

## Appendix 35

### Mount Emerald Wind Farm Draft Offset Area Management Plan

Prepared by CO2 Australia Limited

# Mount Emerald Wind Farm Offset Plan RATCH-Australia Corporation Limited

Version 4 - May 2014

**REPORT TITLE:** Mount Emerald Wind Farm Offset Plan

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## ABBREVIATIONS AND ACRONYMS

<b>DoTE</b>	Australian Government Department of the Environment
<b>EIS</b>	environmental impact statement
<b>EIS guidelines</b>	Final Guidelines for an Environmental Impact Statement for the Mount Emerald Wind Farm April 2012 (Department of Sustainability, Environment, Water, Populations and Communities, 2012)
<b>EPBC Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i>
<b>offsets assessment guide</b>	EPBC Act Offsets Assessment Guide
<b>EPBC Act offsets policy</b>	EPBC Act Environmental Offsets Policy October 2012
<b>MNES</b>	matters of national environmental significance
<b>OAMP</b>	offset area management plan
<b>PMST</b>	Protected Matters Search Tool database (EPBC Act)
<b>the project</b>	Mount Emerald Wind Farm project
<b>SPRAT</b>	Species Profile and Threats database
<b>TEC</b>	threatened ecological community
<b>VM Act</b>	<i>Vegetation Management Act 1999 (Qld)</i>

## 1. INTRODUCTION

RATCH-Australia Corporation Limited (RAC) propose to develop the Mount Emerald Wind Farm project (the project) located north-west of Atherton in north Queensland (**Figure 1**). The project area (Lot 7 SP235244) is approximately 2,422 ha in size and will include 70 wind turbines and associated access tracks and electrical infrastructure feeding into the main electricity grid (Chalumbin-Woree transmission line).

The project has been designed to avoid and mitigate impacts on environmental values; however, residual, unavoidable impacts on matters of national environmental significance (MNES) remain. To compensate for these unavoidable impacts, RAC is committed to delivering offsets in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth; EPBC Act) Environmental Offsets Policy October 2012 (the EPBC Act offsets policy).

This report has been prepared to address Section 5.13 of the Final Guidelines for an Environmental Impact Statement (EIS) for the Mount Emerald Wind Farm April 2012 (EIS guidelines), and to inform the Australian Government Department of the Environment (DoTE) and the public about the proposed approach to offset delivery. The purpose of this report is to:

- provide an overview of the EPBC Act offset framework
- summarise how the project has been designed and located to avoid and mitigate impacts on protected environmental values
- identify the residual significant impacts of the project and associated offset requirements
- outline RAC's proposed approach to offset delivery including details of a direct offset option for further assessment
- provide details of potential compensatory measures
- outline RAC's proposed approach to offset implementation including the preparation and implementation of a detailed offset proposal.





Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

Ratch/Australia Corporation - Mount Emerald Wind Farm

LOCATION DIAGRAM

**Figure 1:  
Overview Map**

DATA SOURCE:  
The following datasets are © State of Qld 2013:  
- Cadastral Data (2011)

Offset area

DATE	AUTHOR	REQUESTED BY
24-02-2014	RF	LW

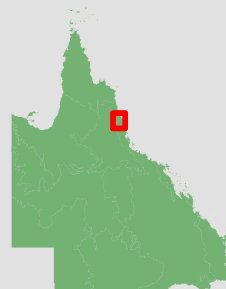
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0 5 10 15

Kilometres

1:500,000

(A4) GCS GDA 1994



## 2. PROJECT BACKGROUND

The proposed project was referred under the EPBC Act on 21 December 2011. On 24 January 2012, the Australian Government determined that the project was a controlled action under the provisions of the EPBC Act due to the project's potential impacts on MNES. The controlling provisions for the project are:

- world heritage properties (sections 12 and 15A)
- national heritage places (sections 15B and 15C)
- listed threatened species and ecological communities (sections 18 and 18A)
- listed migratory species (sections 20 and 20A).

On the same date, the Australian Government also determined that the proposed project be assessed by EIS in accordance the EIS guidelines. A draft EIS has been prepared by RAC and was submitted to the Australian Government in November 2013.

RAC is also seeking local and Queensland Government approval for the project and in March 2012 submitted an application for a development permit for a material change of use for the purpose of a 'wind farm' as defined under the Mareeba Shire Planning Scheme Temporary Local Planning Instrument 01/11. RAC has recently been granted an extension for the submission of environmental and technical reports to fulfil local and Queensland Government requirements until April 2014. It is possible that impacts to particular state significant biodiversity values that cannot be reasonably avoided or mitigated (i.e. residual impacts) will require environmental offsets as a condition of Queensland Government approval. Assessment of the offset requirements of the project under Queensland legislation will be undertaken separate to the assessment of Australian Government requirements, as presented in this report.

### 2.1. PROJECT DESCRIPTION

The project is located on a plateau stretching west of the Kennedy Highway between the towns of Walkamin and Tolga on the Atherton Tablelands, approximately 50 km south-west of Cairns. It is located within Tablelands Regional Council local government area and straddles the Wet Tropics bioregion and the Einasleigh Uplands bioregion. The project area is approximately 2,422 ha in size and will include 70 wind turbines and associated access tracks and electrical infrastructure feeding into the main electricity grid (Chalumbin-Woree transmission line). Each tower will be approximately 80 to 90 m high with approximately 50 m blades, utilising 3 MW machines.

### 2.2. FIELD SURVEYS

Flora and vegetation assessments were undertaken on and surrounding the project area by RPS Group between May 2010 and December 2013 and are documented in the Mount Emerald Flora Report (RPS, 2013). Vegetation survey sites were established across the project area to determine the ecology of the vegetation and its flora, with a particular focus on determining the project's impacts on MNES. All vascular plant species were recorded and an inventory of species was compiled. Voucher specimens were collected for species that could not be identified in the field and lodged with the Queensland Herbarium for formal identification.

Due to the unique characteristics of the project area (including elevation, exposure and landform), poorly represented vegetation communities are present. The project area is almost entirely covered in remnant, dry sclerophyll woodland vegetation on rhyolite geology and is dominated by a series of roughly parallel high rocky ridges, up to 1000 m altitude, dissected by ephemeral creek lines. Remnant vegetation present in the project area is classified under Queensland's *Vegetation Management Act 1999* (VM Act) as least concern and of concern. As a result of field surveys it has been determined that two vulnerable flora species likely to be significantly impacted by the construction and operation of the project are listed as MNES – *Grevillea glossadenia* and *Homoranthus porteri*.



Preliminary surveys undertaken in mid- 2010 also assessed the presence/absence of MNES fauna species within the project area. Subsequent targeted fauna surveys were conducted between August 2012 to September 2013. Fauna survey methodologies were developed and implemented in accordance with the:

- Wildlife Survey Guidelines, NSW Department of Agriculture and NSW National Parks and Wildlife Service (recognised and recommended wildlife survey guidelines for Queensland use) including:
- ANZCCART Guidelines for the Euthanasia of Animals Used for Scientific Purposes; and
- Hygiene protocol for the control of disease in frogs (NSW National Parks and Wildlife Service).

The results of these surveys indicate that three terrestrial fauna species listed as MNES are likely to be significantly impacted by the construction and operation of the project – the endangered northern quoll (*Dasyurus hallucatus*), the critically endangered bare-rumped sheathail bat (*Saccolaimus saccolaimus nudicluniatus*) and the vulnerable spectacled flying-fox (*Pteropus conspicillatus*).

## 2.3. AVOIDANCE AND MITIGATION MEASURES

The EPBC Act offsets policy requires that proponents avoid and mitigate impacts on MNES to the greatest practicable extent to ensure only unavoidable residual impacts remain. RAC could not identify any suitable alternative project locations as feasibility assessments determined that the proposed Mount Emerald site is the preferred location for the development of a wind farm in Queensland. However, RAC has identified avoidance and mitigation measures that can be implemented on site during preconstruction, construction, operation and decommissioning of the project.

Preconstruction surveys will be undertaken to identify locations of rare and threatened flora species along the preferred WTG access tracks and turbine sites. These surveys will allow designers to avoid and minimise clearing of these species and communities during construction.

Where practicable, during construction and operation of the project, RAC will avoid disturbance to significant flora and fauna species. The Bird Management Plan Construction Phase protocols will be implemented to avoid clearing of any roosting trees identified during preconstruction surveys and micro siting of turbine and track location and minimise the area of cleared vegetation. The Micro Bat Management Plan Construction Phase protocols will be implemented to avoid clearing of any roosting trees identified during preconstruction surveys and micro siting of turbine and track location.

During the project's decommissioning phase, RAC will avoid disturbance to endangered, vulnerable, rare and poorly known flora species that have regenerated adjacent to or in original construction zones. Individual significant species, which are located in the decommissioning zone, will be flagged (including habitat trees) so they may be avoided. In addition, physical barriers will be placed around significant vegetation areas in order to restrict access and avoid further disturbance.

RAC proposes to adopt a number of mitigation measures to minimise the magnitude of project impacts on specific MNES. These include:

- for turbine collision and barotrauma impacts on the bare-rumped sheathail bat (*Saccolaimus saccolaimus nudicluniatus*):
  - turbine operation curtailment (increased cut-in speed and targeted turbine shut-down during high risk conditions or detected collision mortality)
  - continue and expand ultrasonic call surveys; sample within Rotor Swept Area (RSA) (higher towers and balloons)
  - collect weather and insect abundance/height data
  - identify high-risk conditions/times and seasons
  - conduct radar utilisation at call survey locations sampling at RSA; quantify abundance and flight heights

- conduct numerical risk modelling
- prepare a Microchiropteran Bat Management Plan
- for turbine collision impacts on the spectacled flying-fox (*Pteropus conspicillatus*):
  - turbine curtailment during high risk conditions (active) or excessive mortality events (reactive)
  - conduct radar utilisation surveys
  - support CSIRO researchers to conduct satellite telemetry of more individuals from nearest colonies to site (Mareeba and Tolga Scrub)
  - conduct numerical collision risk modelling (using radar/telemetry data)
- for habitat loss impacts on the northern quoll (*Dasyurus hallucatus*):
  - avoid clearing high-quality denning and foraging habitats
  - undertake additional telemetry studies on the project site to determine whether proposed turbine ridge habitats are used preferentially, particularly females with young; and offsite, to collect data on dispersion rates to refine the population viability analysis (to assess the significance of potential impacts)
  - redesign infrastructure layout to avoid identified high quality foraging or maternal denning habitat
  - prepare a Quoll Management Plan
- for clearing impacts on significant plant species:
  - micro-positioning of turbines to minimise clearing and disturbance to conservation significant plants and important vegetation types
  - presence of botanical advisor in pre clearance team
  - instigate site-based seed and propagule collection for future rehabilitation work
  - prepare a Significant Plant Management Plan
  - research propagation of *Homoranthus porteri*, *Melaleuca uxorum*, *Plectranthus amoenus* and *Grevillea glossadenia*.

