throughout the park and surrounding properties, with numbers fluctuating with seasonal conditions. Pig damage on the park has been seasonal and minor. Impacts include habitat modification through trampling and digging damage for ground parts of plants and invertebrates, particularly when the ground is soft after rain. They wallow in dams and creeks, fouling water supplies. At Taunton National Park (Scientific) trapping may be the most appropriate pig control technique because of the low numbers of animals involved and the ease of trapping at water points during dry periods.

Rabbits *Oryctolagus cuniculus* occur on the park with numbers also fluctuating between seasons. Rabbits are an alternative food source for other pest animals and are not considered a major threat to bridled nailtail wallabies or any other species known to exist on the park as long as numbers stay low.

The park is fenced to exclude neighbouring stock. Most fences are beside roads or fire control lines, providing adequate protection from fire and convenient access for maintenance. On occasions, neighbouring cattle *Bos taurus* stray onto the park, their removal undertaken by their owners.

Desired outcomes 2021	Actions and guidelines
<p>The impact of pests, particularly on bridled nailtail wallabies, is known and minimised through strategic, sustained management.</p>	<p>A33. Manage pest plants and animals in accordance with the Management of Pests on QPWS-managed Areas — Operational Policy, including:</p> <ul style="list-style-type: none"> • use the QPWS pest management system and ParkInfo to plan, manage, record and monitor all pests and pest management • where practical and appropriate, QPWS will participate cooperatively in pest management planning and implementation across the landscape with surrounding land managers, other government departments, local governments and utility providers to ensure landscape-level pest management is successful • follow all pest management principles outlined in the QPWS Good Neighbour Policy • ensure any pest management will not adversely affect the park's natural integrity and use the best available scientific and technical knowledge. <p>A34. Continue to evaluate and refine current monitoring methods to improve the accuracy of data collection.</p> <p>A35. Encourage neighbouring landholders to report fox sightings to park staff immediately to facilitate a rapid response.</p>
<p>The movement of weed seeds to and from the park is minimised.</p>	<p>A36. Build a vehicle wash-down bay in the park and ensure vehicle hygiene becomes a routine activity for visitors and staff.</p>

5.2 Fire management

Fire is a very important ecological management tool and has played a major role in shaping the Australian landscape. Fire (or its absence) is critical to maintaining the park's conservation values. Therefore, fire planning is essential. While some vegetation communities need fire to maintain structure and composition, others are fire-sensitive and are subsequently managed accordingly with fire exclusion zones.

Active fire management is an ongoing responsibility. On park, the fire regime is manipulated to meet the conservation objectives for the bridled nailtail wallabies. In addition to ecological requirements, fuel reduction burns temporarily remove rank buffel grass on feeding strips, provide fresh pick and minimise the intensity and occurrence of wildfires. In other areas, such as the brigalow forests and softwood scrubs, fire is excluded naturally or by manipulation. Bridled nailtail wallabies shelter underneath the low shrubby bushes of young brigalow regrowth, among currantbush *Carissa ovata* thickets or in hollow logs. It is, therefore, critical that fire is excluded from these areas of habitat. Softwood scrubs are naturally fire-resistant due to their lack of combustible fuel.

A fire management strategy developed in 1994 has guided activities on the park, but fuel loads have changed with the encroachment of buffel grass and the strategy needs review. Historically, the risk of fire entering the park has been minimal except for the eastern boundary where fuel loads are greater. Wildfire threats and subsequent damage to fire-sensitive brigalow communities are growing with buffel grass encroachment on to the park. On Taunton National Park (Scientific), this has damaged fire-sensitive remnants and regrowth, both of which are critical shelter habitat for bridled nailtail wallabies. Effective fire control lines, appropriate burning regimes and good neighbour relationships will help minimise the risk of fires entering or leaving the park. Fire management practices on the park should aim to maintain the structural diversity in the brigalow forests.

A network of park tracks is also used as fire control lines, as well as access for trapping bridled nailtail wallabies and monitoring and baiting predators. Some purpose-built fire control lines are prepared as necessary for conducting annual burns and, when not in use, are allowed to revegetate to reduce environmental impacts, such as erosion and spread of pest plants. Other fire control lines, particularly those surrounding fire exclusion zones, are maintained free of fallen debris to allow emergency access in a wildfire event.

