Department of Environment and Heritage Protection

Galilee Basin Offset Strategy

August 2013

Great state. Great opportunity.

Queensland Government

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Executive summary

The Queensland Government introduced the Queensland Biodiversity Offsets Policy (BOP) to guide compensation for the removal of state significant biodiversity values as a result of development. The policy provides the framework to ensure that there is no net loss of biodiversity.

The Galilee Basin Offset Strategy has been developed to support the BOP as a result of the scale of activity planned for the Galilee Basin. This strategy provides direction to proponents of level one mining, petroleum and gas activities (and level two petroleum and gas activities where the pipeline is less than 150km); who need to locate an offset site as part of the conditions of an environmental authority under the *Environmental Protection Act 1994* (EP Act). The strategy will achieve this by spatially identifying where a proponent can locate and secure an offset site that achieves the best possible biodiversity outcomes for Queenslanders. The advantage for the proponents who choose to utilise these resources is that development applications will be easier to assess as they relate to offsets, and these companies will contribute to targeted biodiversity conservation in and around the Galilee Basin, with both land based and offset payments targeted to these areas.

The strategy will support the implementation of the BOP, and offsets required under the Vegetation Management Framework through the Policy for Vegetation Management Offsets (PVMO). It also has the potential to support offset placement under the Draft Environmental Offsets Policy for the *Environment Protection and Biodiversity Conservation Act 1992* (EPBC).

Purpose

The purpose of this strategy is to provide spatial resources that guide proponents to locate offset sites in identified strategic conservation hubs and corridors and assist delegated decision-makers under either the EP Act or *Vegetation Management Act 1999* (VMA) in the assessment of development activities in the Galilee Basin.

The strategy aims to do this by identifying a strategic footprint within the Desert Uplands and Northern Brigalow Belt bioregion that identifies where to locate land based offsets for the best biodiversity conservation outcomes. Within the footprint, two priorities have been identified that include:

Priority 1—Identification of conservation hubs that are areas of high conservation value and where there are limited mining interests.

Priority 2—Key north south and east west corridors that link to adjacent bioregions.

The remaining corridor areas identified will link the conservation hubs throughout the bioregions. This footprint can be used either voluntarily by proponents in the Galilee Basin, or by delegated decision-makers to ensure offsets are located in areas that achieve the best possible biodiversity benefits. It can also be used to identify areas that could be acquired and managed for the protected area estate, specifically conservation park.

How this strategy is to be used

The strategy will describe:

- types of development planned in the Galilee Basin;
- what approvals are required and the legislative requirements for offsets;
- environmental values triggered in the Galilee Basin;
- how the strategic footprint was developed and its components; and
- implementation requirements.

For approvals under the *State Development and Public Works Organisation Act 1971 (SDPWOA)*, the strategy will be used to:

- allow appropriate conditioning as part of a Coordinator-General's report to guide proponents into the strategic footprint as part of an offset package.

For proponents and offset brokers the strategy will:

- identify properties that support landscape level outcomes so that the offsets package achieves a no net loss of biodiversity
- identify properties that can acquit offsets for the connectivity value under the BOP and PVMO
- ensure the values to be lost are secure in other areas, to meet BOP and PVMO equivalence requirements.

For decision makers under the EP Act, *Nature Conservation Act 1992* (NCA) and the VMA the strategy will provide options to guide negotiations as part of development approval process and improve offset locations.

For all parties, the strategy provides for pre-approved offset areas allowing for both streamlined approval processes and sound biodiversity outcomes.

Introduction

The Galilee Basin near the town of Alpha in central Queensland will be the location for some of the largest coal mine developments in Australia over the coming decade. The proposed footprint for the ten mine sites and three railway corridors will impact on state significant environmental values regulated under Queensland legislation and matters of national environmental significance regulated under Commonwealth legislation. Environmental impacts that cannot be avoided or minimised may be required to provide an offset under the relevant government offset policies including but not limited to the:

- Queensland Government Environmental Offsets Policy (QGEOP);
- Queensland Biodiversity Offsets Policy (BOP)
- the Policy for Vegetation Management Offsets (PVMO)
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC) Environmental Offsets Policy consultation draft (Commonwealth).

The approval stages of the various mines will occur over the next several years. Five of the mining projects have already advanced to the mining lease application stage and environmental impact statements under the *SDPWOA* with another five at various stages of assessment or preparation. For several of the projects, the specific mining impact areas are well defined. To support the mines, a number of large scale infrastructure developments such as supporting rail lines and worker accommodation villages are proposed.

Knowledge of the potential footprints of advanced proposals has provided the opportunity to quantify the potential biodiversity impacts and plan where offsets could be strategically placed within the landscape and to guide the development of the 'strategic footprint'.

Mining proposals

The Galilee Basin coal-bearing sequence is being intensively explored by a range of companies, some of whom have progressed to firm mining proposals, the subject of detailed EIS and applications for mining leases. The prospective part of the Galilee Basin falls within the Brigalow Belt and Desert Uplands bioregions of central Queensland (Map 1). The five proposals that have commenced an EIS are:

- Alpha (Tad's Corner) Coal Project (GVK Hancock)
- Kevin's Corner Project (GVK Hancock)
- Carmichael Coal Project (Adani Mining)
- China First Galilee Coal Northern Export Facility (Waratah)
- South Galilee Project (AMCI).

Additionally, exploration is progressing on a significant number of early to advanced projects by numerous companies. Five of the more advanced exploration projects are listed below. In some cases, these are extensions of known resources within the deposits listed above; others are separate resources that are also expected to become firm mining proposals in due course—including:

- Degulla Coal Project (Vale)
- China Stone (MacMines) Coal Project (Macmines Austasia Pty Ltd)
- Alpha West (Pau's Corner) Coal Project (GVK Hancock)
- Alpha West Coal Project (Waratah)
- Alpha North Coal Project (Waratah)

The whole of the eastern part of the Galilee Basin, which is the most prospective area for large open-cut thermal coal resources, is held under coal exploration tenure and is being actively explored, with companies such as Guildford Coal, Matilda Coal, Blackwood Resources, Resolve Coal, Linc Energy and Xstrata having outlined coal resources of potential future mining interest.

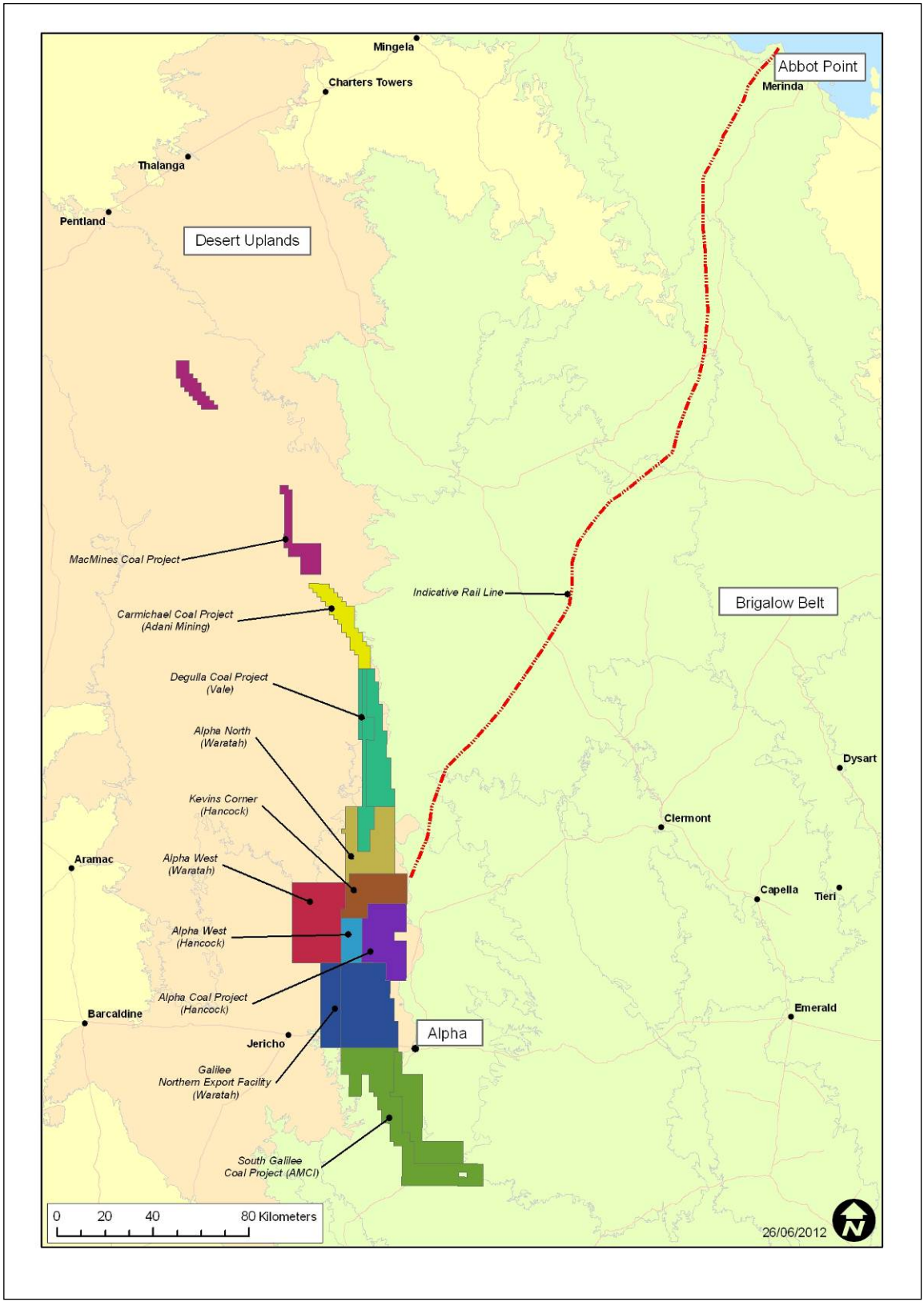
Further information about the declaration of significant projects listed above is available on the Department of State Development, Infrastructure and Planning web site.