## 3. OFFSET FRAMEWORK

This section provides a summary of the current legislative and policy framework for environmental offsets as applicable to the project. Under the EPBC Act the significant residual impacts of the project on MNES may be required to be offset in accordance with the EPBC Act offsets policy.

### 3.1. EPBC ACT OFFSETS POLICY

The purpose of the EPBC Act offsets policy is to outline the Australian Government's position on the use of environmental offsets to compensate for significant adverse impacts on MNES. Under the EPBC Act offsets policy, offsets must deliver an overall conservation gain that compensates for the significant residual impacts associated with the project. A suitable offset under the policy must:

- deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action
- be built around direct offsets but may include other compensatory measures
- be in proportion to the level of statutory protection that applies to the protected matter
- be of a size and scale proportionate to the residual impacts on the protected matter
- effectively account for and manage the risks of the offset not succeeding
- be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs
- be efficient, effective, timely, transparent, scientifically robust and reasonable
- have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.

Under the EPBC Act offsets policy there are three primary options available for offset delivery: direct offsets, other compensatory measures and advanced offsets.

#### 3.1.1. Direct Offsets

Direct offsets are an essential component of a suitable offsets proposal and must generally account for at least 90% of the offset requirement for any given impact. Direct offsets are actions that ensure a measurable conservation gain for the impacted matter whereby the action maintains or increases its viability or reduces threatening processes. A conservation gain may be achieved by:

- improving existing habitat for the protected matter
- creating new habitat for the protected matter
- reducing threats to the protected matter
- increasing the values of a heritage place, and/or
- averting the loss of a protected matter or its habitat that is under threat.

#### 3.1.2. Compensatory Measures

Other compensatory measures may be used to satisfy up to 10% of offset requirements under the EPBC Act offsets policy. Other compensatory measures do not directly offset the impacts to protected matters but should lead to an increased benefit to the impacted matter. Other compensatory measures are usually delivered through a suitable research or education program that must:

- endeavour to improve the viability of the impacted protected matter

- be targeted toward key research/education activities identified the relevant Commonwealth approved recovery plan, threat abatement plan, conservation advice, ecological character description, management plan or listing document
- be undertaken in a transparent scientifically robust and timely manner
- be undertaken by a suitably qualified individual or organisation in a manner approved by the department
- consider best practice research approaches.

### 3.1.3. Advanced Offsets

An advanced offset is an offset that is secured to deliver a conservation gain for a protected matter prior to the impact occurring. Advanced offsets must satisfy all of the requirements of the EPBC Act offsets policy. They are advantageous in that they can reduce the project's overall offset requirements as the offsets assessment guide places a higher value on offsets that deliver a conservation gain in a shorter time period. Advanced offsets can be used to better managing the risks associated with the time delay in realising a conservation gain.

## 3.2. OFFSETS ASSESSMENT GUIDE

The EPBC Act Offsets Assessment Guide (the offsets assessment guide), which accompanies the EPBC Act offsets policy, has been developed to clarify and provide further guidance on the requirements of the policy. The offsets assessment guide utilises a balance sheet approach to compare impacts to the suitability of proposed offset areas. The offsets assessment guide is a tool used by DoTE assessment officers to determine if the proposed offset area adequately acquits the offset requirements for impacts to MNES.

To inform the final offset size requirement and the overall suitability of the proposed offset area, an offsets assessment guide has been completed for each of the listed threatened species on which the project is expected to have a significant residual impact. The guide relies on the input of sound scientific data (ideally obtained through field surveys), including information about the quality of the offset area. A summary of these results are presented in **Section 5**.



## 4. RESIDUAL IMPACTS AND OFFSET REQUIREMENTS

The residual project impacts (i.e. those impacts that cannot be reasonably avoided or mitigated) are related to the clearing of vegetation, the associated loss of habitat for EPBC Act listed flora and fauna identified within the project area and species mortality due to turbine collisions. RAC has advised that project development requires the removal of approximately 57.7 ha of remnant vegetation for the construction of the turbine pads, contractors lay down pad, access tracks and substation.

RAC has determined that there are likely to residual impacts on three EPBC Act listed fauna species and two flora species as a result of project development. The northern quoll, listed as an endangered species under the EPBC Act, was found to be widely distributed across the project area and present in relatively high numbers (RPS, 2012). Project actions are expected to directly reduce the area of occupancy (i.e. habitat loss) of northern quolls as well as fragment remaining habitat and potentially facilitate weed encroachment in disturbed areas, alter the fire regime and affect predator-prey dynamics by opening intact vegetation communities. The maximum impact of the project on habitat for the northern quoll is 57.7 ha. The impacted area is considered to contain a mix of denning and foraging habitat (RPS 2013). However, for the purpose of undertaking a conservative approach to offset assessment it has been assumed that the all of the impacted habitat is denning habitat.

The spectacled flying-fox is expected to be impacted by the removal of foraging habitat within the project area, and the bare-rumped sheath-tail bat is expected to be impacted by the removal of roosting habitat. As the bat species are likely to utilise the foraging and roosting resources across the project area, the residual project impact on foraging and roosting habitat is equivalent to the area of vegetation clearing, 57.7 ha.

Approximately 300-400 *Grevillea glossadenia* individuals and 10.2 ha of potential habitat for *Grevillea glossadenia* (RPS, 2014, pers. comm., 1 May) is expected to be impacted by the project. Approximately 300-350 *Homoranthus porteri* individuals and 5.1 ha of potential habitat for *Homoranthus porteri* (RPS, 2014, pers. comm., 1 May) is expected to be removed as a result of vegetation clearing.

Based on an assessment of the project's residual impacts, the offset requirements have been identified and are presented in **Table 1**. The offset requirements outlined below are not cumulative as some environmental values occur within the same area. The offset requirements are presented in terms of the minimum area required to be secured and the final size of the offset area and its suitability will be determined through the field assessments and the application of the offsets assessment guide.

Table 1: Summary of the project's offset requirements under the EPBC Act Environmental Offsets Policy

ENVIRONMENTAL VALUE	EPBC ACT STATUS <sup>1</sup>	SPECIES DISTRIBUTION WITHIN PROJECT AREA	TYPE OF HABITAT IMPACTED	IMPACT AREA (ha)
THREATENED FAUNA				
northern quoll ( <i>Dasyurus hallucatus</i> )	E	A number of individuals of both sexes and different ages were detected across the subject site, predominantly in rocky areas in both ridges and valleys. Quolls were detected through cage trapping, camera traps and scat identification. It was concluded that Northern quolls are abundant and widespread across the site (RPS 2012).	Denning and foraging	57.7
spectacled flying-fox ( <i>Pteropus conspicillatus</i> )	V	No suitable roosting habitat (rainforest) is present on the subject site; however, the species may forage on site during mass flowering of Myrtaceous trees, and/or fly over site at rotor height between suitable nearby foraging areas.	Foraging	57.7
bare-rumped sheath-tail bat ( <i>Saccolaimus saccolaimus nudiclunatus</i> )	CE	The subject site contains suitable habitat for this species, particularly in the lower reaches of Granite Creek where <i>E. platyphylla</i> is present. Calls potentially belong to this species have been recorded in the vicinity of turbine #30 and turbine #38 (RPS 2012).	Roosting	57.7
THREATENED FLORA				
<i>Grevillea glossadenia</i>	V	Widespread in rocky habitat of the Wet Tropics bioregion section of site. Relatively common along ridges above 900 m, but rarely found under woodland cover.	Suitable and known	10.20
<i>Homoranthus porteri</i>	V	More or less confined to south west ridges of the Wet Tropics bioregion section, with two isolated populations in Einasleigh Uplands bioregion.	Suitable and known	5.10

<sup>1</sup> CE- critically endangered; E- endangered; V- vulnerable

**Table 2** provides details of species- specific information that will be used to inform the suitability of offsets and the delivery of the project's offset requirements for impacts on MNES. It is important to note that the threat abatement and recovery actions provided are not exhaustive.

**Table 2: Species- specific information on MNES**

ENVIRONMENTAL VALUE	RELEVANT RECOVERY OR CONSERVATION PLAN AVAILABLE	RECOMMENDED THREAT ABATEMENT AND RECOVERY ACTIONS
<b>THREATENED FAUNA</b>		
northern quoll ( <i>Dasyurus hallucatus</i> )	National Recovery Plan for the Northern Quoll ( <i>Dasyurus hallucatus</i> ) (Hill and Ward, 2010)	<p>The National Recovery Plan for the Northern Quoll aims to minimise the rate of decline of northern quoll in Australia and ensure the viability of remaining populations. Cane toads have been identified as a major threat to northern quoll and recovery actions identified in the recovery plan focus of mitigating this threat. Threat abatement and recovery actions should aim to achieve the following objectives:</p> <ul style="list-style-type: none"> <li>• Protect northern quoll populations on offshore islands from invasion and establishment of cane toads, cats and other potential invasive species.</li> <li>• Foster the recovery of northern quoll sub-populations in areas where the species has survived alongside cane toads.</li> <li>• Minimise species declines in areas recently colonised by cane toads.</li> <li>• Maintain secure populations and source animals for future reintroductions/introductions, if they become appropriate.</li> <li>• Reduce the risk of northern quoll populations being impacted by disease.</li> <li>• Reduce the impact of pastoral land management practices on northern quolls.</li> </ul> <p>Specific actions include:</p> <ul style="list-style-type: none"> <li>• continue research into the susceptibility of quolls to cane toad poisoning</li> <li>• investigate factors causing declines in northern quoll populations not yet affected by cane toads</li> <li>• continue studies of whether there is a genetic basis for differences in susceptibility of northern quolls to cane toad toxins</li> <li>• develop and, where required, implement a strategy for rapid-response control of cane toad or feral cat outbreaks on offshore islands occupied by northern quolls (DoTE, 2013d).</li> </ul>