Desired outcomes 2021	Actions and guidelines
Human life, property, cultural values, and the biological diversity and integrity of plant and animal communities are protected through responsibly managing fire.	<p>A37. Review the existing fire management strategy with emphasis on minimising risk of wildfire, promoting and protecting suitable bridled nailtail wallaby habitat, maintaining fire sensitive vegetation and considering the requirements of neighbouring landholders.</p> <p>A38. Review the wildfire response procedure annually.</p> <p>A39. Coordinate fire management with landholders, local authorities, and fire-fighting agencies.</p>

5.3 Climate change

Living in a region where the average temperature has not only risen, but accelerated over the past decade (1998–2007), and the annual rainfall has declined by 13 per cent in the same period (Office of Climate Change, 2009), the bridled nailtail wallaby population on Taunton National Park (Scientific) is at risk from the effects of climate change. For a species that is already living in a much reduced, fragmented habitat, climate change is likely to cause a marked decline in the population (Matson, 2009).

The number and intensity of late, hot, dry season fires may increase as a result of more extreme weather events, such as hotter, longer droughts, likely altering optimal bridled nailtail wallaby habitat. Hotter temperatures and less predictable rainfall could cause waterholes to dry up, with pastures and desired browse vegetation species becoming depleted, causing starvation and dehydration of the less mobile bridled nailtail wallaby (Matson, 2009).

Droughts and increased incidence and intensity of fires will provide favourable conditions for some non-native species, putting bridled nailtail wallabies at greater risk of being killed by predators and allowing buffel grass and other pest plants to flourish.

Implementing appropriate fire management strategies, maximising the amount of optimal habitat available and minimising other threatening processes, like predation and buffel grass invasion, will give bridled nailtail wallabies the best chance of surviving the added pressure of climate change.

Desired outcomes 2021	Actions and guidelines
Fire-sensitive species and communities are not adversely impacted by hotter, drier conditions resulting from climate change.	A40. Protect fire-sensitive species and communities by developing and implementing appropriate fire management strategies as outlined in section 5.2.
Threatening processes exacerbated by climate change are minimised through appropriate pro-active management practices.	A41. Implement actions in sections 5.1, 4, 2.3 and 5.3 to reduce the impacts of predation and buffel grass invasion on bridled nailtail wallabies.
Suitable habitats are available and linked to help bridled nailtail wallabies move through the landscape and adapt to climate change impacts.	A42. Improve the condition and connectivity of optimal bridled nailtail habitat throughout the park and adjacent lands by implementing the actions outlined in sections 4.1 and 4.2.3.

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7. Hyperlinks

Bonn Convention < www.cms.int>

Disaster Management Act 2003 < www.legislation.qld.gov.au>

Environment Protection and Biodiversity Conservation Act 1999 and regulations 2000
<<http://www.environment.gov.au>>

Environmental Protection Act 1994 <www.legislation.qld.gov.au>

DERM website <www.derm.qld.gov.au>

Key threatening process <www.environment.gov.au>

Nature Conservation Act 1992 <www.legislation.qld.gov.au>

Nature Conservation (Protected Areas) Regulation 1994 <www.legislation.qld.gov.au>

Nature Conservation (Wildlife Management) Regulation 2006 <www.legislation.qld.gov.au>

Nature Conservation (Wildlife) Regulation 2006 <www.legislation.qld.gov.au>

QPWS Pest Management Plan: Areas managed by the Queensland Parks and Wildlife Service 2003–2008
<www.derm.qld.gov.au>