Rail lines

In addition to the mining projects, there are proposals for rail lines to transport coal to the Port of Abbot Point near Bowen and to the proposed new Dudgeon Point coal terminal near Mackay. Two rail lines are currently proposed from the southern Galilee to Abbot Point, one by Waratah will start at the China First Coal project and the second proposed by GVK Hancock will start at the Alpha Coal Project and have a spur connecting into the Kevin's Corner project. Adani has proposed a line connecting from its Carmichael project to the existing rail network near Moranbah that could then haul coal to Abbot Point and Dudgeon Point, with the additional option to connect to either the Waratah or GVK Hancock line mid-way to Moranbah.

Other rail proponents include QR National and East-West Line Park, both with proposals to create a network solution for the Galilee Basin. The government has announced there will be a limit of two rail lines.

For any of these rail options, additional spur lines will have to connect to projects such as AMCI's, Vale's and Macmines'. Each proposed railway traverses a separate route impacting a different range of environmental values. The proposed Waratah line is approximately 460km long and the GVK Hancock line, 490km long. The final decision regarding the rail lines is still outstanding and the rail line shown on Map 1 is indicative only.



Map 1 Galilee Basin development area, mining projects and an indicative rail line.

Legislative and policy background

To be granted approval each mining project and rail line will be subject to the legislative and policy requirements under both Commonwealth and State government statutes outlined in Table 1.

Table 1 Summary of legislative and policies applied to development within the Galilee basin

Legislation	Description	Applicable Environment Offsets Policy
State		
State Development and Public Works Organisation Act 1971 (SDPWOA)	The SDPWOA facilitates development and infrastructure planning. Powers are granted to the Coordinator-General to manage major infrastructure projects and to coordinate the environmental impact assessment of significant projects.	QGEOP Significant projects are not directly bound by the BOP however the Coordinator-General may include conditions for offsets consistent with the BOP in the Assessment Report for significant project EIS evaluations
Sustainable Planning Act 2009 (SPA)	SPA provides for a development assessment process for a range of activities that are assessable development. This includes but it is not limited to certain wetlands, vegetation clearing, coastal developments, and environmentally relevant activities. SPA also provides for community infrastructure designations which remove the need for assessment against provisions of a planning scheme.	BOP and PVMO depending on the type of development application
Vegetation Management Act 1999 (VMA)	The VMA regulates clearing through assessment and approval under SPA. Where clearing requires a permit and impacts certain values, an offset will need to be provided in accordance with the PVMO.	PVMO
Nature Conservation Act 1992 (NCA)	The NCA contains provisions aimed at protection of native species and especially those listed as Endangered, Vulnerable, Near Threatened or Special Least Concern wildlife under the Nature Conservation (Wildlife Regulation). Clearing of threatened plant species require an offset in accordance with the BOP.	BOP
Environmental Protection Act 1994 (EP Act)	The EPA requires an environmental authority for certain mining, petroleum and gas activities. Where an activity subject to an environmental authority impacts on State significant biodiversity values, offsets will need to be provided in accordance with the BOP	BOP
Mineral Resources Act 1989 (MRA)	The MRA provides for the administration of mining tenements aiming to facilitate prospecting, exploring and the appropriate environmental responsibility.	Not applicable Activities on Mining Leases are exempt from the VMA
Commonwealth		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC) (Commonwealth)	The EPBC provides a legal framework to protect and manage matters of national environmental significance. Offsets can be considered as part of a decision on whether to approve actions under the EPBC.	*EPBC* Environmental Offsets Policy

Approval framework for the proposed mining projects under State legislation

The proposed mining projects within the Galilee Basin are mining activities for which an environmental authority under the EP Act and a mining lease under the MRA are required.

In addition, five of the mining projects in the Galilee Basin have to date been referred to the Coordinator-General for assessment and have each been declared significant projects. Whilst projects declared as significant projects are not directly bound by the BOP, an offset requirement is almost certain to form part of the conditions set by the Coordinator-General and the BOP is likely to be used as the basis for equitable offset requirements.

If a level one mining project is not declared a significant project requiring an Environmental Impact Statement under the *SDPWOA*, then the BOP requirements are relevant to assessment and approval of an application for an Environmental Authority under the EP Act.

Clearing of native plants, unless made exempt, requires a clearing permit under the NCA. Clearing of plants listed as endangered, vulnerable or near threatened will require an offset in accordance with the BOP.

Approval framework for the proposed rail lines under State legislation

The rail lines needed for the Galilee mine proposals (main line or spur connection to a main line) have been included in the significant project declarations, except for the QR National proposal, which is subject to a separate declaration and requirement for an Environmental Impact Statement.

In the case of the GVK Hancock rail line, the Coordinator-General has also declared it to be an infrastructure facility of significance pursuant to the *SDPWOA*. This provides an ability for GVK Hancock to request the Coordinator-General to compulsorily acquire land for the rail corridor should the company not be able to acquire the land by agreement, having demonstrated that reasonable endeavours had been made to do so.

Clearing of vegetation for the proposed rail lines from the Galilee Basin to Abbot Point or other ports will be assessable development under the Sustainable Planning Regulation 2009 for which a development approval is required. An application to clear vegetation will be assessed against the relevant Regional Vegetation Management Code and impacts on certain values regulated by the VMA that cannot be avoided may be required to be offset in accordance to the PVMO. The PVMO is a statutory policy under the VMA. The Coordinator-General may require offsets for impacts associated with the rail in addition to the requirements of the PVMO including offsets consistent with the BOP.

There is a possibility that GVK Hancock (and other rail proponents) will seek designation of their rail components as community infrastructure pursuant to the *Sustainable Planning Act 2009 (SPA)*. A designation would remove the need for approval of an application for material change of use against provisions of relevant local government planning schemes. However, clearing approval, and therefore offsets, will still be required.

Clearing of certain native plants requires a clearing permit under the NCA. Clearing of plants listed as endangered, vulnerable or near threatened will require an offset in accordance with the BOP.

Approval framework under Environment Protection and Biodiversity Conservation requirements

Matters of National Environmental Significance (NES) such as world heritage sites and nationally threatened species are regulated by the EPBC, which is the Commonwealth Government's environmental legislation. Developments which potentially impact matters of NES are referred to the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) where the Commonwealth Minister for Environment or a delegate will make a decision to declare the project as a 'controlled action' the assessment process required and whether approval is required under the EPBC.

Each controlled action requires approval under the EPBC. The Commonwealth will assess each application either in parallel with the State Government assessment process, or under a bilateral agreement where a Queensland process is accredited by the Commonwealth. In either case the Commonwealth retains approval powers and may determine if a controlled action may or may not proceed.

As part of the approval process the Minister may impose conditions including a requirement to offset in accordance with the EPBC Environmental Offsets Policy. Offsets required by the Commonwealth may also count as being acceptable for the BOP though it should be noted that the Commonwealth may accept offsets that are already mapped as remnant vegetation. The Galilee Basin Offset Strategy has identified remnant vegetation that may satisfy the protection of matters of national environmental significance under Commonwealth legislation.