ENVIRONMENTAL VALUE	RELEVANT RECOVERY OR CONSERVATION PLAN AVAILABLE	RECOMMENDED THREAT ABATEMENT AND RECOVERY ACTIONS
spectacled flying-fox ( <i>Pteropus conspicillatus</i> )	National Recovery Plan for the Spectacled Flying Fox <i>Pteropus conspicillatus</i> (Queensland Department of Environment and Resource Management, 2010).	<p>The overall objectives of the recovery plan are to secure the long term protection of the spectacled flying-fox through a reduction in threats to the species. Threat abatement and recovery actions should aim to achieve the following objectives:</p> <ul style="list-style-type: none"> <li>• research practicable and cost effective flying fox deterrent systems for commercial fruit growers</li> <li>• identify and protect native foraging habitat critical to the survival of the spectacled flying fox</li> <li>• accurately assess the short and long term population size and population trends of the spectacled flying-fox</li> <li>• improve the public perception of the spectacled flying-fox and the standard of information available to guide recovery</li> <li>• increase knowledge of spectacled flying-fox roosting requirements and protect important camps</li> <li>• improve understanding of incidence of tick paralysis and actions to minimise paralysis mortality in flying foxes</li> <li>• implement strategies to reduce incidence of electrocution and entanglement of spectacled flying-fox roosting</li> <li>• investigate the causes of birth abnormalities such as cleft palate syndrome (Queensland Department of Environment and Resource Management, 2010).</li> </ul>
bare-rumped sheath-tail bat ( <i>Saccolaimus saccolaimus nudicluniatus</i> )	National Recovery Plan for the Bare-rumped Sheath-tail Bat <i>Saccolaimus saccolaimus nudicluniatus</i> 2007-2011 (Schulz and Thomson, 2007)	<p>Threat abatement and recovery actions to mitigate the loss of bare-rumped sheath-tail bat habitat and increase the long term viability of the species include:</p> <ul style="list-style-type: none"> <li>• develop more effective detection techniques (including obtaining echolocation reference calls) and undertake systematic surveys to enable a more comprehensive assessment of distribution, population size, status and habitat preferences</li> <li>• increase protection of known roosts both on and outside reserved lands</li> <li>• better determine roosting requirements and document foraging requirements of the species, including potential seasonal and distributional differences and the identification of threatening processes</li> <li>• establish monitoring sites to investigate population trends in the species</li> <li>• clarify the taxonomic status of the species (DoTE, 2013a).</li> </ul>
<b>THREATENED FLORA</b>		
<i>Grevillea glossadenia</i>	Recovery plan not required	<p>Threat abatement and recovery actions to mitigate the loss of <i>Grevillea glossadenia</i> habitat and increase the long term viability of the species include:</p> <ul style="list-style-type: none"> <li>• protection from disturbances associated with mining activities and other developments</li> <li>• control of weed species which may prevent the growth of <i>Grevillea glossadenia</i> particularly sisal (<i>Agave sisalana</i>) and panic grass (<i>Panicum maximum</i>)</li> <li>• increase conservation awareness within the community for <i>Grevillea glossadenia</i></li> <li>• enable recovery of additional sites through seed collection and storage and translocation (DoTE, 2013b)</li> </ul>

ENVIRONMENTAL VALUE	RELEVANT RECOVERY OR CONSERVATION PLAN AVAILABLE	RECOMMENDED THREAT ABATEMENT AND RECOVERY ACTIONS
<i>Homoranthus porteri</i>	Recovery plan not required	<p>Threat abatement and recovery actions to mitigate the loss of <i>Homoranthus porteri</i> habitat and increase the long term viability of the species include:</p> <ul style="list-style-type: none"> <li>• protection from habitat loss, disturbance and modification</li> <li>• provide known occurrences of species to local and State Rural Fire Services for inclusion in mitigation measures in bush fire management plans</li> <li>• control of invasive weed species that threaten <i>Homoranthus porteri</i> growth and long term viability</li> <li>• increase conservation awareness within the community for <i>Homoranthus porteri</i></li> <li>• enable recovery of additional sites through seed collection and storage and translocation (DoTE, 2013c)</li> </ul>

## 5. PROJECT OFFSETS

The EPBC Act offsets policy states that where a project results in residual impacts to MNES, suitable offsets must be proposed. RAC has undertaken a preliminary assessment to identify suitable areas to meet the offset requirements of the project. The selection of these areas has taken into account:

- the requirements of the EPBC Act offsets policy
- proximity to the existing project area
- the characteristics of the offset area (vegetation, topography, ecosystems) and their similarity to the characteristics of the project area
- connectivity to existing reserves (e.g. national parks, state forests)

Based on this assessment, RAC has identified a potential offset area, comprising six lots, to fulfil the offset requirements of the project. The results of a desktop assessment of the potential offset area are provided in **Section 5.1**. The suitability of the offset area has yet to be ground-truthed to determine the actual extent of environmental values on the ground. Should the offset area prove to be unviable following field surveys an alternative direct offset option will be identified. However, a preliminary assessment of the offset area against the EPBC Act Offsets Assessment Guide (the offsets assessment guide) has been undertaken. This assessment indicates that there is sufficient potential to configure a compliant offset on the identified property.

In the event that direct offsets do not fulfil the entire project's offset requirements, other compensatory measures will be explored in order to meet any shortfall. Examples of compensatory measures relevant to the impacted MNES are outlined in **Section 5.4**.

### 5.1. OFFSET AREA FOR FURTHER ASSESSMENT

RAC proposes to acquit the project's offset requirements by securing an offset area on six contiguous lots (based on the Digital Cadastral Database, current as of 11 August 2013) that adjoin the project area (**Figure 2**; the offset area). The offset area is approximately 583.48 ha in size, is located in the Tablelands Regional Council local government area and is zoned as rural (general rural). The lot tenure within the offset area is freehold and the primary land use is vacant. The offset area fringes the southern boundary of the project area and is connected to the Herberton Range State Forest, Baldy Mountain Forest Reserve and the Herberton Range National Park via the Herberton range (Queensland Government, 2013). Due to the close proximity of the offset area and the project area, they share similar environmental features such as topography, geology, climate, vegetation communities and fauna diversity.

#### 5.1.1. Environmental Values of the Offset Area

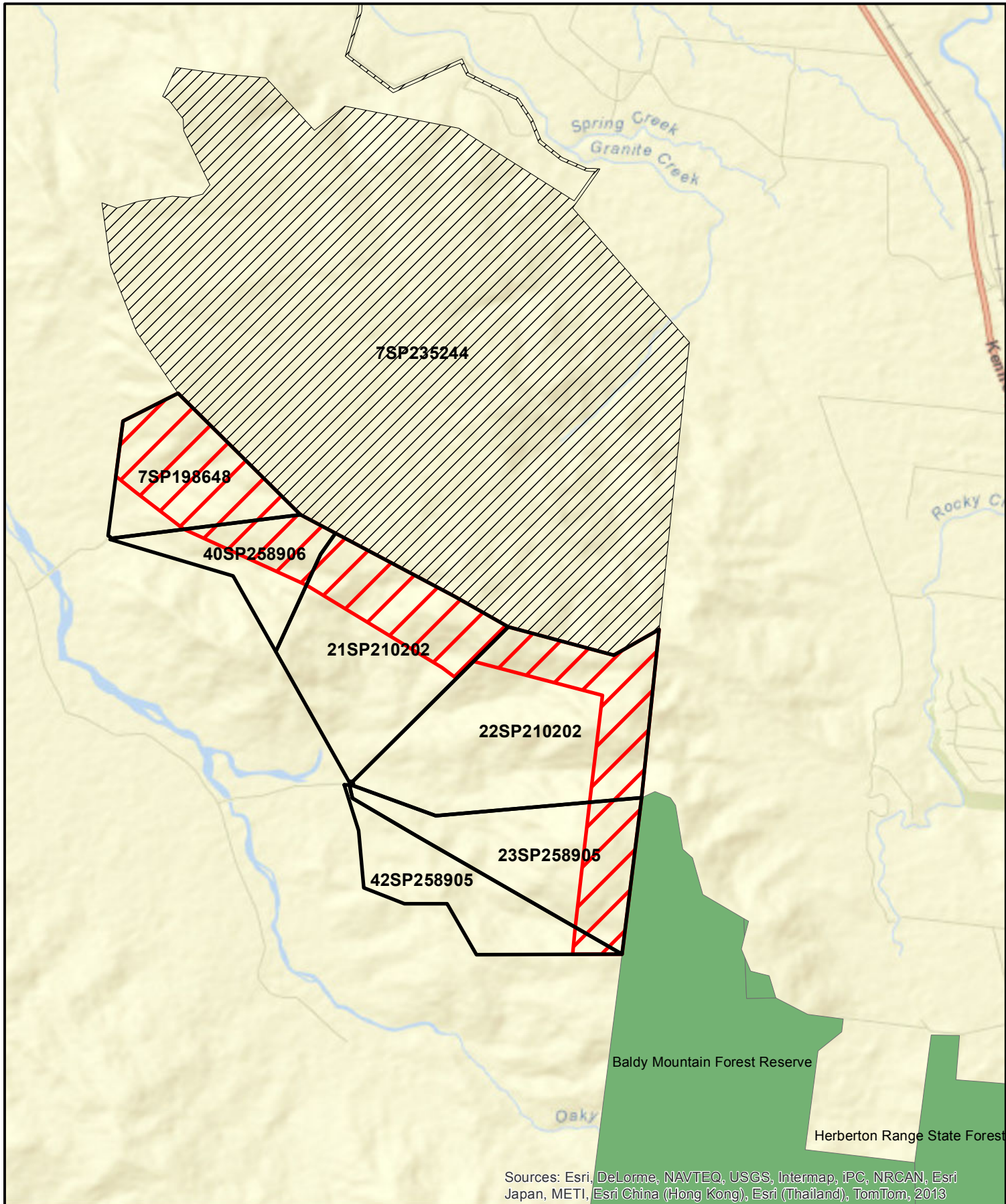
The offset area is characterised by high elevation ridges and valleys composed of remnant vegetation communities. The Queensland Government's regional ecosystem mapping has been assessed to identify the vegetation communities present within the offset area and the types of habitat for MNES that may be present. The majority of the remnant vegetation communities are listed as least concern under the VM Act, however approximately 159 ha of concern montane heath community (RE 7.12.57) is mapped within the offset area (**Table 3**; **Figure 3**). An assessment of the EPBC Act Protected Matters Search Tool database (the PMST) indicates that the northern quoll, spectacled flying-fox, *Grevillea glossadenia* and *Homoranthus porteri* and/or their habitat are likely to occur in the offset area. The Atlas of Living Australia has records within the offset area of *Grevillea glossadenia* and *Homoranthus porteri*.