Queensland Heritage Act 1992 <www.legislation.qld.gov.au>

Regional ecosystems <www.derm.qld.gov.au>

8. Appendixes

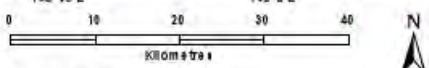
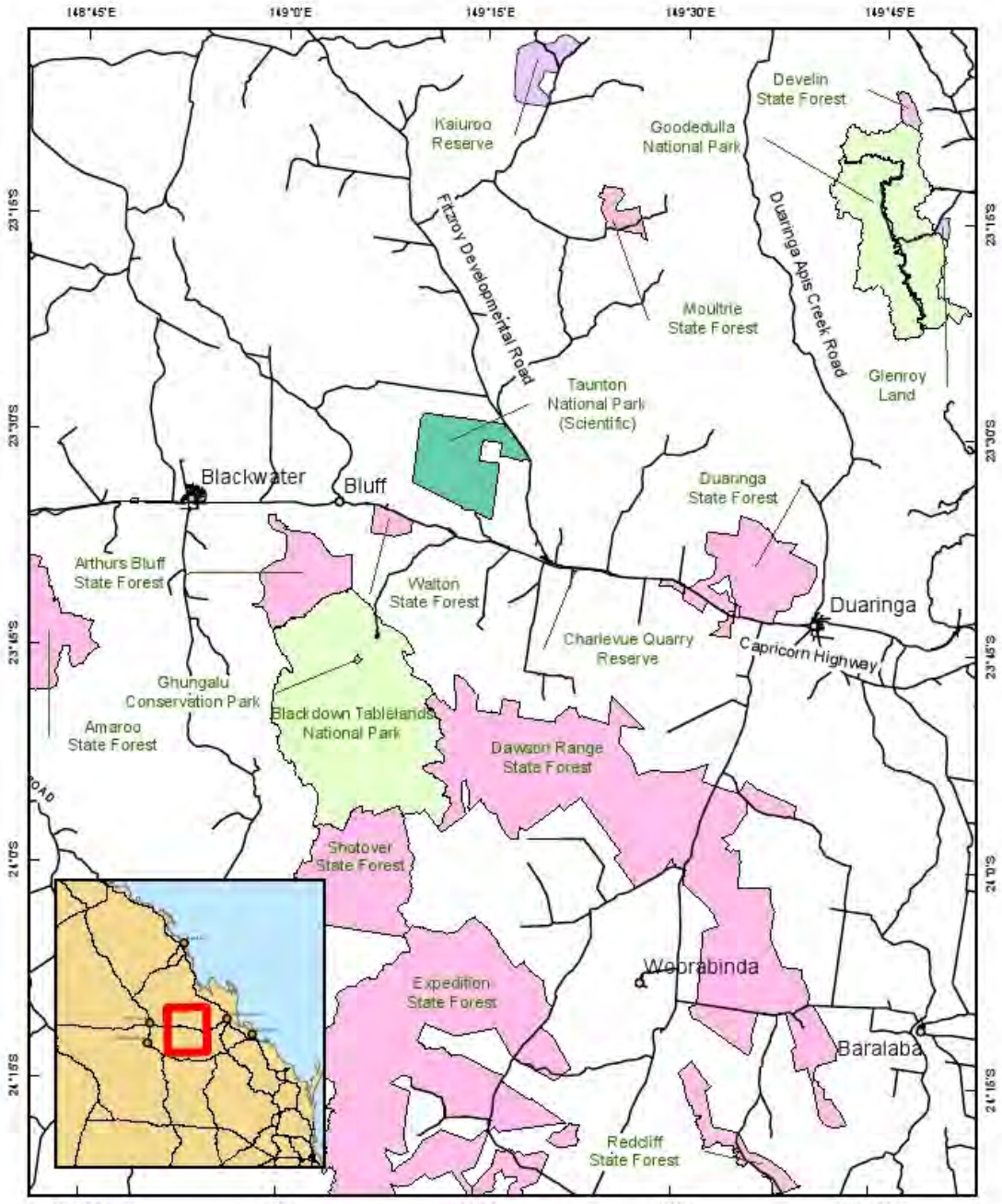
Appendix A – Maps

Appendix B – Definitions

Appendix C – Tables

Appendix A – Maps

Map 1 - Locality



Map Projection:
Universal Transverse Mercator (UTM) zone 56
Horizontal Datum:
Geocentric Datum of Australia 1994 (GDA94)

Map Production:
Spatial Services Group, Rockhampton,
Queensland Parks and Wildlife Service,
Department of Environment and Resource Management
18 November 2010

Disclaimer:
This map has been produced for the purpose of
information and comment. While the map
has been prepared with care, neither the
Queensland Government nor the Department
of Environment and Resource Management
accepts any liability for any decisions or actions
taken by individuals or organizations on the
basis of this map.