Environmental Values and Potential Impacts within the Galilee Basin

The Galilee Basin coal project proposals are located within the Brigalow Belt and Desert Uplands bioregions in an area that contains a range of environmental values with large areas of intact remnant vegetation. The area contains important refuges for woodland bird species that have declining populations in the southern part of their range; and wetlands including Lake Galilee and Lake Buchanan, Caukingburra swamp which provide nesting and feeding habitat for over 50,000 waterbirds annually comprising over 50 different species. Numerous sub-artesian springs such as Doongmabulla springs support endemic flora and fauna with a high level of species richness. The Galilee Basin supports over 2000 known plant species, with 17 endangered, 17 vulnerable and 31 near threatened species. The Bimble Box Nature Refuge is also located in the proposed Galilee Basin coal mining area.

The impacts of the proposed mines within the Galilee Basin will vary according to their footprint and the extent of open cut operations or the depth of underground operations. Known mining footprints indicate impacts ranging from 4000 ha to 8000 ha per mine. This could result in a total impact area of 50 000 ha for the mines currently proposed, including the proposed rail lines.

The table below summarises the potential values that may require offsets as a result of the proposed impacts under the respective policies, including the potential offset ability. The potential offset availability has been determined based on a search of unprotected woody regrowth that potentially contains the appropriate environmental values. State significant biodiversity values that overlap with matters of national environmental significance (EPBC) are identified to enable proponents to identify where the provision of offsets could meet both frameworks. These tables are based on a number of assumptions and provide an indicative overview of the potential impacts and offset availability.

Table 2 Mine Sites Values and Impacts

BOP Values for mining project areas	**Potential Impact (ha)** High >2500 ha Moderate 500 – 2499ha Low <500ha DEU = desert uplands bioregion BB = brigalow belt bioregion		**Potential Offset Availability** High >2500 ha Moderate 500 – 2499ha Low <500ha	**Overlap with EPBC matters of 'National Environmental Significance'.**
Endangered Remnant RE	DEU	Nil	N/A	✓ Brigalow Ecological Community. Semi-evergreen vine thickets of the Brigalow Belt (north and south) and Nandewar Bioregions.
	BB	Moderate (2030ha)	High (579 090ha)	
Endangered Remnant Grassland RE	DEU	Nil	N/A	✓ Natural Temperate Grasslands of the Queensland Central Highlands and the Northern Fitzroy Basin.
	BB	Low (30ha)	High (7 526ha)	
Endangered High Value Regrowth RE	DEU	Nil	N/A	✓ Brigalow Ecological Community. Semi-evergreen vine thickets of the Brigalow Belt (north and south) and Nandewar Bioregions.
	BB	Low (40ha)	High (579 090ha)	
Of concern Remnant RE	DEU	High (2915ha)	Moderate (1585ha)	✓ Weeping Myall Woodlands ecological community). Semi-evergreen vine thickets of the Brigalow Belt (north and south) and Nandewar Bioregions.
	BB	High (8035ha)	high (67 420ha)	
Of concern Remnant Grassland RE	DEU	Nil	N/A	✓ Natural Temperate Grasslands of the Queensland Central Highlands and the Northern Fitzroy Basin.
	BB	Low (113ha)	High (17 358ha)	
Of concern High Value Regrowth RE	DEU	Low (10ha)	Moderate (1585ha)	✓ Weeping Myall Woodlands ecological community). Semi-evergreen vine thickets of the Brigalow Belt (north and south) and Nandewar Bioregions.
	BB	Low (240ha)	High (67 420ha)	
Threshold RE	DEU	Mod (1000ha)	Low (308ha)	✗
	BB	High (3500ha)	High(79 910ha)	
Critically limited RE	DEU	Nil	N/A	✗
	BB	Nil	N/A	
Essential Habitat	DEU	Mod (1979ha)	To be determined	

	BB	Low (29ha)	To be determined	×
Essential Regrowth Habitat	DEU	Nil	N/A	×
	BB	Nil	N/A	
Watercourses	DEU	High (16100ha)	High (9443ha)	×
	BB	High (6551ha)	High (>2500ha)	
Wetlands (Significant and non—significant wetlands)	DEU	Low (254ha)	Moderate (1181ha)	✓ The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin.
	BB	Low (125ha)	High (18 852ha)	
Great Barrier Reef Wetlands	DEU	Moderate (2207 ha)	Moderate (587 ha)	×
	BB	Low (13ha)	High (14 045ha)	
Connectivity	DEU	High (>2500ha)	High (>2500ha)	×
	BB	High (>2500ha)	High (>2500ha)	
Protected plants Potentially includes but not limited to: Western rosewood (Acacia spania)(NT) Mt Coolum bertya (Bertya sharpeana) (NT) Cassowary Plum (Cerbera dumicola) (NT) Bloodwood (Corymbia clandestine) (V) Large-podded Tick trefoil (Desmodium Macrocarpum) (NT) Round-leaved myrtle (Micromyrtus rotundifolia) (V) Belyando Cobblers Peg (Trioncinia retroflexa)(E)		To be determined	To be determined	✓ To be determined

Protected animals Potentially includes but not limited to: Common Death Adder (Acanthophis antarcticus) (NT) Little Pied Bat (Chalinolobus picatus)(NT) Capricorn Ctenotus (Ctenotus capricorni) (NT) Yakka Skink (Egernia rugosa) (V) Black-necked Stork (Ephippiorhynchus asiaticus) (V) Dunmall's Snake (Furina dunmalli)(V) Squatter Pidgeon (Geophaps scripta scripta) (V) Square-tailed Kite (Lophoictinia isura)(NT) Black-chinned Honeyeater (Melithreptis gularis) (NT) Brigalow Scaly Foot (Paradelma orientalis) (V) Black Throated Finch (Poephila cincta cincta) (E) Australian Painted Snipe (Rostratula australis) (V)		To be determined	To be determined	✓ The following species have been identified as potential MNES under the EPBC for the Galilee Basin, but are not limited to: Yakka Skink (Egernia rugosa) (V) Dunmall's Snake (Furina dunmalli)(V) Squatter Pidgeon (Geophaps scripta scripta) (V) Brigalow Scaly Foot (Paradelma orientalis) (V) Black Throated Finch (Poephila cincta cincta) (E) Australian Painted Snipe (Rostratula australis) (V)

*Table 3 Rail line values and impacts based on the proposed Waratah and GVK Hancock lines**

PVMO values triggered by potential rail lines	**Potential Impact** High >2500 ha Moderate 500 – 2499ha Low <500ha DEU = desert uplands bioregion BB = brigalow belt bioregion		**Potential Offset Availability** High >2500 ha Moderate 500 – 2499ha Low <500ha	**Overlap with EPBC matters of 'National Environmental Significance'.**
Endangered Remnant RE	DEU	Nil	N/A	✓ Brigalow Ecological Community Semi-evergreen vine thickets of the Brigalow Belt (north and south) and Nandewar Bioregions
	BB	Moderate (1080ha)	High (579 090ha)	
Of concern Remnant RE	DEU	Nil	N/A	✓ Weeping Myall Woodlands ecological community Semi-evergreen vine thickets of the Brigalow Belt (north and south) and Nandewar Bioregions
	BB	Moderate (2200ha)	High (67 420ha)	
Threshold RE	DEU	Nil	N/A	×
	BB	Low (357ha)	High (79 910ha)	
Critically limited RE	DEU	Nil	N/A	×
	BB	Nil	N/A	
Essential Habitat	DEU	Nil	N/A	×
	BB	Low (5ha)	To be determined	
Watercourses	DEU	Low (200ha)	High (9443ha)	×
	BB	Moderate (2266ha)		
Wetlands	DEU	Low (5ha)	Moderate (1181ha)	×
	BB	Low (220ha)	High (18 852ha)	
Connectivity	DEU	Nil	N/A	×
	BB	Low (400ha)	High (>2500ha)	

*These figures are based on nominal rail line buffers for the Waratah and GVH Hancock lines and are indicative only.

The Strategic Footprint

The Strategic Footprint, as identified in map 2, has been designed to identify areas within the Desert Uplands and the Northern Brigalow Belt Bioregions that have state significant and irreplaceable values and provide for landscape connection in order to ensure the long-term protection and viability of these biodiversity assets within each bioregion. By protecting the biodiversity values within the footprint, the broad outcomes will include improved long-term viability of ecosystems, species and the services they provide through protection and/or enhancement of:

- large tracts of remnant habitat with particularly significant environmental values; and
- connectivity, and hence reducing the effects of habitat isolation of species.

The footprint provides the basis of the offsets strategy by identifying key areas to protect in order to contribute to the long term conservation outcomes for each bioregion.