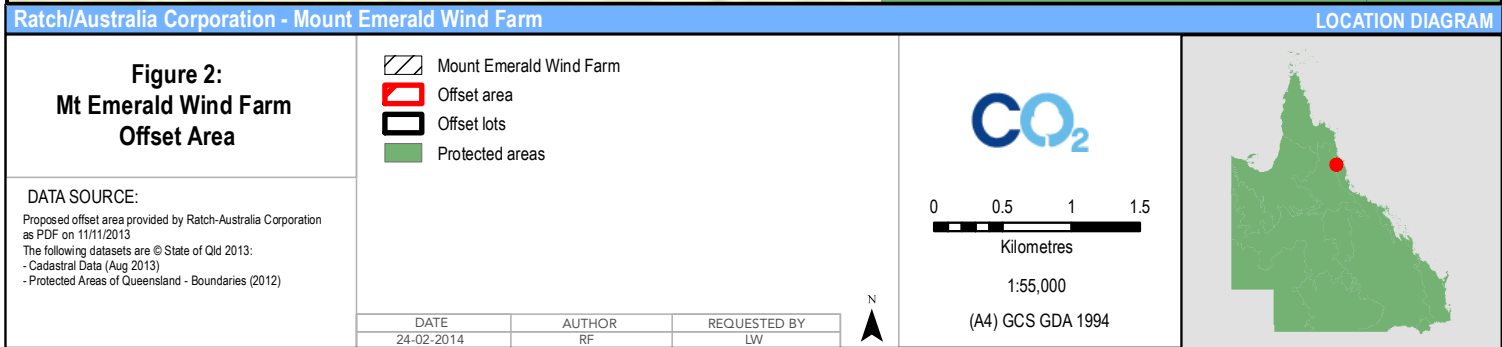
Table 3. Vegetation communities within the offset area

RE	VM ACT STATUS <sup>2</sup>	DESCRIPTION	AREA (ha)
7.12.26	LC	<i>Syncarpia glomulifera</i> +/- <i>Corymbia intermedia</i> +/- <i>Allocasuarina</i> spp. closed forest to woodland, or <i>Lophostemon suaveolens</i> , <i>Allocasuarina littoralis</i> , <i>C. intermedia</i> shrubland, (or vine forest with these species as emergents), on exposed ridgelines or steep rocky slopes, on granite and rhyolite	22.79
7.12.34	LC	<i>Eucalyptus portuensis</i> and/or <i>E. drepanophylla</i> , +/- <i>Corymbia intermedia</i> +/- <i>C. citriodora</i> , +/- <i>E. granitica</i> , open woodland to open forest on dry uplands on granite	166.05
7.12.57	OC	Shrubland and low woodland mosaic with <i>Syncarpia glomulifera</i> , <i>Corymbia abergiana</i> , <i>Eucalyptus portuensis</i> , <i>Allocasuarina littoralis</i> , and <i>Xanthorrhoea johnsonii</i> , on moist and dry uplands and highlands on granite and rhyolite	158.53
7.12.65	LC	Rock pavements or areas of skeletal soil, on granite and rhyolite, mostly of dry western or southern areas, often with shrublands to closed forests of <i>Acacia</i> spp. and/or <i>Lophostemon suaveolens</i> and/or <i>Allocasuarina littoralis</i> and/or <i>Eucalyptus lockyeri</i> subsp. <i>Exuta</i>	8.68
7.12.7	LC	Simple to complex microphyll to notophyll vine forest, often with <i>Agathis robusta</i> or <i>A. microstachya</i> , on granites and rhyolites of moist foothills and uplands	1.14
9.12.30	LC	<i>Corymbia leichhardtii</i> +/- <i>Callitris intratropica</i> +/- <i>Eucalyptus shirleyi</i> low woodland to low open woodland on rhyolite hills	95.88
9.12.20	LC	<i>Eucalyptus pachycalyx</i> and <i>E. cloeziana</i> woodland on acid volcanics	76.70
9.12.4	LC	<i>Eucalyptus shirleyi</i> or <i>E. melanophloia</i> with <i>Corymbia peltata</i> and/or <i>C. leichhardtii</i> low open woodland to low woodland on acid volcanic rocks	26.78
9.12.2	LC	Open forest commonly including <i>Eucalyptus portuensis</i> , <i>E. crebra</i> (sens. lat.), <i>Corymbia clarksoniana</i> , <i>C. citriodora</i> on steep hills and ranges on acid and intermediate volcanics close to Wet Tropics boundary	3.26
9.12.7	LC	<i>Eucalyptus cullenii</i> +/- <i>Corymbia</i> spp. +/- <i>Eucalyptus</i> spp. woodland on acid and intermediate volcanic rocks	22.72
non-remnant	-	-	0.95
<b>TOTAL</b>			<b>583.48</b>

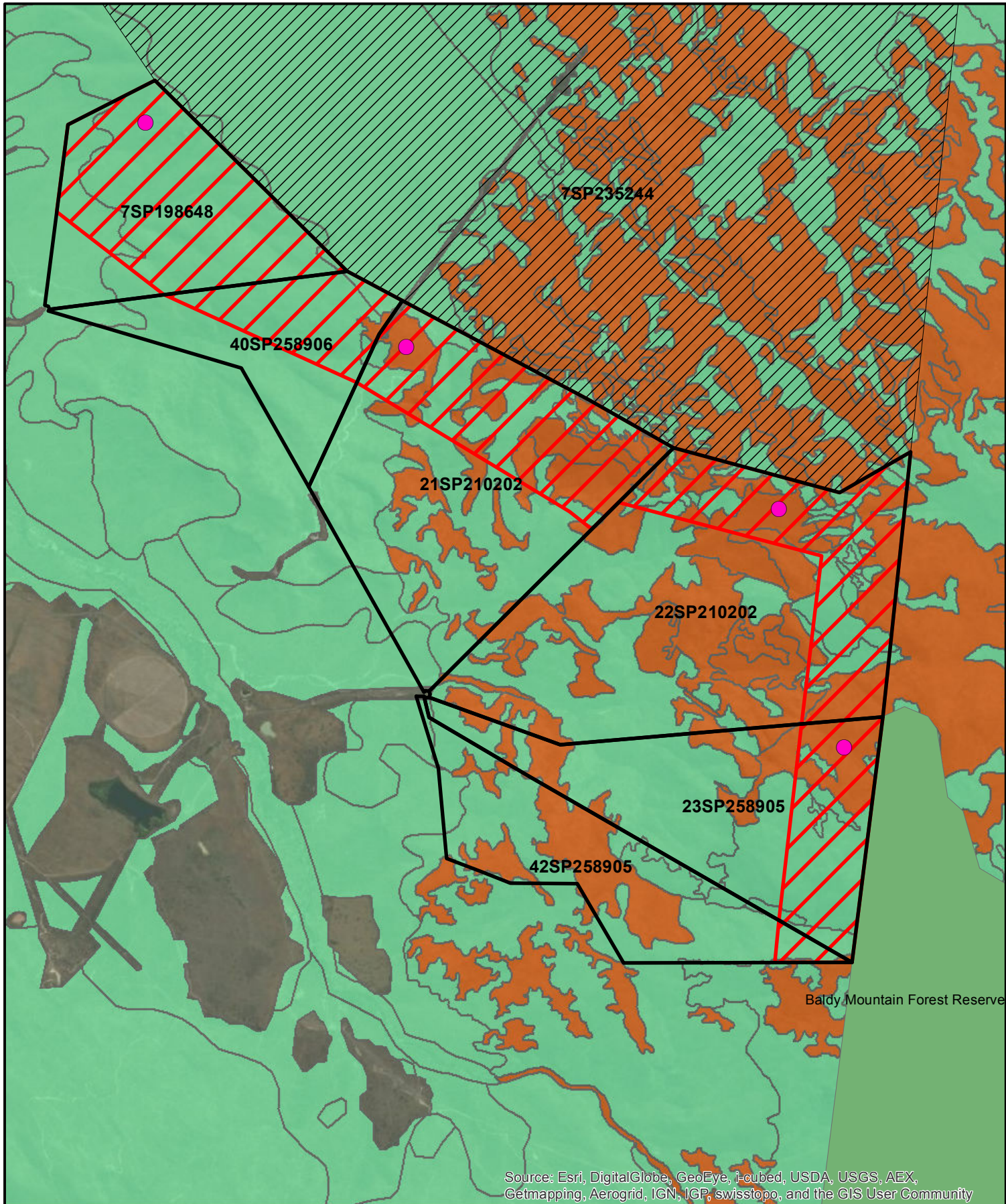
<sup>2</sup> LC- least concern; OC- of concern



Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013







Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

**Ratch/Australia Corporation - Mount Emerald Wind Farm** **LOCATION DIAGRAM**

**Figure 3:  
Regional ecosystems  
within the offset**

**DATA SOURCE:**  
Proposed offset area provided by Ratch-Australia Corporation as PDF on 11/11/2013  
The following datasets are © State of Qld 2013:  
- Cadastral Data (Aug 2013)  
- Protected Areas of Queensland - Boundaries (2012)  
- Vegetation Management Act Regional Ecosystems V6.1 (2011)

Mount Emerald Wind Farm  
 Offset area  
 Offset lots  
 Protected areas  
 Photo monitoring points

**VMA Status**

Containing Endangered regional ecosystems  
 Containing Of Concern regional ecosystems  
 Is a Least Concern regional ecosystem

DATE	AUTHOR	REQUESTED BY
24-02-2014	RF	LW

0 0.25 0.5 0.75 1  
 Kilometres  
 1:35,000  
 (A4) GCS GDA 1994

### 5.1.2. Offset Potential of the Offset Area

A preliminary desktop assessment of the environmental values within the offset area demonstrates that the offset area has the potential to acquit the project's offset requirements as outlined in **Table 4**. A detailed discussion on the suitability of the offset area to fulfil the offset requirement for each impacted MNES is provided below.