Accuracy statement:
Due to varying source, accuracy or currency
of data layered on this map, the spatial location
of features may not coincide when aerial.

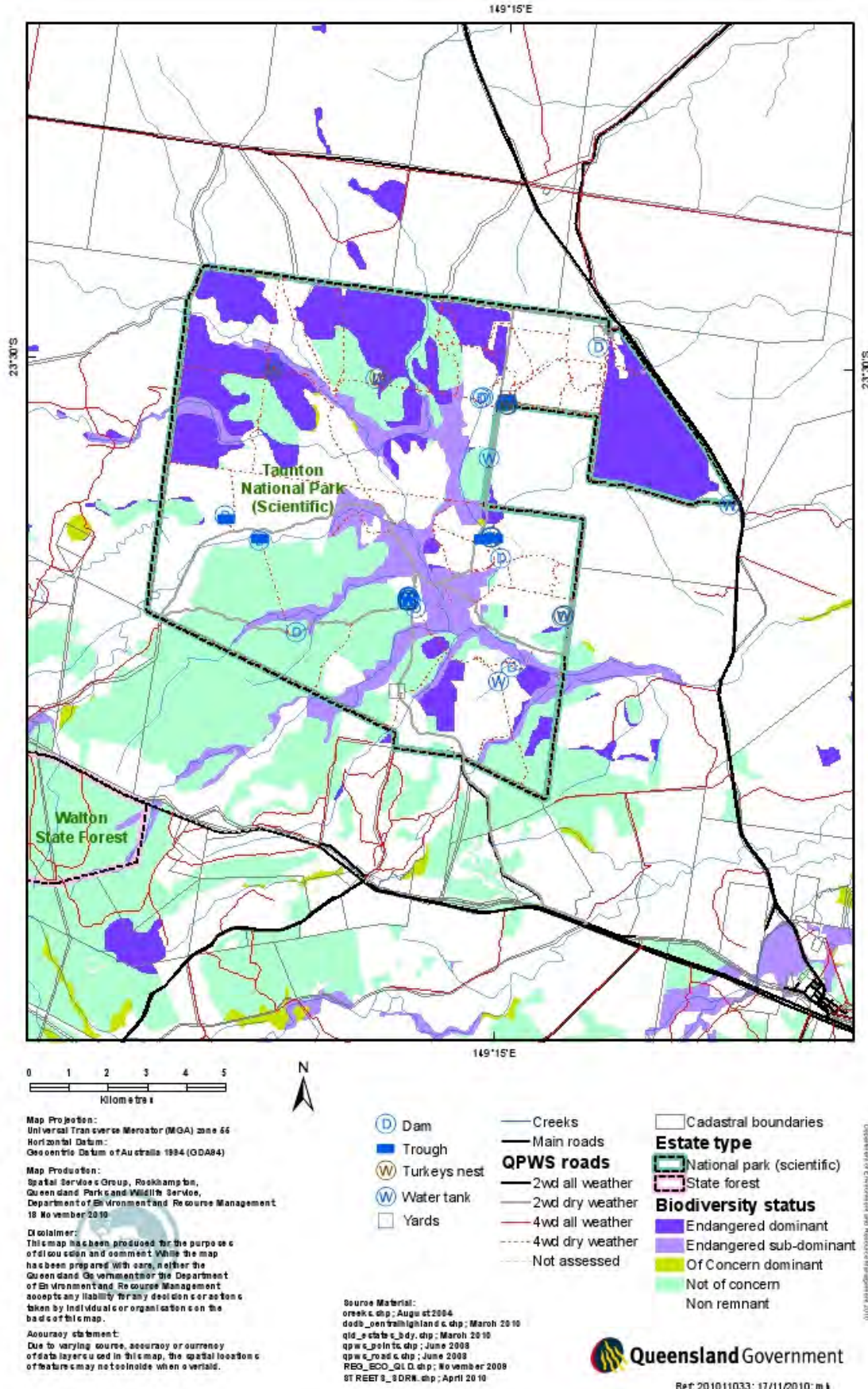
- Main roads
- National park (scientific)
- National park
- Conservation park
- State forest
- Other lands