Rationale

The rationale of the strategic footprint includes:

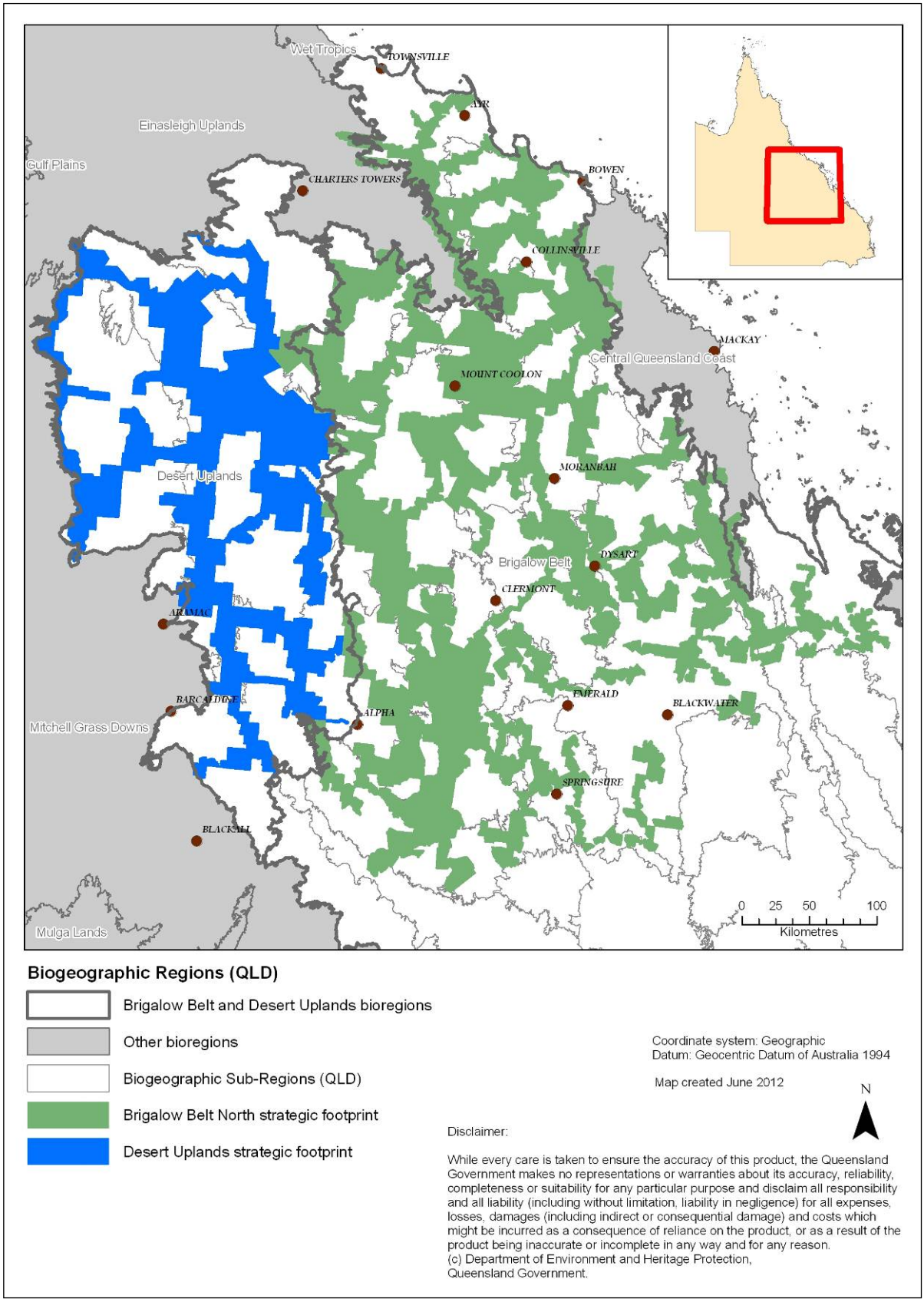
- to protect the most significant areas of remnant habitats;
- to ensure these areas remain connected;
- identify areas that could be acquired and managed for the protected area estate (conservation park);
- identify non-remnant areas which can serve as viable offsets to enhance connectivity or enhance significant remnants as buffers;
- provide opportunities for landholders to raise income from offset management; and
- provide streamlined approvals for proponents requiring offsets.

Protecting the key large remnant areas will help ensure that core habitat is available for the long-term survival of ecosystems and larger more viable populations of species. Protecting the connectivity between the large remnant habitat areas will ensure that ecosystems can continue to function across the landscape, migration of species can continue and populations remain connected in the long-term. It will also help protect the provision of ecosystem services across the landscape. Rehabilitation may be carried out to expand on the total habitat available and enhance the connections.

The strategic footprints are comprised of four types of areas:

- high conservation value areas
- complementary conservation areas
- biodiversity corridors that link current protected areas and areas with high conservation value and can include a combination of areas that are either remnant or have potential for rehabilitation
- potential rehabilitation areas (including non-remnant vegetation).

Within the footprint a number of conservation hubs have been identified as potential focus areas for offsets. Conservation hubs are centred on and around existing protected areas or areas with high conservation value that have a low level of mining interest, and therefore the greatest opportunity of protection. Map 2 provides an overview of the strategic footprints to accompany the description below.



Map 2 Overview of the strategic footprint within the Northern Brigalow Belt and Desert Uplands bioregion

The Desert Uplands strategic footprint

Within the Desert Uplands strategic footprint, 599,137ha (8.6% of the Desert Uplands Bioregion) has been identified as having high conversation values. Within the Desert Uplands footprint, 1,717,975ha (25% of the bioregion) has been identified as having significant biodiversity corridor values that will help maintain east west and north south connectivity across the bioregion. A total of 69 of the 75 regional ecosystems in the bioregion are represented in the biodiversity corridor areas. A further 17,467ha of non-remnant areas have been identified as having potential rehabilitation values. These areas could potentially meet the BOP where the values are appropriate.

Two conservation hubs have been identified within the Desert Uplands hub; the Lakes Complex and the Boongoondoo Hubs. Mining interests in these areas are low and therefore have a higher probability of long-term protection (see details in Appendix 2).

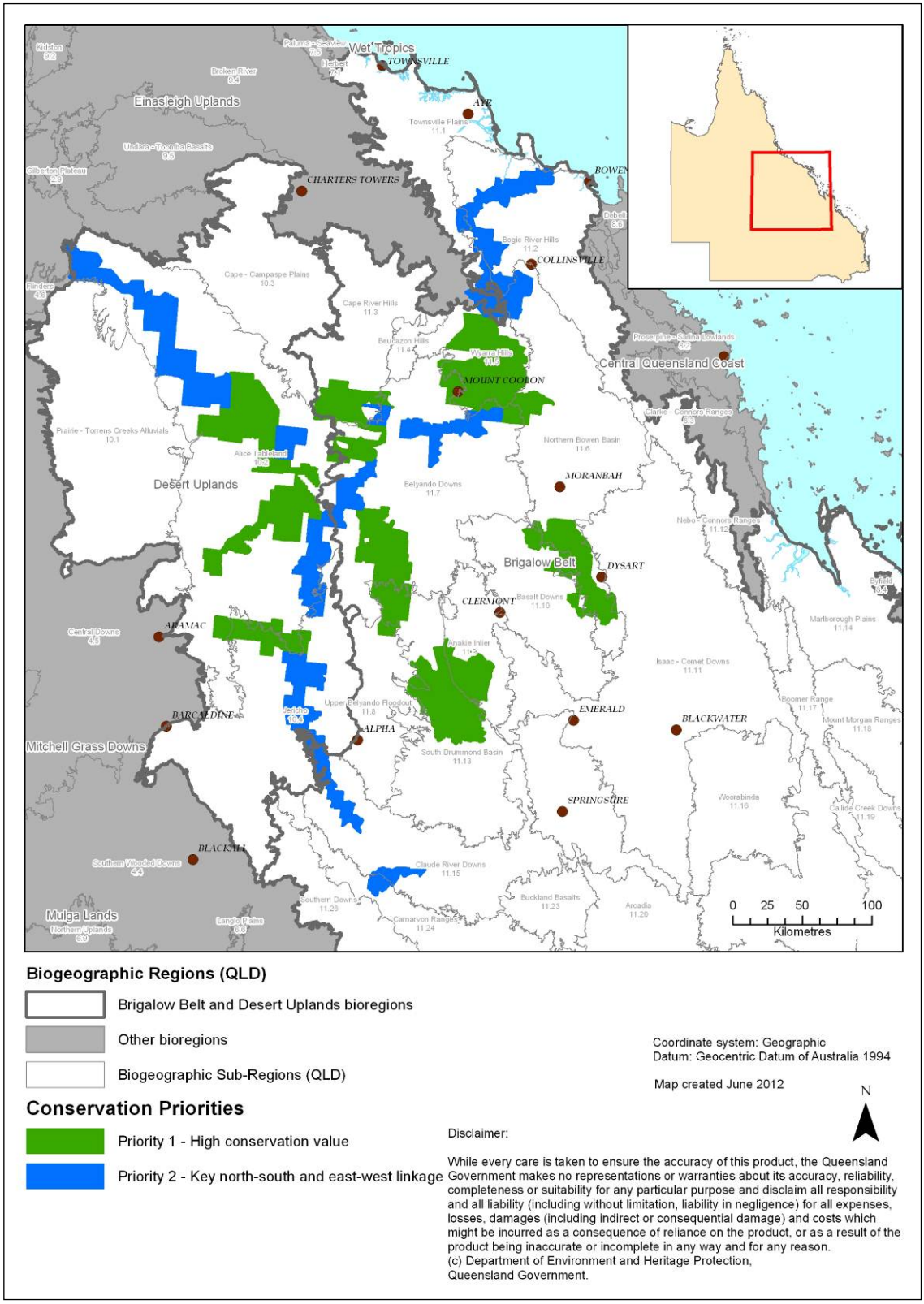
The Northern Brigalow Belt strategic footprint