**Table 4: Potential offset availability within the offset area**

MNES	EPBC STATUS <sup>3</sup>	IMPACT (ha or count)	ESTIMATED OFFSET POTENTIAL IN OFFSET AREA (ha)	TYPE OF HABITAT IN OFFSET AREA
northern quoll ( <i>Dasyurus hallucatus</i> )	E	57.7	583	Denning and foraging
spectacled flying-fox ( <i>Pteropus conspicillatus</i> )	V	57.7	360	Foraging
bare-rumped sheathail bat ( <i>Saccolaimus saccolaimus nudiclunatus</i> )	CE	57.7	391	Roosting
<i>Grevillea glossadenia</i>	V	10.20	167	Suitable and known
<i>Homoranthus porteri</i>	V	5.10	117	Suitable and known

#### Northern quoll

The proposed offset area has the potential to deliver a conservation gain that maintains, and is likely to enhance, the viability of the regional northern quoll population. As the offset area is yet to be ground-truthed a desktop GIS assessment was undertaken to determine the extent of northern quoll habitat within the offset area. Analysis of satellite imagery was used to divide the potential northern quoll habitat area into denning and foraging habitat types. Rocky areas on ridge lines were considered as denning habitat, while the steep slopes, gullies and low flats were considered as suitable foraging habitat. Based on this analysis the proposed offset area is estimated to contain 347.32 ha of denning habitat and 236.17 ha of foraging habitat for the northern quoll (**Figure 4**).

The actual extent and quality of the habitat within the offset area will require field verification; however, as the offset area neighbours the project area, the habitat quality within the offset area is expected to be similar to the baseline conditions of the project area as identified in the draft Flora Report (RPS, 2013). The baseline conditions within the project area were characterised by high levels of natural landscape integrity, remnant and relatively intact vegetation communities. As the offset area is likely to provide habitat for the northern quoll, it is expected that the proposed offset area can effectively compensate for specific impacted attributes of the project on the species (i.e. habitat loss, habitat degradation and potential displacement) by securing a neighbouring area that meets, if not exceeds, the quality of the habitat at the project area.

Securing a neighbouring area as an offset also manages the risk of the offset not succeeding. The analogous vegetation communities and environmental values of the two areas increase the effectiveness of the offset. In addition, the connectivity of vegetation between the offset area and the Baldy Mountain Forest Reserve, Herberton Range State Forest and the Herberton Range National Park via the Herberton range reduces the risk of the offset not being effective as the continuity of remnant vegetation facilitates flora and fauna dispersal and ecological resilience.

The proposed offset area is not currently reserved by law or planning regulations or agreed to under other schemes or programs; therefore, securing and managing the proposed offset area will deliver a new conservation gain for the

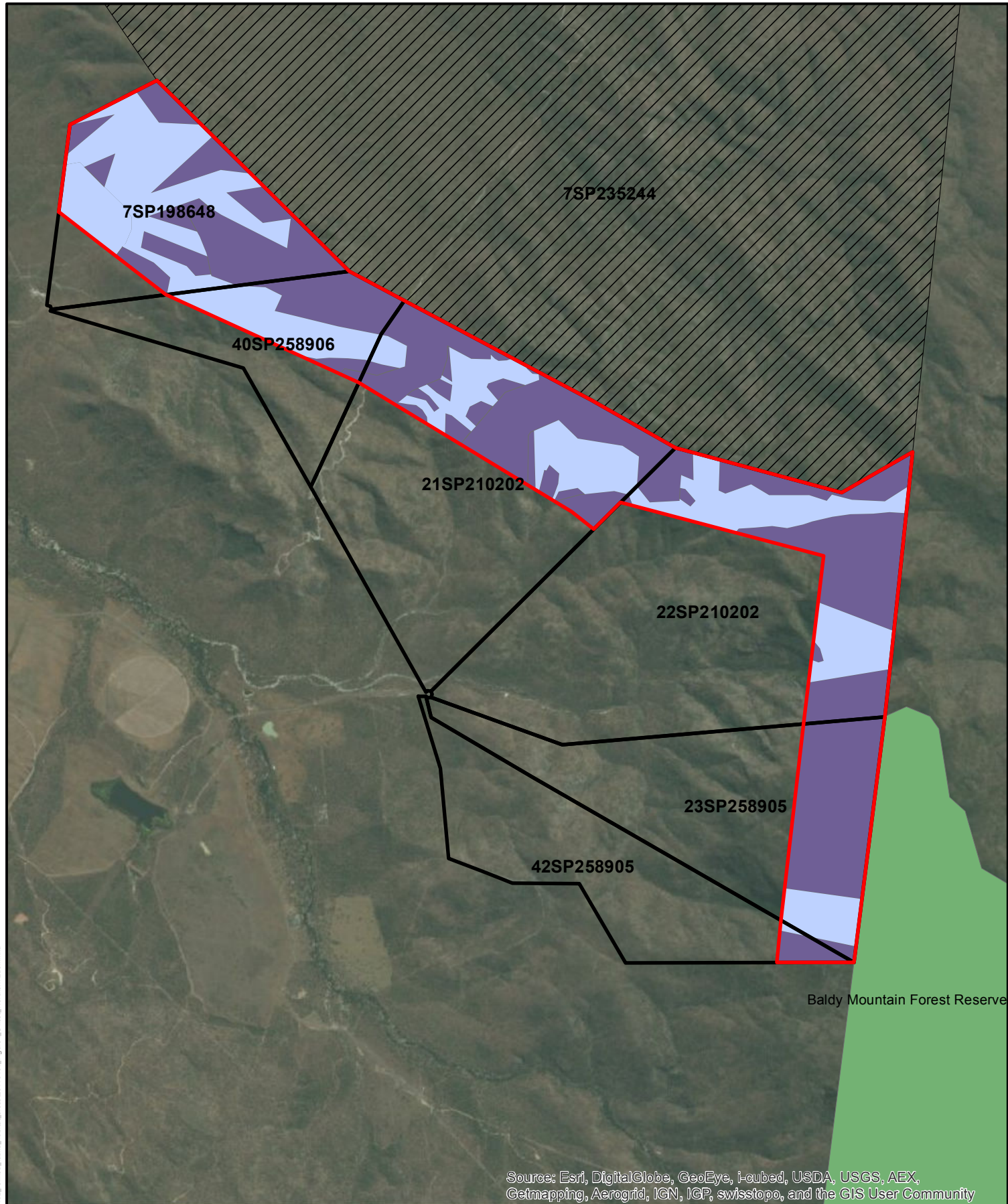
<sup>3</sup> E- endangered; CE- critically endangered; M- migratory; V- vulnerable

impacted protected matter. To determine that the proposed offsets are in proportion to the level of statutory protection that apply to the northern quoll, the offsets assessment guide has been completed as part of offset implementation (CO<sub>2</sub> Australia 2014). A summary of the results of this assessment are presented in Section 5.2.

Offsets will be implemented in accordance with MNES flora and fauna national recovery plans and/or the threat abatement and recovery recommendations in the DoTE Species Profile and Threats Database thereby ensuring that the offsets are effective, timely, reasonable and scientifically robust.

Securing the direct offset area is expected to wholly acquit the project's offset requirements, however, the implementation of compensatory measures may provide the opportunity to enhance the viability of the northern quoll population and lead to a long term conservation outcome. The northern quoll's population is declining across its distribution; however, the species was found to be widely distributed across the project area and present in relatively high numbers (RPS, 2012). Studying this population in accordance with the actions and objectives detailed in the National Recovery Plan for the Northern Quoll (Hill and Ward, 2010) may provide valuable data that contributes to minimising the rate of decline and ensuring that viable populations (such as this one) remain in each of the major regions of distribution into the future.





Ratch/Australia Corporation - Mount Emerald Wind Farm

LOCATION DIAGRAM

**Figure 4:**  
**Northern Quoll habitat**  
**within the offset**

**DATA SOURCE:**

Proposed offset area provided by Ratch-Australia Corporation as PDF on 11/11/2013  
The following datasets are © State of Qld 2013:  
- Cadastral Data (Aug 2013)  
- Protected Areas of Queensland - Boundaries (2012)  
- Vegetation Management Act Regional Ecosystems V6.1 (2011)  
- Habitat areas assessed by CO2 Australia (desktop analysis only)

- Mount Emerald Wind Farm
- Offset area
- Offset lots
- Protected areas

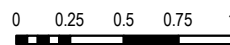
**Northern quoll habitat (approx 580 ha)**

- Denning habitat (approx 345 ha)
- Foraging and dispersal habitat (approx 235 ha)

DATE	AUTHOR	REQUESTED BY
04-04-2014	RF	LW

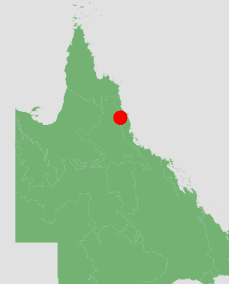


**CO<sub>2</sub>**



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(A4) GCS GDA 1994





## Spectacled flying- fox

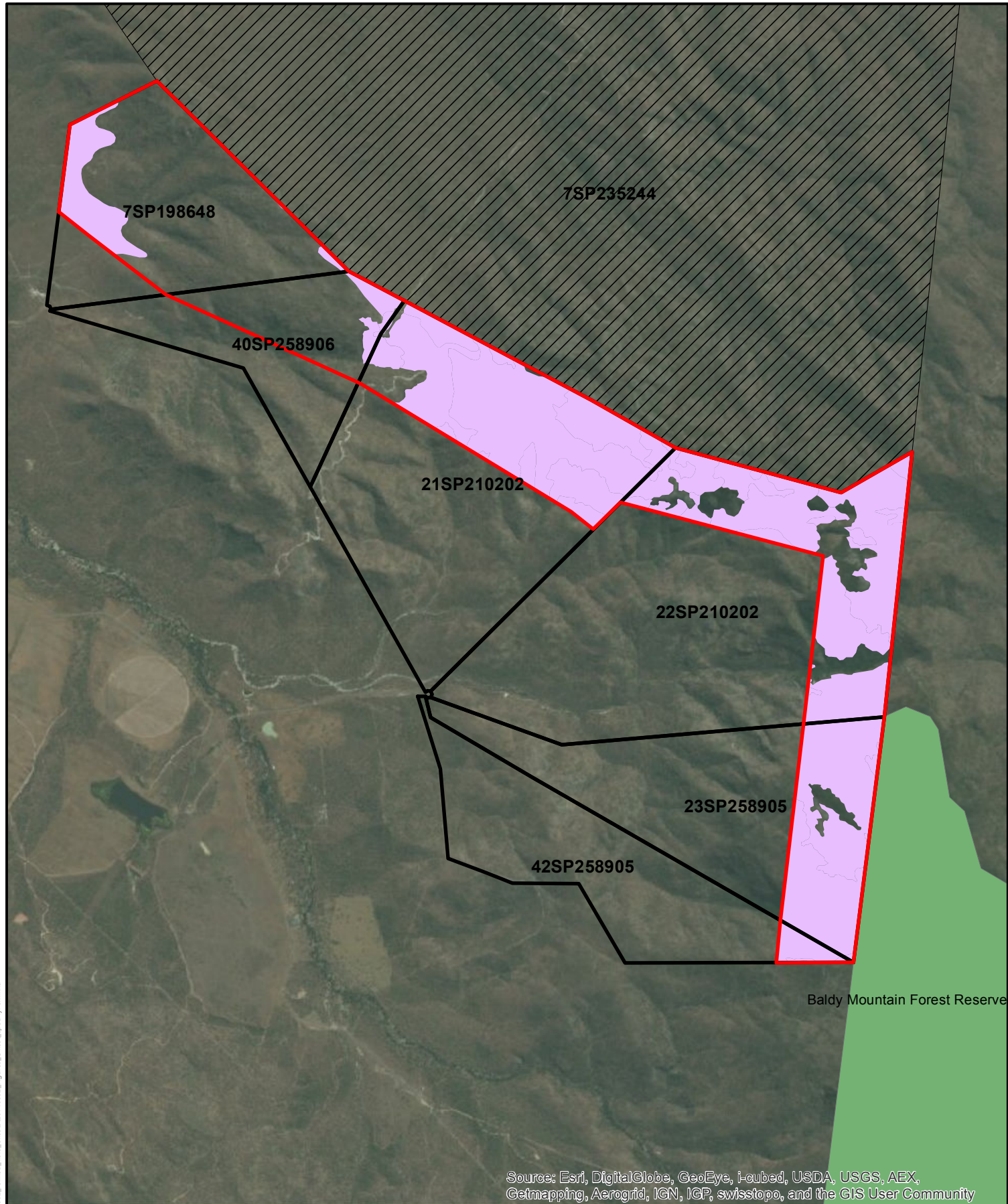
The proposed offset is expected to deliver a conservation gain by compensating for the specific attributes impacted by project actions. Project actions are expected to impact on spectacled flying-fox foraging habitat as well introduce the risk of direct mortality from turbine strike (RPS, 2012).