Source Material:
abc_s_sws; July 2007
qid_csbto_s_dy.shp; March 2008
ST REEF 3_DRN.shp; April 2010



Ref: 201011033; 17/11/2010, m 1

Map 2 – Regional ecosystems and biodiversity status



Appendix B – Definitions

Aboriginal cultural heritage

Aboriginal cultural heritage is anything that is:

- (a) a significant Aboriginal area in Queensland
- (b) a significant Aboriginal object
- (c) evidence, of archaeological or historic significance, of Aboriginal occupation of an area of Queensland.

Biodiversity status (regional ecosystems)

The biodiversity status is based on an assessment of the condition of remnant vegetation in addition to the pre-clearing and remnant extent of a regional ecosystem. The current biodiversity status of regional ecosystems is available via the Regional Ecosystem Description Database on DERM's website along with information on the criteria used to assess each status.

Conservation significance

Native plant and animal species in the park which are listed under the Nature Conservation (Wildlife) Regulation 1994, species listed under JAMBA/CAMBA and other relevant legislation.

Endangered (regional ecosystems)

A regional ecosystem is listed as endangered under the DERM biodiversity status if:

- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*
- 10–30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10 000 hectares
- it is a rare* regional ecosystem subject to a threatening process*.

*refer to DERM's biodiversity status for further information.

Endangered (species)

At the state level, endangered species are those species listed as endangered under schedule 2 of Queensland's Nature Conservation (Wildlife) Regulation 2006. At the national level, endangered species are those species listed as endangered under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*

Of concern

A regional ecosystem is listed as of concern under the *Vegetation Management Act 1999* if remnant vegetation is 10–30 per cent of its pre-clearing extent across the bioregion or more than 30 per cent of its pre-clearing extent remains and the remnant extent is less than 10 000 hectares.

In addition, for biodiversity planning purposes, regional ecosystems are assigned a DERM biodiversity status of concern if 10–30 per cent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss. Moderate degradation and/or biodiversity loss is defined as floristic and/or faunal diversity that is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or, soil surface that is moderately degraded.

Protected area

An area of land or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

Regional ecosystems

Regional ecosystems were defined by Sattler and Williams (1999) as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. Readers should refer to this publication for background information about regional ecosystems and the bioregional planning framework used in Queensland.

Compiling the information about regional ecosystems presented in Sattler and Williams (1999) was derived from a broad range of existing information sources including land system, vegetation and geology mapping and reports. However, the framework is dynamic and is regularly reviewed as new information becomes available. During the past few years the Queensland Herbarium has developed a program for explicitly mapping regional ecosystems across Queensland.

This has resulted, and will continue to result, in updates to the descriptions and status of regional ecosystems. Therefore, updated regional ecosystem descriptions in the format of Sattler and Williams (1999) are maintained in DERM's Regional Ecosystem Description Database.

Vulnerable (species)

At the state level, vulnerable species are those species listed as vulnerable under schedule 3 of Queensland's Nature Conservation (Wildlife) Regulation 2006. At the national level, vulnerable species are those species listed as vulnerable under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*.

Appendix C – Tables

Table 1: Of concern or endangered regional ecosystem for Taunton National Park (Scientific).