The Northern Brigalow Belt strategic footprint covers 3,332,277ha or 22% of the bioregion. Of this area, 1,163,284ha (or 8% of the bioregion) has been identified as having high conservation value, such as irreplaceable ecosystem values, a high level of ecosystem function and habitat values. A further 1,205,592ha within the footprint (8% of the bioregion) has been identified as having high biodiversity corridor values. A further 963,401ha has been identified as having excellent rehabilitation potential, which could potentially meet the BOP requirements. A total of 142 regional ecosystems out of a total 168 in the Northern Brigalow Belt Bioregion are represented within the footprint.

Five conservation hubs have been identified within the Northern Brigalow Belt footprint. These areas would provide long-term security for biodiversity offsets. These hubs are the Drummond Range Hub (202,289ha), the Epping Forest Hub (126,558ha), Wilandspey Hub (110,470ha), the Cerito Hub (268,460ha) and the Denham Range Hub (126,840ha) (see Appendix 2 for details).

Priority areas within the strategic footprint

Given the large size of the footprint within the bioregions, a two-tiered priority system has been allocated and is shown on Map 3. This priority system within the footprint has been designed to provide higher priority to certain areas within the footprint. Where possible, proponents or offset brokers should locate offsets in accordance with the priorities. Below is a description of each of the priorities.



Map 3 Priority areas within the strategic footprint

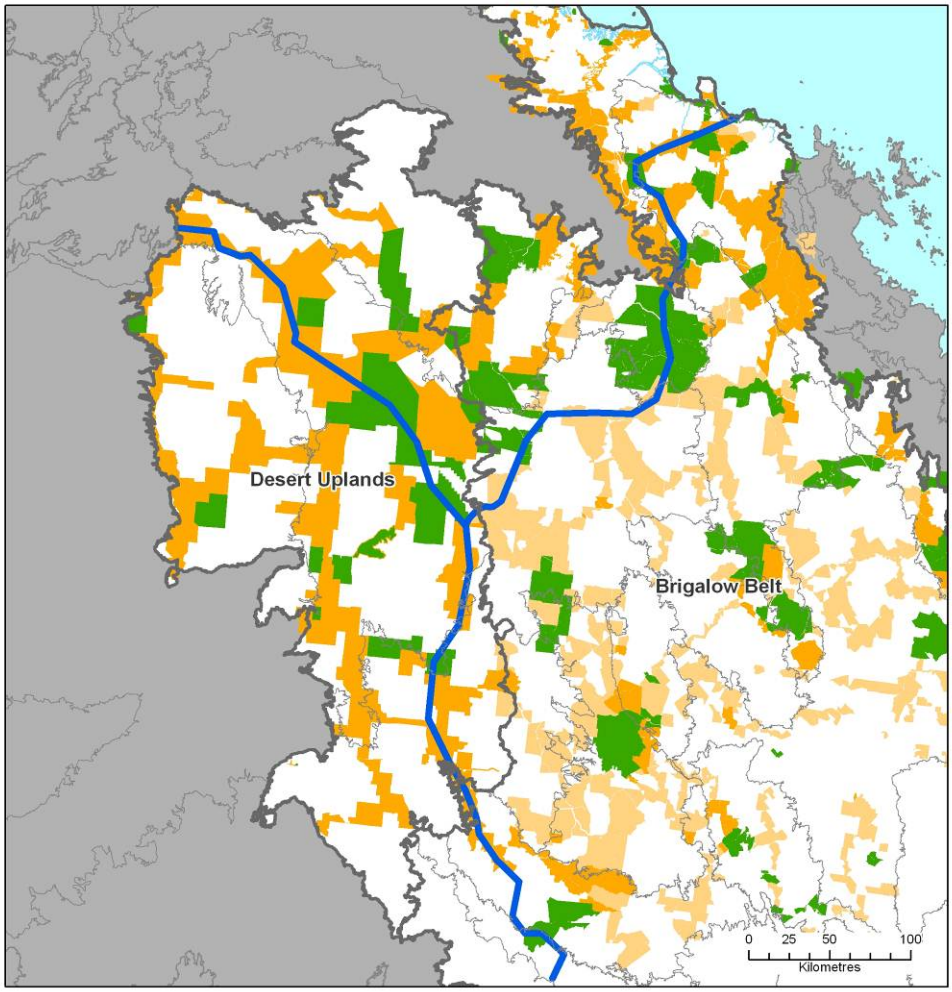
Priority 1—Conservation hubs.

Represented by the green areas on Map 3, these are the areas that contain high levels of conservation value and should be focussed on first to locate offsets. These areas are also likely to have the lowest risk of future development through mining. The full values associated with each of the conservation hubs are provided in Appendix 2.

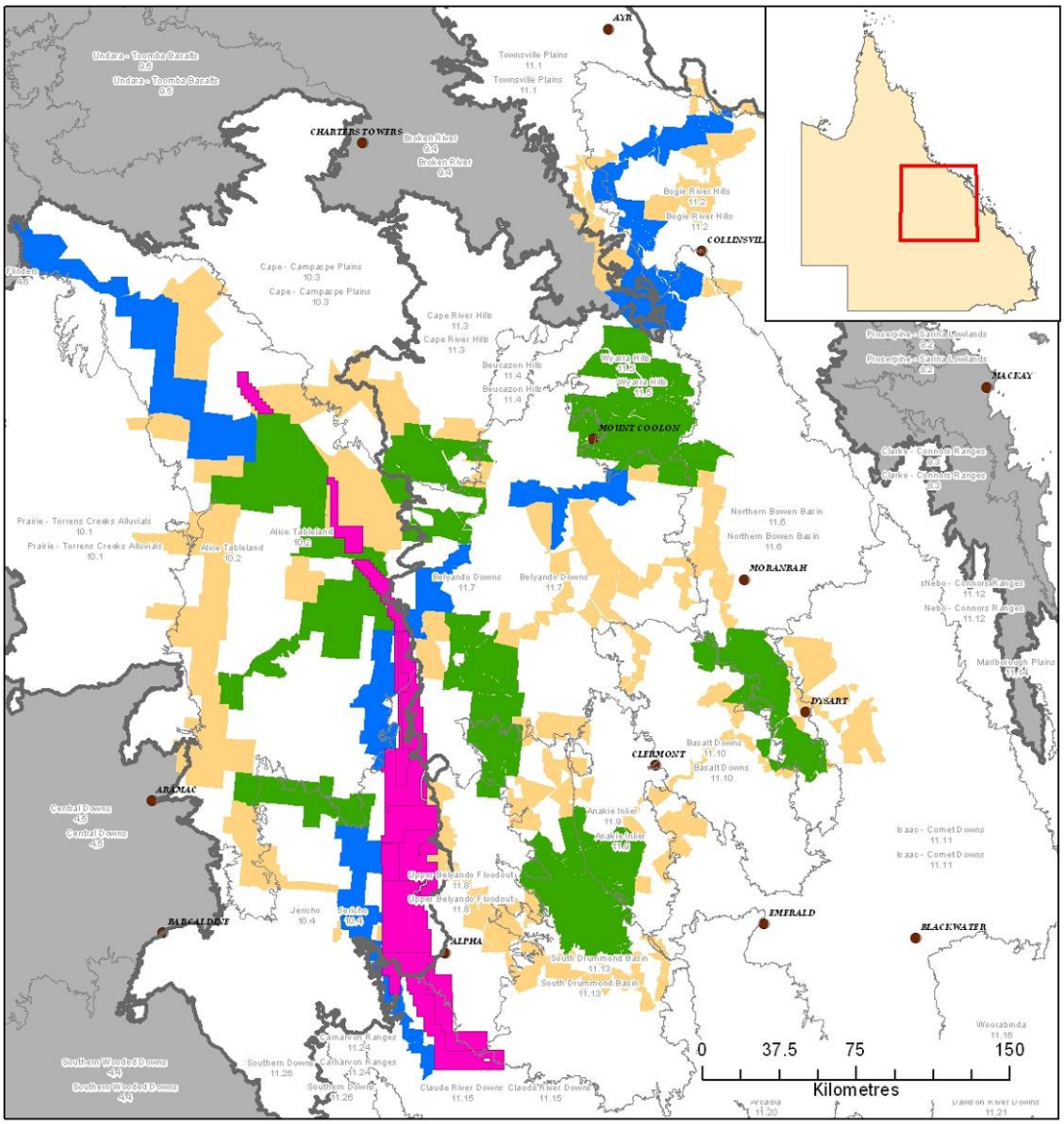
Priority 2—Key north south and east west linkages.