The availability of spectacled flying-fox habitat within the offset area was calculated based on a desktop assessment and the presence of regional ecosystems 9.12.4c, 9.12.2, 9.12.7a, 7.12.34, all of which contain eucalyptus forests and are considered suitable foraging habitat for the species. Regional ecosystem 7.12.7c (Simple to complex microphyll to notophyll vine forest) and regional ecosystem 7.12.57 (Shrubland and low woodland mosaic with *Syncarpia glomulifera*, *Corymbia abergiana*, *Eucalyptus portuensis*, *Allocasuarina littoralis* and *Xanthorrhoea johnsonii* on uplands and highlands on granite) were also included in the offset area calculation as they are considered suitable spectacled flying-fox foraging habitat. Based on an analysis of these regional ecosystems there is estimated to be 360 ha of potential foraging habitat for the spectacled flying-fox within the offset area (**Table 4; Figure 5**). The actual extent and quality of foraging habitat within the offset area will require field verification; however, as the offset area neighbours the project area, the foraging habitat within the offset area is expected to be similar to the foraging habitat identified in the project area (i.e. Myrtaceous trees).

The offset area's proximity to the project area decreases the risk of the offset not succeeding as the comparable vegetation communities and environmental values increases the effectiveness of the offset. In addition, the connectivity of vegetation between the offset area and the Baldy Mountain Forest Reserve, Herberton Range State Forest and the Herberton Range National Park via the Herberton range reduces the risk of the offset not being effective as the continuity of remnant vegetation facilitates flora and fauna dispersal and ecological resilience.

The proposed offset area is not currently reserved by law or planning regulations or agreed to under other schemes or programs; therefore, securing and managing the proposed offset area will deliver a new conservation gain for the impacted protected matter. To determine that the proposed offsets are in proportion to the level of statutory protection that apply to the spectacled flying-fox, the offsets assessment guide has been completed as part of the offset implementation (CO<sub>2</sub> Australia 2014). A summary of the results of this assessment are presented in Section 5.2.

Offsets will be implemented in accordance with MNES fauna national recovery plans and/or the threat abatement and recovery recommendations in the DoTE Species Profile and Threats Database thereby ensuring that the offsets are effective, timely, reasonable and scientifically robust.



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

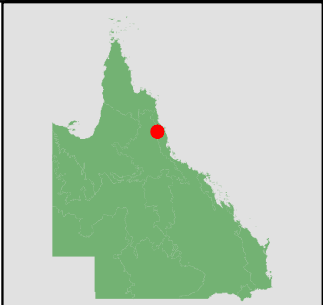
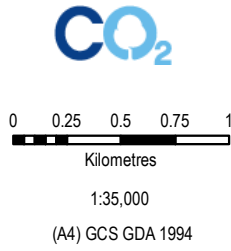
**Ratch/Australia Corporation - Mount Emerald Wind Farm** **LOCATION DIAGRAM**

**Figure 5:  
Spectacled flying-fox  
habitat within the offset**

**DATA SOURCE:**  
Proposed offset area provided by Ratch-Australia Corporation as PDF on 11/11/2013  
The following datasets are © State of Qld 2013:  
- Cadastral Data (Aug 2013)  
- Protected Areas of Queensland - Boundaries (2012)  
- Vegetation Management Act Regional Ecosystems V6.1 (2011)  
- Habitat areas assessed by CO2 Australia (desktop analysis only)

- Mount Emerald Wind Farm
- Offset area
- Offset lots
- Protected areas
- Spectacled flying-fox habitat (approx 360 ha)

DATE	AUTHOR	REQUESTED BY
05-05-2014	RF	LW



## Bare-rumped sheathtail bat

The distribution, habitat preferences, biology and threats of the bare-rumped sheathtail bat are poorly known (DoTE, 2013); however, based on museum records and previously collected specimens, the project area is likely to contain suitable habitat (i.e. mature eucalyptus woodland) (RPS, 2012; DoTE, 2013).

Securing the proposed offset area is expected to maintain the viability of the species population by counterbalancing the habitat lost as a result of project actions. The availability of bare-rumped sheathtail bat roosting habitat within the offset area was calculated based on the presence of the following regional ecosystems:

- 9.12.2, 9.12.30a, 7.12.34 – eucalypt forests
- 9.12.4c, 9.12.7a – open woodlands
- 9.12.20 – low woodlands containing eucalypts.

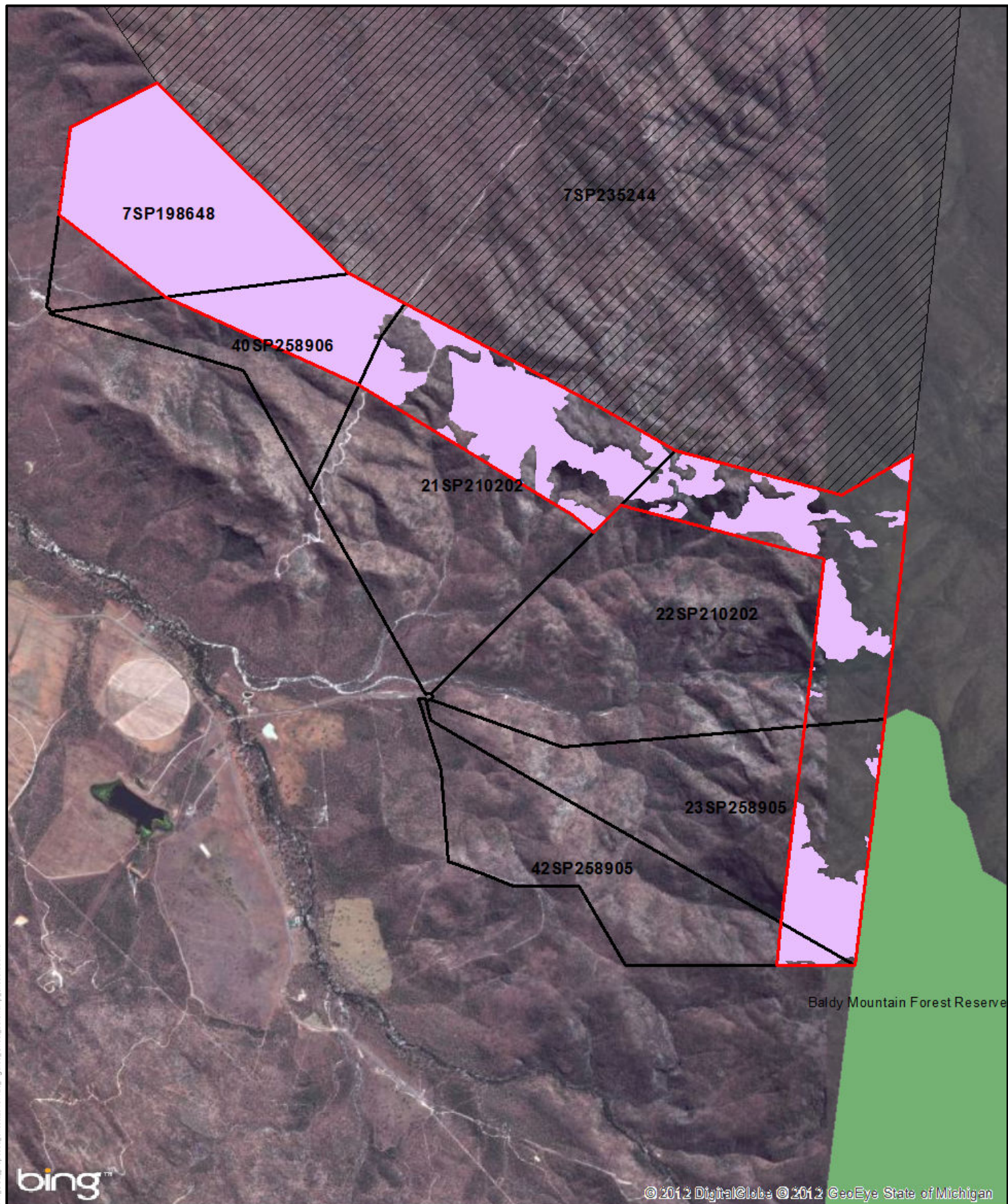
Based on an analysis of these regional ecosystems there is estimated to be 391 ha of potential roosting habitat for the bare-rumped sheathtail bat within the offset area (**Table 4; Figure 6**). The actual extent and quality of roosting habitat within the offset area will require field verification; however, as the offset area neighbours the project area, the habitat within the offset area is expected to be similar to the bare-rumped sheathtail bat habitat identified in the project area (RPS, 2012).

The offset area's proximity to the project area decreases the risk of the offset not succeeding as the comparable vegetation communities and environmental values of the two areas facilitate the effectiveness of the offset. In addition, the connectivity of vegetation between the offset area and the Baldy Mountain Forest Reserve, Herberton Range State Forest and the Herberton Range National Park via the Herberton range reduces the risk of the offset not being effective as the continuity of remnant vegetation facilitates flora and fauna dispersal and ecological resilience.