Regional ecosystem number	Regional ecosystem name	DERM biodiversity status	Reason for status and the threats to ongoing sustainability
11.3.1	<i>Acacia harpophylla</i> and/or <i>Casuarina cristata</i> open forest on alluvial plains.	Endangered	Extensively cleared for cropping and pasture with low representation. Brigalow remnants on which native species now depend are marginal habitats such as steep, rocky slopes or are in poor condition and highly degraded. Tree and shrub cover are much reduced, there is a high incidence of weeds and feral animals which either further ruin the landscape or prey upon native animals. Over-grazing, soil erosion, raised water tables and salinity further reduce the quality of the remaining habitats.
11.3.2	Poplar box open woodland with a grassy low understorey on alluvial plains.	Of concern	Extensively cleared or modified by grazing with 10–30 % of the pre-clearing area remaining. Over-grazing, soil erosion, raised water tables and salinity further reduce the quality of the remaining habitats.
11.4.2	<i>Eucalyptus</i> spp. and/or <i>Corymbia</i> spp. grassy or shrubby woodland.	Of concern	Low representation in protected areas with extent was > 10 000 ha and 10–30 % of the pre-clearing area remaining. Over-grazing, soil erosion, raised water tables and salinity further reduce the quality of the remaining habitats.
11.4.9	Brigalow shrubby open forest to woodland, usually with yellow wood and false sandalwood.	Endangered	Extensively cleared or modified by grazing. Brigalow remnants on which native species now depend are marginal habitats such as steep, rocky slopes or are in poor condition and highly degraded. Tree and shrub cover are much reduced, there is a high incidence of weeds and feral animals which either further ruin the landscape or prey upon native animals. Over-grazing, soil erosion, raised water tables and salinity further reduce the quality of the remaining habitats.
11.9.1	<i>Acacia harpophylla</i> (brigalow) – <i>Eucalyptus cambageana</i> (Dawson gum) open forest to woodland on fine-grained sedimentary rocks.	Endangered	Extensively cleared or modified by grazing with <10 % of the pre-clearing area remaining. Brigalow remnants on which native species now depend are marginal habitats, such as steep, rocky slopes, or are in poor condition and highly degraded. Tree and shrub cover are much reduced, there is a high incidence of weeds and feral animals that either further ruin the landscape or prey upon native animals. Over-grazing, soil erosion, raised water tables and salinity further reduce the quality of the remaining habitats.
11.9.5	<i>Acacia harpophylla</i> (brigalow) open forest on fine-grained sedimentary rocks with a prominent low tree or tall shrub layer dominated by species, such as <i>Geijera parviflora</i> (wilga) and <i>Eremophila mitchellii</i> (false sandalwood), and with semi-evergreen vine thicket species.	Endangered	Extensively cleared or modified by grazing with <10 % of the pre-clearing area remaining. Brigalow remnants on which native species now depend are marginal habitats, such as steep, rocky slopes, or are in poor condition and highly degraded. Tree and shrub cover are much reduced, there is a high incidence of weeds and feral animals, which either further ruin the landscape or prey upon native animals. Over-grazing, soil erosion, raised water tables and salinity further reduce the quality of the remaining habitats.

Department of Environment Resource Management (2007). Regional Ecosystem Description Database (REDD). Version 5.2 Updated November 2007.

Database maintained by Queensland Herbarium, Department of Environmental Resource Management, Brisbane.

Table 2: Vulnerable, endangered and near threatened native animals for Taunton National Park (Scientific).

Family	Scientific name	Common name	Status under the Nature Conservation Act 1992	Status under the Environment Protection and Biodiversity Conservation Act 1999
Columbidae	<i>Geophaps scripta scripta</i>	Squatter pigeon (southern subspecies)	Vulnerable	Vulnerable
Gekkonidae	<i>Strophurus taenicauda</i>	Golden-tailed gecko	Near threatened	–
Macropodidae	<i>Onychogalea fraenata</i>	Bridled naitail wallaby	Endangered	Endangered
Pygopodidae	<i>Paradelma orientalis</i>	Brigalow scaly-foot (lizard)	Vulnerable	Vulnerable

Table 3: Endangered, vulnerable and near threatened native plants for Taunton National Park (Scientific).

Family	Scientific name	Common name	Status under the Nature Conservation Act 1992	Status under the Environment Protection and Biodiversity Conservation Act 1999
Apocynaceae	<i>Cerbera dumicola</i>	–	Near threatened	–
Poaceae	<i>Dichanthium setosum</i>	–	Near threatened	Vulnerable
Solanaceae	<i>Solanum adenophorum</i>	–	Endangered	–
Solanaceae	<i>Solanum elachophyllum</i>	–	Endangered	–

Table 4: Species listed in international agreements for Taunton National Park (Scientific).

Family	Scientific name	Common name	BONN	JAMBA	ROKAMBA	CAMBA
Meropidae	<i>Merops ornatus</i>	Rainbow bee-eater		✓		