Represented by the blue areas on Map 3 and the representative lines on Map 4, there are two key connections that provide important linkages at a bioregion scale across the Desert Uplands and Northern Brigalow Belt. One provides a contiguous linkage of habitat north south through the Desert Uplands Bioregion along-side the Great Dividing Range. The second provides an east west linkage from the Desert Uplands across towards the coast via the Carmichael river, to the Belyando river, along the Suttor river to the Leichhardt Ranges and then across Dalrymple Mountain to the coast at Upstart Bay. These areas should be focussed on as a second priority.

The remaining areas of the strategic footprint are shown on Map 5 below as a tan colour and provide the linkages between the conservation hubs. Parts of these areas will meet the PVMO as they have large areas of non remnant with potential for rehabilitation.



Map 4 Representation of the key north south and east west linkages between priority areas



Conservation Priorities

- Priority 1 - High conservation value
- Priority 2 - Key north-south and east-west linkage
- Strategic footprint
- Galilee Basin mining tenements

Biogeographic Regions (QLD)

- Brigalow Belt and Desert Uplands bioregions
- Other bioregions
- Biogeographic Sub-Regions (QLD)
- Towns

Coordinate system: Geographic
Datum: Geocentric Datum of Australia 1994

Map created July 2012

Map 5 Galilee Basin Offset Strategy Priority 1 and Priority 2 areas

Resource values within the strategic footprint

The 'strategic footprint' is known to cover in part some significant coal resources and may contain other valuable coal, mineral and petroleum resources which, due to current economic and technological constraints, remain undiscovered or underexplored.

Through the development of the strategic footprint, Department of Environment and Heritage Protection (EHP) and Department of Natural Resources and Mines (DNRM) have attempted to identify the conservation hubs in areas containing known biodiversity values but with minimal future mining potential. However, with much of Queensland presently covered by some form of resource tenure or tenure application, locating and securing suitable areas for land-based offsets will inevitably lead to competing interests. Consequently more detailed resource evaluations are required to refine conservation hubs which due to their low resource potential can be restricted from future mining activities and protected in perpetuity. This will be an ongoing process with the appropriate delegate of the *MRA* from DNRM.

Galilee Basin Offset Strategies

To achieve strategic conservation outcomes from the proposed impacts, the following strategies are to be implemented:

Strategies		Policy Relevance		
		BOP	PVMO	EPBC policy
1.	The priority 'strategic footprint' is provided to proponents, offset brokers and relevant decision makers (Coordinator-General's office and Commonwealth Department of Sustainability, Environment, Water, Population and Communities) to guide the location of land based offsets The strategic footprint provides a significant area in both bioregions to locate offsets. It includes areas that are currently not protected (non-remnant areas) and remnant areas. It provides an area that proponents and offset brokers can locate offsets to maximise biodiversity benefits, and allows decision-makers, such as the Coordinator-General to condition offset placements into the footprint where practicable. The strategic footprint will also under the BOP and PVMO provide: Areas for offsetting the connectivity value; and Additional ability to score special features score under the ecological equivalence methodology.	✓	✓	✓
2.	The priority strategic footprint is used to identify areas to be acquired or funded from financial payments made to approved trusts (such as Balance the Earth) or other offset brokers to acquit offset liability Financial payments will be encouraged as the preferred method for offset acquittal. The strategic footprint will contain key parcels that contain values similar to that affected by the development thereby satisfying overall the values to be lost. Funds will be used for: • payments to landholders for land management to protect and enhance conservation values, • acquisition and management of lands under the protected area estate (conservation park).	✓	✓	✓

3.	Liaise with DNRM to identify possible areas within the strategic footprint that could be restricted from mining under the *Mineral Resources Act 1989.* Large areas of the affected bioregions are potentially subject to resource extraction which will affect areas being protected in perpetuity or secured in perpetuity. Options exist to restrict areas from future mining, and key parcels within the strategic footprint (those with high conservation value) will be proposed to be restricted in negotiation with the DNRM. This will facilitate approval of the projects and offsets under EPBC.	✓	✓	✓

Implementation of the strategies

The following actions and timing will be implemented as follows:

	Action	Timing	Responsibility
1	Discuss the strategic footprint with proponents and offset brokers	Immediate and then as required as part of the mining approvals process.	EHP
2	Provide advice to the Coordinator-General as part of the assessment and approval process to locate offsets within the strategic footprint where practicable.	As required for each Coordinator-General report	EHP
3	Negotiate the Galilee Basin Offset Strategy and priority strategic footprint with the Commonwealth Government so offset requirements under both State and Commonwealth legislation (EPBC) can be coordinated.	Within one month of the strategy endorsement	EHP
4	Discuss recommendations to approved trusts on the Galilee Basin Offset Strategy and the key properties that should be considered for acquiring and managing under the protected area estate or properties that could be funded for good land management outcomes.	Within one month of endorsement and once annually.	EHP
5	Liaise with the delegate of the *MRA to* protect identified Conservation Hubs within the strategic footprint from mining.	Ongoing	EHP DNRM

Appendices

Appendix 1—The Methodology for developing the strategic footprint

Introduction

A range of existing information sources and tools were combined to assist planning for the development of the strategic footprint. In particular the key information included:

Areas of high conservation value as identified through the Protected Areas for the Future program

Information from Biodiversity Planning Assessments which spatially map the strategic values (including wildlife corridors) in the regions

Regional ecosystem mapping of vegetation in the Galilee Basin

Expert field knowledge of the area

Mapped foliage projective cover > 6 percent (an area containing woody vegetation with foliage projective cover of greater than 6 percent per hectare may represent a functioning regional ecosystem if rehabilitated).

Queensland government ecologists have carried out an analysis using the available data sources to ensure the strategic footprint provides the best opportunity to support ecological function and biological diversity.

Identifying areas with high conservation value

The process for identifying areas with high conservation value involves a systematic and information-rich methodology through the protected area acquisition program. The major stages include:

- obtain information about the ecological values
- identify conservation goals
- review existing conservation areas for contribution to these targets
- select additional conservation areas
- implement conservation actions
- ensure the values are conserved into the future.

Some of the key criteria that feed into the process for identifying areas with high conservation value include:

- the contribution to long-term climate change resilience of biodiversity;
- representation of freshwater or geological features and the range of terrestrial ecosystems;
- whether the area provides ecosystem services;
- whether the area is important for priority or threatened species;
- land condition and level of threat; and
- the potential for rehabilitation of environmental values.

Identifying complementary conservation areas

Complementary conservation areas are identified around existing protected areas or areas with high conservation value. These areas will support the long-term ecological viability of local ecosystems, primarily by providing increased protection for large tracts of remnant vegetation. This is considered to be an important approach in highly cleared landscapes (such as the northern Brigalow Belt) where a large proportion of core habitat has been lost. Protection of large remnant patches therefore is likely to have the most significant impact on long-term viability of species and ecosystems (Falcy and Estades, McAlpine et al. 2002, Martensen et al. 2008).

Complementary conservation areas are assessed against the same criteria as areas with high conservation value, but do not need to meet the same high standard. As the areas are not intended as public space or for addition to the protected area estate, they do not need to be assessed for tourism or recreation values or against protected area targets.

A property (or part thereof) is considered appropriate for designation as a complementary conservation area if:

- it is adjacent to an existing protected area or area with high conservation value, and the remnant vegetation is part of the same contiguous tract
- it is predominantly remnant vegetation (>70%)
- it complements the protection of values in the existing protected area, and also rates highly for many of the principles of high conservation value selection
- the condition of the property is good or has the potential for rehabilitation with improved ecologically sustainable management.

Identifying potential rehabilitation areas

The rehabilitation areas within the strategic footprint have two aims—to enhance:

- habitat area and patch size, particularly in fragmented bioregions such as the Brigalow Belt
- connectivity between remnant vegetation patches.