The proposed offset area is not currently reserved by law or planning regulations or agreed to under other schemes or programs; therefore, securing and managing the proposed offset area will deliver a new conservation gain for the impacted protected matter. To determine that the proposed offsets are in proportion to the level of statutory protection that apply to the bare-rumped sheathtail bat, the offsets assessment guide has been completed as part of the offset implementation (CO<sub>2</sub> Australia 2014). A summary of the results of this assessment are presented in Section 5.2.

Offsets will be implemented in accordance with the MNES fauna national recovery plans and/or the threat abatement and recovery recommendations in the DoTE Species Profile and Threats Database thereby ensuring that the offsets are effective, timely, reasonable and scientifically robust.





Ratch/Australia Corporation - Mt Emerald Wind Farm

LOCATION DIAGRAM

**Figure 6:  
Potential bare-rumped  
sheath-tail bat habitat  
within the offset area**

**DATA SOURCE:**

Proposed offset area provided by Ratch-Australia Corporation as PDF on 11/11/2013  
The following datasets are © State of Qld 2013:  
- Cadastral Data (Aug 2013)  
- Protected Areas of Queensland - Boundaries (2012)  
- Vegetation Management Act Regional Ecosystems V6.1 (2011)  
- Habitat areas assessed by CO2 Australia (desktop analysis only)

- Bare-rumped sheath-tail bat habitat (approx 390 ha)
- Project area
- Offset area
- Offset lots
- Protected areas

DATE	AUTHOR	REQUESTED BY
25-11-2013	RF	LW



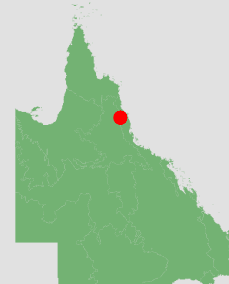
**CO<sub>2</sub>**

0 0.25 0.5 0.75 1

Kilometres

1:35,000

(A4) GCS GDA 1994



### ***Grevillea glossadenia***

The proposed offset area is expected to maintain the viability of *Grevillea glossadenia* by securing habitat of equal or higher quality and managing the threatening processes currently identified in the DoTE Species Profile and Threats database (i.e. resource operation, weed encroachment and stochastic events).

The proposed offset area is mapped as containing 167 ha of *Grevillea glossadenia* habitat (**Table 4; Figure 7**). The availability of habitat in the offset area was calculated based on the presence of the following regional ecosystems:

- 7.12.57
- 7.12.65k
- 7.12.30

Regional ecosystem 7.12.57 was found to support *Grevillea glossadenia* in the project area and the atlas of living Australia has records of the species within the offset area. The actual extent and quality of habitat within the offset area will require field verification; however, as the offset area neighbours the project area, the habitat within the offset area is expected to be similar.

The offset area is not currently subject to resource development permits or applications and is of little risk of resource exploration or development due to the area's steep topography. Weeds have the potential to establish within the offset area as a result of project actions within the adjacent project area; however, weeds will be managed as part of an offset area management plan to ensure that populations do not become established in the offset area.

The implementation of the direct offset area is expected to wholly acquit the project's offset requirements; however compensatory measures such as addressing the scientific knowledge gaps relating to the montane heath vegetation community would be advantageous in achieving a conservation outcome.

The offset area's proximity to the project area decreases the risk of the offset not succeeding as the comparable vegetation communities and environmental values of the two areas facilitate the effectiveness of the offset. In addition, the connectivity of vegetation between the offset area and the Baldy Mountain Forest Reserve, Herberton Range State Forest and the Herberton Range National Park via the Herberton range reduces the risk of the offset not being effective as the continuity of remnant vegetation facilitates flora and fauna dispersal and ecological resilience.

The proposed offset area is not currently reserved by law or planning regulations or agreed to under other schemes or programs; therefore, securing and managing the proposed offset area will deliver a new conservation gain for the impacted protected matter. To determine that the proposed offsets are in proportion to the level of statutory protection that apply to *Grevillea glossadenia*, the offsets assessment guide has been completed as part of the offset implementation (CO<sub>2</sub> Australia 2014). A summary of the results of this assessment are presented in Section 5.2.

Offsets will be implemented in accordance with MNES flora and fauna national recovery plans and/or the threat abatement and recovery recommendations in the DoTE Species Profile and Threats Database thereby ensuring that the offsets are effective, timely, reasonable and scientifically robust.



### ***Homoranthus porteri***

The proposed offset area is expected to maintain the viability of *Homoranthus porteri* by securing habitat of equal or higher quality. Habitat loss as a result of vegetation clearing is expected to impact 5.1 ha of potential *Homoranthus porteri* habitat in the project area. The proposed offset area is mapped as containing 117 ha of *Homoranthus porteri* habitat (**Table 4; Figure 7**). The availability of habitat in the offset area was therefore calculated based on the presence of the following regional ecosystems above 900 m ASL:

- 7.12.57
- 7.12.65k
- 7.12.30

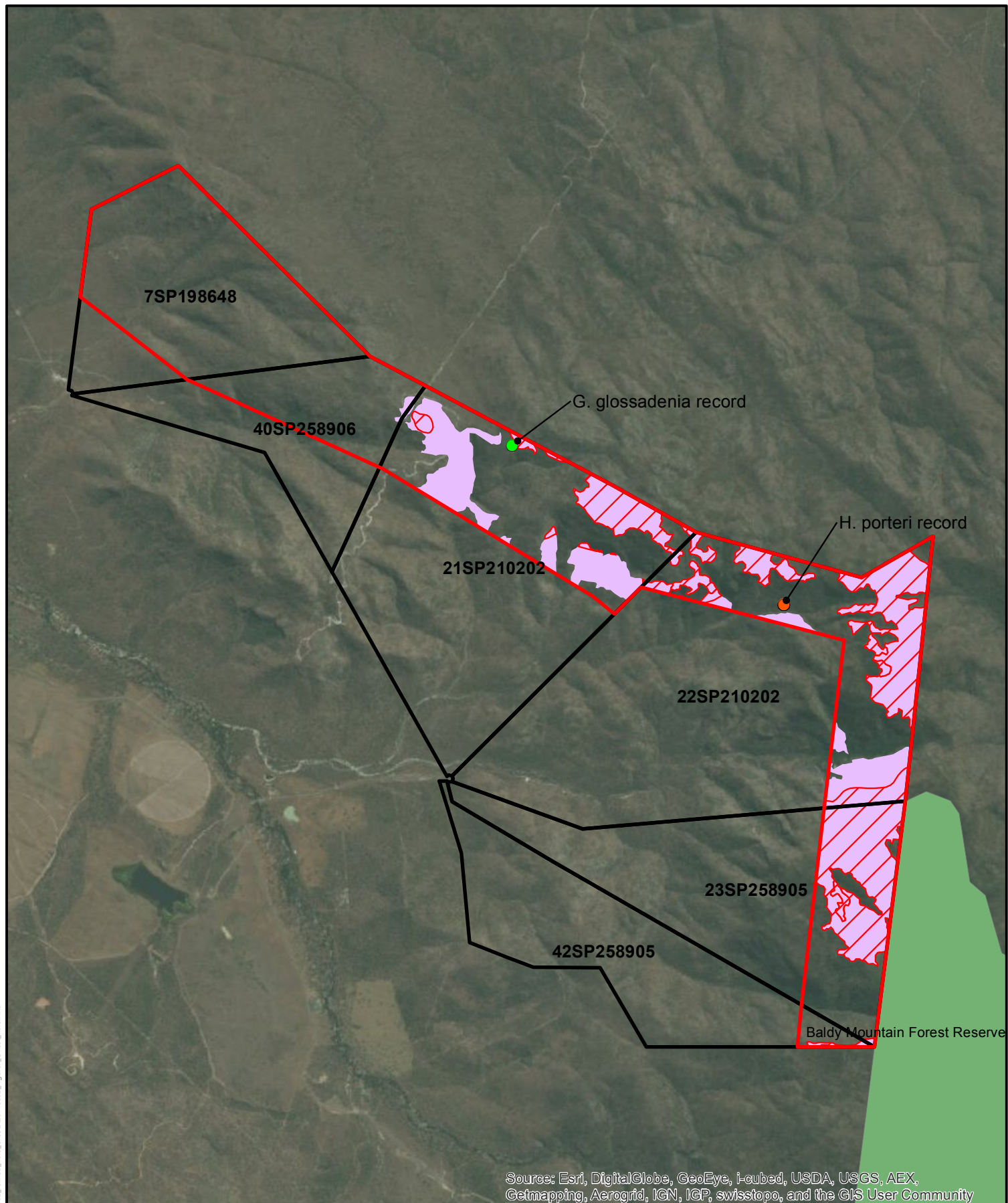
Regional ecosystem 7.12.57 was found to support *Homoranthus porteri* in the project area and the atlas of living Australia has records of the species within the offset area. The actual extent and quality of habitat within the offset area will require field verification; however, as the offset area neighbours the project area, the habitat suitability within the offset area is expected to be similar.

The implementation of the direct offset area is expected to wholly acquit the project's offset requirements (with respect to the *Homoranthus porteri* population); however compensatory measures such as addressing the scientific knowledge gaps relating to the montane heath vegetation community would be advantageous in achieving a conservation outcome.

The offset area's proximity to the project area decreases the risk of the offset not succeeding as the comparable vegetation communities and environmental values of the two areas facilitate the effectiveness of the offset. In addition, the connectivity of vegetation between the offset area and the Baldy Mountain Forest Reserve, Herberton Range State Forest and the Herberton Range National Park via the Herberton range reduces the risk of the offset not being effective as the continuity of remnant vegetation facilitates flora and fauna dispersal and ecological resilience. Furthermore, while this species does not have recorded threats, management plans to address the threatening processes that generally affect other rare plants species, such as weed encroachment, will be implemented to increase the effectiveness of the offset.

Offsets will be implemented in accordance with MNES flora and fauna national recovery plans and/or the threat abatement and recovery recommendations in the DoTE Species Profile and Threats Database thereby ensuring that the offsets are effective, timely, reasonable and scientifically robust. To determine that the offsets are in proportion to the level of statutory protection that applies to the protected matter, the offsets assessment guide has been completed as part of the offset implementation (CO2 Australia 2014). A summary of the results of this assessment are presented in Section 5.2.





Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Ratch/Australia Corporation - Mount Emerald Wind Farm LOCATION DIAGRAM

**Figure 7:  
Flora habitat  
within the offset**

**DATA SOURCE:**

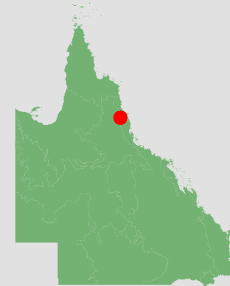
Proposed offset area provided by Ratch-Australia Corporation as PDF on 11/11/2013  
The following datasets are © State of Qld 2013:  
- Cadastral Data (Aug 2013)  
- Protected Areas of Queensland - Boundaries (2012)  
- Vegetation Management Act Regional Ecosystems V8 (2013)  
- Habitat areas assessed by CO2 Australia (desktop analysis only)  
- Species records from Atlas of Living Australia Records (May 2014)

- Offset area
- Offset lots
- Protected areas
- H. porteri habitat (approx 115 ha)
- G. glossadenia habitat (approx 165 ha)
- G. glossadenia record
- H. porteri record

DATE	AUTHOR	REQUESTED BY
05-05-2014	RF	LW



0 0.25 0.5 0.75 1  
Kilometres  
1:35,000 (A4) GCS GDA 1994



## 5.2. PRELIMINARY RESULTS OF OFFSETS ASSESSMENT GUIDE

Based on the results of the offset assessment using the EPBC Act offsets assessment guide (CO<sub>2</sub> Australia 2014), there is sufficient potential for RAC to configure an offset area that is compliant with the requirements of the Australian Government's EPBC Act Offsets Policy on the proposed offset property. While this assessment is preliminary in nature, the values generated from the offsets assessment guide indicate that the proposed offset is suitable to acquit the offset requirements of the project and the percentage of impact offset is over 100% for all values.

The offset area provides for the long term protection of habitat for the five threatened species and through the implementation of adaptive management practices the quality of the habitat will be improved and maintained over time. The actual extent and quality of the habitat within the offset area will require field verification and the final offset configuration will be determined based on the results of these surveys.

**Table 5: Offsets assessment guide results**

OFFSETS ASSESSMENT GUIDE PARAMETER	MNES				
	northern quoll	spectacled flying-fox	bare-rumped sheath-tail bat	<i>Grevillea glossadenia</i>	<i>Homoranthus porteri</i>
Size of impact area:	57.7 ha	57.7 ha	57.7 ha	10.2 ha	5.1 ha
Quality of impact area:	8	3	7	7	7
Start quality of offset area:	8	3	7	7	7
Future quality with offset:	9	4	8	8	8
Future quality without offset:	6	3	6	6	7
Confidence in results:	50%	70%	70%	70%	50%
Risk of loss with offset:	2%	2%	2%	2%	2%
Risk of loss without offset:	5%	5%	5%	5%	5%
Confidence in results:	70%	70%	70%	70%	70%
Time over which loss is averted:	20 years	20 years	20 years	20 years	20 years
Time until ecological benefit:	5 years	Immediate	Immediate	5 years	5 years
Minimum offset area:	315 <sup>4</sup> ha	213 ha	300 ha	50 ha	57 ha
Minimum % of impact offset:	100%	100%	100%	100%	100%
Maximum offset area:	347 <sup>4</sup> ha	360 ha	391 ha	167 ha	117 ha
Maximum % of impact offset:	112%	155%	133%	346%	207%

<sup>4</sup> Includes denning habitat only; however, 236 ha of potential foraging habitat is also available within the proposed offset area.

### 5.3. LANDHOLDER CONSULTATION

Through consultation, RAC has determined that the landholders of the identified lots are amenable to securing the offset area for conservation purposes; however, further assessments of the offset area are necessary and relevant contractual agreements will be required to be negotiated and established. In addition, if approved by DoTE, the offset area will need to be secured in perpetuity through a legally-binding mechanism.

### 5.4. COMPENSATORY MEASURES

RAC's preferred offset delivery method is direct offsets; however, should additional offsets be required, compensatory measures are available. The draft Mount Emerald Wind Farm Flora Report (RPS, 2013) recommended the following compensatory offsets.

#### **Plant Translocation Plan**

A translocation plan based on the criteria and guidelines detailed in the Guidelines for the translocation of threatened plants in Australia (Vallee et al., 2004) should be developed to identify MNES plant species appropriate for relocation as well as target and recipient sites.

#### **Research Opportunities**

The unique and threatened vegetation communities (e.g. montane heath land) and fauna populations (e.g. northern quoll) in the project area present an opportunity to study and address scientific knowledge gaps relating to:

- northern quoll ecology, population dynamics, response to disturbance
- montane heath succession after disturbance
- the effects of weeds on the establishment and succession of montane heath species
- fire ecology as it relates to montane heath communities
- floristic inventory
- flora endemism
- flora rehabilitation
- soil-seed bank dynamics
- horticulture of specialist plants.

#### **Literature and Interpretive Material**

Flora and fauna within the project area is poorly represented in the current literature, apart from occasional taxonomic work (RPS, 2013). Interpretive literature and associated material could be prepared to describe the unique characteristics of the project site and to provide educational sources for a general audience. The northern quoll, for example, is relatively widespread in the project area and provides a unique opportunity to document this regional proportion of the population. The development of this project provides an opportunity to study the rare and threatened species in the project area.

#### **Revegetation**

Replacing native weeds with native plants along the existing road verges from Granite Creek to the base of the project area will reduce the capacity for weeds such as grader grass and molasses grass to spread. In addition, the replacement of weeds with native plants will increase visual amenity into the site. Revegetation may also be undertaken in the vicinity of each turbine.

## 6. OFFSET IMPLEMENTATION

RAC is committed to offsetting the residual impacts of the project on MNES and has developed an approach to offset implementation which ensures offsets deliver an overall conservation gain for the impacted species and are delivered in a timely manner. An overview of offset implementation, including tasks and timeframes, is provided in **Table 6**. These tasks and timeframes are subject to change due to a number of variables, including regulatory approval, regulatory requirements, landholder negotiation, climatic conditions, land access, stakeholder inactivity and other unexpected delays. Details of each of the components associated with offset implementation are provided below.

**Table 6: Implementation plan**

IMPLEMENTATION TASK	TIMEFRAME
Assessment of the proposed offset area against the offsets assessment guide for each impacted MNES, including field surveys where required	Preliminary assessment complete The offsets assessment guide will be updated following field surveys post wet season
Negotiations to establish an offset agreement with the landholder of the offset property	July 2013 – ongoing
Preparation of a detailed offset proposal for submission to DoTE	Following field surveys post wet season
Preparation of an offset area management plan for submission to DoTE	Draft plan completed February 2014
Registration of a relevant instrument on land title to protect the offsets environmental values in perpetuity.	November 2014 Subject to DoTE approval of OAMP and RAC Board Approval for project construction.
Implementation of the offset area management plan	November 2014 Subject to DoTE approval of OAMP and RAC Board Approval for project construction.

### 6.1. FIELD ASSESSMENT OF OFFSET AREA

Field assessments of the offset area will be undertaken following the wet season and will include flora and fauna surveys, where appropriate. The aim of the field assessment is to inform the final assessment using the offsets assessment guide, verify that the values identified through desktop assessments are present and confirm the suitability of the property as an offset. Field assessments will also inform the size and the management requirements of the offset area.

### 6.2. LANDHOLDER NEGOTIATIONS

RAC is currently in consultation with the landholder of the offset area and has determined that they are amenable to securing the offset area for conservation purposes. Once offset suitability has been confirmed through the application of the offsets assessment guide, negotiations with the landholder will commence to establish an offset agreement which will include:

- long-term access arrangements for the offset area
- responsibilities of each party, including, but not limited to, the landholder being party to a legally binding agreement and an offset area management plan (OAMP)
- details of the financial compensation payable to the landholder for long-term access to the offset area.



## 6.3. OFFSET PROPOSAL

In accordance with Sections 6, 7 and 8 of the EPBC Act offsets policy a detailed offset proposal will be prepared for submission to DoTE. The offset proposal will address the overarching principles of the policy and include the results of offsets assessment guide calculations for each impacted MNES. The offset proposal will detail the:

- specific attributes of the protected matter being impacted
- scale and nature of the impact
- duration of the impact
- details of the proposed offset
- extent to which the proposed offset actions correlate to and adequately compensate for the impacts on the protected matter
- conservation gain to be achieved by the offset
- current land tenure of the offset and the proposed method of securing and managing the offset for the of the impact
- time it will take to achieve the proposed conservation gain
- level of certainty that the proposed offset will be successful
- suitability of the location of the offset.

## 6.4. OFFSET AREA MANAGEMENT PLAN

The offset area will be supported by an OAMP. A draft OAMP was prepared in accordance with the Queensland Department of Natural Resources and Mines' offset management plan template in February 2014. The OAMP will be finalised in consultation with regulators, RAC and the relevant landholders and will then be submitted to the regulators for endorsement and will include:

- a map of the offset area, including GPS points
- the type and location of values to be offset
- the offset area management objectives and outcomes
- activities that will be undertaken to achieve the management objectives and outcomes
- an analysis of the risks to achieving the management objectives and outcomes
- a monitoring and reporting program
- estimated time until the offset management objectives and outcomes will be achieved
- identification of all registered interests including mortgages, leases, subleases, covenants, profit-a-prendre, easements and building statements, that have been registered on title under the *Land Act 1994* (Qld) and *Land Title Act 1994* (Qld).

Once approved, the OAMP will be implemented. Implementation includes ongoing management, monitoring and reporting until the objectives of the OAMP have been achieved.

## 6.5. LEGALLY BINDING MECHANISM

The offset area will be secured by a legally binding mechanism. The appropriate mechanism will be determined through negotiation with RAC, the regulators and the landholder and may include.

- conservation park, nature refuge, resource reserve or national park as recognised by the *Nature Conservation Act 1992* (Qld)
- conservation agreements under the EPBC Act
- voluntary declaration under the VM Act

- statutory covenant under the *Land Title Act 1994* (Qld) for freehold land or *Land Act 1994* (Qld) for non-freehold land.

Based on information received from the Queensland Government, the preferred mechanism for protection is a statutory covenant. A statutory covenant is typically used to secure remnant vegetation and is a written agreement that is registered under the Queensland *Land Title Act 1994* (freehold) or the Queensland *Land Act 1994* (non-freehold) on the title of the land. The terms of the covenant are binding on all successors of the title. The parties to the covenant are the covenantee (the landholder) and the covenantor (a statutory body representing the State or local government).

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