Potential regeneration/rehabilitation areas were incorporated into the strategic footprint where they:

- were located next to or within an area identified as high conservation value or complementary conservation area
- supported existing connectivity identified within biodiversity corridors
- would provide a connection between areas with high conservation value and associated complementary conservation areas if rehabilitated.

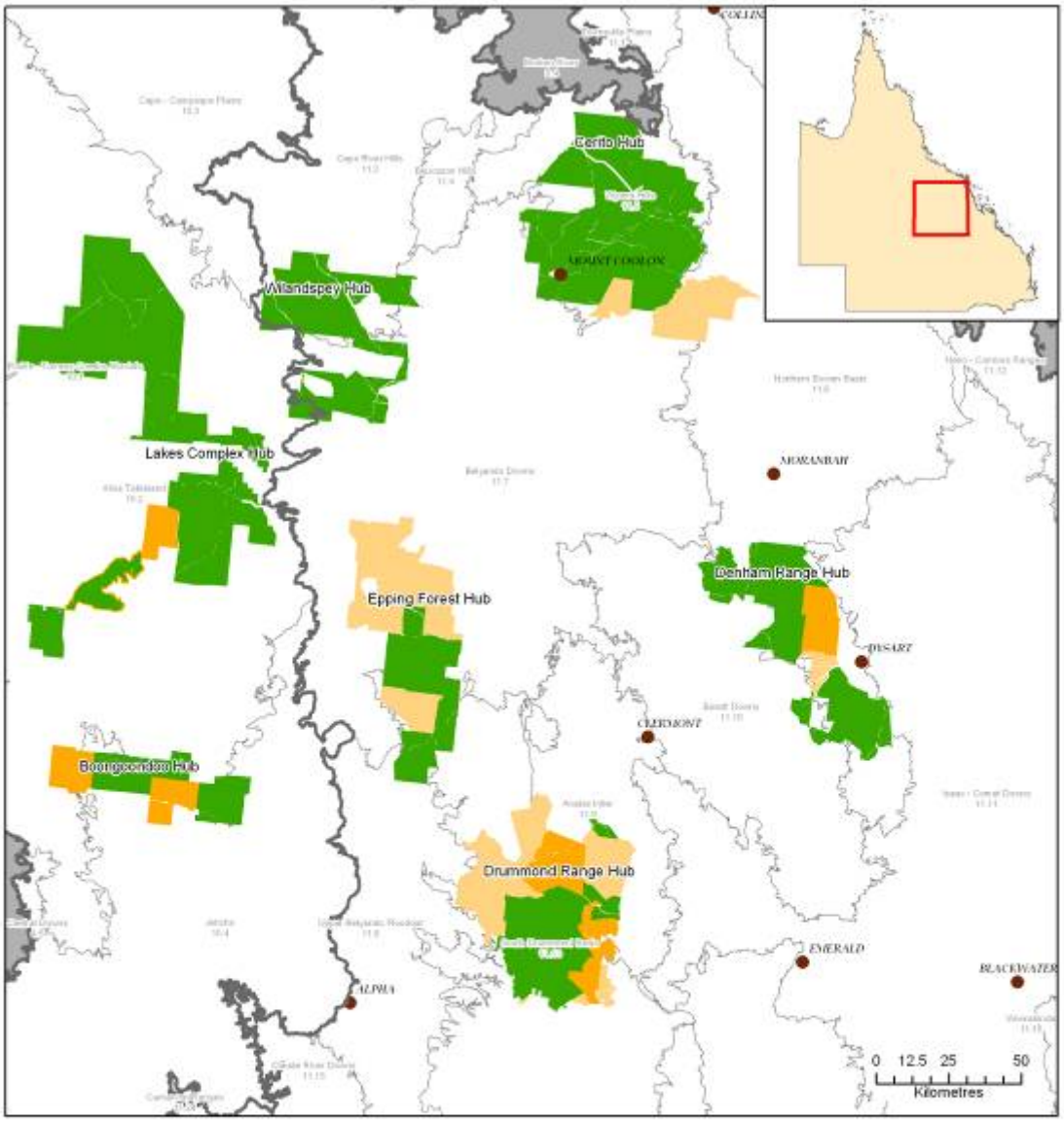
Identifying biodiversity Corridors

The biodiversity corridors identified through the strategic footprint planning process are primarily based on the Biodiversity Planning Assessment wildlife corridors (Criteria J). These corridors have been identified either because they are existing vegetated corridors important for landscape contiguity (these can include regrowth), or cleared areas that could serve this purpose if revegetated. Some examples of corridors include contiguous remnant vegetation, vegetation along riparian habitats, or stepping stone corridors which consist of patches of remnant vegetation through the landscape. For more details on these corridors refer to the Biodiversity Planning Assessment documents for the Brigalow Belt and Desert Uplands.

Conservation hubs

Conservation hubs are potential focus areas for offset processes. These hubs are centred on existing protected areas or areas with high conservation value, and generally represent large tracts of remnant vegetation and areas with rehabilitation value. The areas are not necessarily the highest priority areas for protection (based on threats), but they are areas that have been identified in partnership with DNRM as having low resource potential and therefore have the highest opportunity for successful protection.

Appendix 2—Summary of values within Northern Brigalow Belt and Desert Uplands conservation hubs



Map 5 Overview of the conservation hubs

Epping Forest Hub

- Covers approximately 211,300ha in area, with representation of the following subregions: South Drummond Basin 56,600ha, Belyando Downs 145,400ha, and Upper Belyando Floodout 9,400ha. All subregions are currently poorly represented within protected areas at 0.9%, 1.5% and 0.2% respectively.
- The Epping Forest Hub includes 87,300ha identified as high conservation value and 124,000ha identified as having particular values for complementary conservation area, rehabilitation area or biodiversity corridor area.
- Within the Epping Forest hub 35,500ha of non-remnant regrowth has been identified as having a viable opportunity for regeneration and restoration of ecological function.
- The EPBC listed communities of brigalow and weeping myall cover 9.4% or 19,900ha of the hub area.
- Provides representation of 26 regional ecosystems of which five have endangered biodiversity status and 11 have of concern biodiversity status. Nine regional ecosystems are poorly represented in the protected area estate and one has no representation.
- The hub centres on Epping Forest National Park which is home to the endangered northern hairy-nosed wombat. A near threatened plant is also known from the area—Cerbera dumicola.
- A total of 94.1% of the hub is of State biodiversity significance with the following values identified by the Northern Brigalow Belt Biodiversity Planning Assessment: the presence of threatened regional ecosystems, wildlife refugia values, high ecosystem diversity, special biodiversity values associated with terrestrial corridors, the presence of Mt. Donnybrook and Police Mountain, and the largest tract of silver-leaved ironbark woodland in the bioregion with high habitat values for woodland birds, arboreal mammals and critical weight range mammals (ground dwelling marsupials at greatest risk of extinction).
- A total of 49.4% of the hub has been identified as having state significant terrestrial wildlife corridor values associated with the connection of the Drummond Range north via Mt. Doonybrook, Police Mountain to the Belyando river.
- Has high geological variation from lower carboniferous Mount Hall formation to quaternary alluvium.
- Covers the upper catchment to the Belyando/Burdekin system.

Wilandspey—Cape River Hills Hub

- Covers approximately 146,700ha in area, comprising representation of the following subregions: Alice Tableland 7,750ha, Cape River Hills 88,100ha and Belyando Downs 51,000ha. All these subregions are currently poorly represented within protected areas at 2.3%, 0.2% and 1.5% respectively.
- All of the hub area (146,700ha) has been identified as having high conservation value.
- Within the Wilandspey hub 6,200ha of non-remnant regrowth has been identified as having a viable opportunity for regeneration and restoration of ecological function.
- The EPBC listed community of brigalow covers 17.8% or 26,150ha of the hub area.
- Provides representation of 42 regional ecosystems of which four have endangered biodiversity status and 15 have an of concern biodiversity status. Nineteen are poorly represented in the protected area system and one has no representation at all.
- Protects the Bingeringo Aggregation which is listed on the Directory of Important Wetlands.
- Provides protection of habitat for the endangered black-throated finch, several near threatened species and the vulnerable Livistona lanuginosa palms along creeks. Probable habitat for several threatened reptiles such as yakka skink, brigalow scalyfoot, Dunmalls snake and the ornamental snake.
- Sixty-eight per cent of the hub is identified by the Northern Brigalow Belt Biodiversity Planning Assessment as having state significant biodiversity values due to the presence of wildlife refugia, high ecosystem diversity and high species richness.
- Forty-six per cent of the hub has state significant terrestrial corridors and riparian wildlife corridor values associated with the Belyando river.
- Good cross landscape representation from Mount Bingeringo down to the Belyando river.
- Has broad geological representation from the lower carboniferous Natal formation to quaternary colluvium.
- Will consolidate the areas surrounding the current Wilandspey Conservation Park, Nairana National Park Recovery and Blackwood National Park.

Drummond Range Hub

- Covers approximately 276,400ha in area, comprising representation of the following subregions: Southern Drummond Basin 182,300ha, Upper Belyando Floodout 9,800ha and Anakie Inlier 84,500ha. All these subregions are currently poorly represented in the protected area system at 0.9%, 0.2% and 0% respectively. All three subregions have been significantly impacted from clearing, agriculture and from mining activities.
- The hub consists of 107,900ha identified as high conservation value, 59,550ha with biodiversity corridor values, and 108,900ha with rehabilitation/complementary conservation area values.
- Rehabilitation/complementary conservation areas of the Drummond Range hub includes 31,575ha of non-remnant regrowth identified as having a viable opportunity for regeneration and restoration of ecological function.
- EPBC listed communities cover 6.7% (18,600ha) of the hub, including brigalow, weeping myall and natural grassland communities.
- The area stretches across a highly diverse and spectacular landscape that provides an important wildlife refuge from the surrounding intense land-use.
- The potential protected areas within the hub will improve representation of a number of regional ecosystems, two of which are entirely unrepresented in the current protected area system, and 16 that are very high or high priority for representation. There are two endangered regional ecosystems and 10 of concern (according to biodiversity status).
- The hub is a critical point for landscape level connectivity, located at the nodal point for several state significant terrestrial biodiversity corridors.
- The area is important for threatened species, including the spectacled hare-wallaby.

Cerito Hub

- Covers approximately 333,300ha in area, representing the following subregions: Wyarra Hills 255,600ha, Northern Bowen Basin 30,500ha and Belyando Downs 47,200ha. All subregions are poorly represented in the protected area system at 0%, 0.5% and 1.5% respectively.
- A total of 273,700ha has been identified within the hub as high conservation value and 59,550ha identified as having value for complementary conservation areas, rehabilitation area, or as a biodiversity corridor.
- Within the Cerito Hub 14,000ha of non-remnant regrowth has been identified as having a viable opportunity for regeneration and restoration of ecological function.
- The EPBC listed communities of weeping myall, brigalow and natural grasslands cover 9.4% or 31,300ha.
- The Cerito Hub provides representation of 33 regional ecosystems of which seven have endangered biodiversity status, eight have of concern biodiversity status. Nine regional ecosystems are poorly represented on the protected area estate of which two have no representation.
- Protects the Whynot Aggregation (natural palustrine and lacustrine wetlands which are listed on the Directory of Important Wetlands.
- Provides habitat for: two vulnerable animals—the Squatter Pigeon and Ornamental snake; and three near threatened species: Acacia jackesiana, Paspalidium scabrifolium and the Common Death adder.
- Eighty per cent of the Cerito hub is identified by the Northern Brigalow Belt Biodiversity Planning Assessment as having state biodiversity significance due the presence of threatened regional ecosystems, high connectivity, a significant wetland, high ecosystem diversity and high wildlife refugia values.
- Twenty per cent of the hub has state-wide terrestrial wildlife corridor values associated with the Eastern Ranges and the Suttor river.

Denham Hub

- Covers approximately 177,750ha in area representing the following subregions: Basalt Downs 42,000ha, Isaac Comet Downs 3,100ha, Northern Bowen Basin 131,000ha and Belyando Downs 1,700ha. All these subregions are currently poorly represented in the protected area system, at 1%, 1.2%, 0.5%, 1.5% respectively.
- A total of 142,200ha within the hub has been identified as having high conservation value and 35,550ha identified as having value for complementary conservation areas, rehabilitation area, or as a biodiversity corridor.
- Within the Denham Hub 10,550ha of non-remnant regrowth has been identified as having a viable opportunity for regeneration and restoration of ecological function.
- EPBC listed communities cover 19.2% (34,100ha) of the hub, including brigalow, weeping myall, natural grasslands and semi-evergreen vine thicket communities.
- The Denham hub provides representation for 29 regional ecosystems of which six have endangered biodiversity status and eight have of concern biodiversity status. Four of the regional ecosystems have poor representation on the protected area estate.
- Provides habitat for: one endangered plant—Trioncinia patens; one endangered animal (EPBC listed)—northern quoll; two vulnerable birds—squatter pigeon and red-tailed tropicbird; two near threatened animals—little pied bat and cotton pygmy goose; and three near threatened plants—Acacia spania, Acacia arbian and Bertya pedicellata.
- Eighty-five per cent of the Denham hub is identified as having high biodiversity values including threatened regional ecosystems, high ecosystem diversity, wildlife refugia values, habitat for endangered, vulnerable or near threatened taxa, good context and connection, special biodiversity values associated with Logan creek and Denham ranges, and semi-evergreen vine thicket.
- Thirty-four per cent of the hub has state significant and terrestrial corridor values associated with the Denham Range and Logan creek.

Boongoondoo Hub

- Covers approximately 103,300ha in area representing the following subregions: Alice Tableland 48,200ha and Jericho 55,100ha. Both subregions area currently poorly represented in the protected area system at 4% and 1.3% respectively.
- A total of 61,900ha within the hub has been identified as having high conservation value and 41,350ha identified as having value for complementary conservation areas, rehabilitation area, or as a biodiversity corridor. There is also 3,200ha of non-remnant regrowth identified as having a viable opportunity for regeneration and restoration of ecological function.
- The potential protected areas within the hub will improve representation of two regional ecosystems that are currently unrepresented in protected area and 17 that are very high or high priority for protection. Four of the regional ecosystems are considered endangered and eight of concern.
- Much of the area is considered state significant for biodiversity due to wildlife refugia values, high species richness, limits of the geographic range for some taxa and for being part of a bioregional corridor.
- Located along the last remaining continuous east west link of remnant vegetation across the southern end of the Desert Uplands bioregion.
- The linkage stretches across to Cudmore National Park, and connects the two arms of the statewide Great Artesian Basin Rim corridor (these arms are part of the Great Eastern Ranges corridor) and will:
  - protect core remnant habitat and refuge for species and ecosystems from human land use
  - provide some protection from the long-term effects of habitat fragmentation
  - protect potential migration routes for species
  - continue to provide a variety of habitats that are likely to be critically important for species adaptation.

Lake Complex Hub

- Hub includes the Lake Buchanan and Lake Galilee areas.
- Covers approximately 386,000ha in area representing the following subregions: Prairie, Torrens Creek Alluvials 180ha, Alice Tableland 360,100ha. Both subregions are poorly represented protected area, at 2.6% and 4% respectively.
- Includes 361,700ha identified for high conservation value, 24,300ha having value as complementary conservation areas and 3500ha with regeneration/rehabilitation value.
- Will protect nationally significant wetlands—Lake Buchanan, Lake Galilee, Caukingburra swamp and Doongmabulla springs. These provide nesting and, feeding habitat for over 50,000 waterbirds annually comprising over 50 different species.
- Will protect: five endangered plants—*Eriocaulon carsonii subsp*. *orientale, Eryngium fontanum*, *Myriophyllum artesium*, *Neseae robertsii* and *Sporobulus pamelae:* and one endangered animal—black-throated finch, as well as several near threatened and vulnerable species.
- Provides representation of 11 regional ecosystems with endangered biodiversity status, 15 with of concern biodiversity status, and 32 regional ecosystems which are of high priority for protection of which 15 have no representation on the protected area estate.
- Provides a vital component of east west and north south landscape linkage across the Desert Uplands bioregion.
- Lake Buchanan is a large wetland (over 23,000ha) in an arid environment with no outflow.
- The Yarrowmere property contains the major part of the Lake Buchanan wetland catchment, which is listed in the Directory of Important Wetlands and is also recognised as a high value aquatic ecosystem.
- Lake Buchanan is a tectonic lake, formed by movement of the earth's crust and is unique in Australia, in its physical, chemical and biological characteristics. It is situated at elevation in the Great Dividing Range and fluctuates between freshwater when full, and saline to hypersaline as it evaporates.
- The lakeside deposits support a large suite of endangered and of concern regional ecosystems.
- Yarrowmere also contains a wide range of other ecosystems along a toposequence that ranges from plateau surfaces with deep red earths, plateau margins and scarps with caves and skeletal soils, sandy outwash fans, both old and current, and a diversity of alluvial deposits and riparian systems. It also includes Lake Caukingburra.
- All of the wetland associated ecosystems are currently unrepresented in the protected estate, and most of the balance are unrepresented or poorly represented.

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