Olive Downs Complex
Koala & Greater Glider Program Framework

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PEMBROKE
OLIVE DOWNS COMPLEX
STEELMAKING COAL

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Document History

Revision	Date	Status	Purpose	Author
1	May 2024	Draft	Draft for approval	M. Saul
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1. Introduction

This document provides the framework of the financial contributions that will be delivered by Pembroke Olive Downs Pty Ltd (Pembroke) to support environmental conservation in the Bowen Basin. As per the conditions of the approval for the Olive Downs Mine Site an Access Road (EPBC2017/7867) (the Approval) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), Pembroke is required to contribute funds to deliver conservation outcomes of koala and greater glider in the Bowen Basin through the delivery of a conservation program.

This document is set out as follows:

- Section 2: Description of the Koala & Greater Glider Conservation Program (the Program), designed to support the Program outlined in Section 3.
- Section 3: Koala & Greater Glider Conservation Program (the Program), as applicable to the conditions of approval EPBC 2017/7867.

2. Koala & Greater Glider Conservation Program

Pembroke as the approval holder will engage an independent organisation to establish the Program to meet its obligations under the Approval.

Pembroke will make contributions to the Program. A Steering Committee will be established to manage the distribution of the Program in line with the objectives of the Conservation Program. This section outlines the mechanism proposed to manage and administer the Program.

The initial objective of the Program is to implement the activities required through the Conservation Program in accordance with conditions of the Approval.

Once established the Steering Committee will determine the suitability of broadening the participation and funding opportunities by Third-Parties with EPBC Approvals. This determination would be made within year 1 of the establishment of the Program and will be at the independent delivery party's discretion.

2.1 Administration of the Program

Administration of the funds will occur via standard commercial practices of invoices provided by the delivering party to Pembroke which detail the Steering Committee agreed and DCCEEW approved activities.

In keeping with recognised and accepted accounting practices the allocation of funds for the Program will be auditable and traceable within Pembroke's financial reporting processes.

This process will be guided by the commercial agreement between the parties for delivery of this program. The finalised agreement between the parties will be provided to DCCEEW for the Department's internal review and confidential record keeping.

2.2 Steering Committee

The initial year 1 steering Steering Committee will constitute two representatives of Pembroke and two representatives of the independent party engaged to undertake the Conservation Program.

The Parties to the Steering Committee will be organisational based and will retain independent agency for their respective organisational activities and will deliver this program in good faith and with a collaborative regional focus upon the listed conservation outcomes of this Program. This document serves as the project charter and guidance documentation for the program with guidance and adaptation measures to be incorporated with the annual review and reporting mechanisms that stipulate DCCEEW engagement and/or approval.

The Steering Committee will determine the focus of the Conservation Program and the assignment of suitably qualified persons to undertake the activities under the Conservation Program. Where determined as required by the Steering Committee external advice will be sought from a suitably qualified ecologist regarding the delivery of proposed actions.

In keeping with the intent of this program, the Steering Committee will at a minimum meet biannually, via Teams, to determine annual delivery programs and review progress.

2.3 Delivery of the Conservation Program

The objectives that will be considered by the Program are as follows:

- Contribute $100,000 (GST exclusive and indexed in line with CPI for each year to be equal to the value of $100,000 on the date of commencement of Stage 2)1 each year for 10 years to a program where the total contribution will be used for the better protection and long-term conservation of EPBC Act listed koala (*Phascolarctos cinereus*) (endangered) and greater glider (*Petauroides volans*) (endangered) in the Bowen Basin from the commencement of Stage 2 of the Project (as defined by the Approval)
- Engage suitably qualified person/s to scope and develop activities that will be funded by the Conservation Program. These activities will be endorsed by Pembroke prior to providing to DCCEEW for approval.
- Revegetate and rehabilitate habitat in the riparian zones associated with watercourses to create and maintain koala and greater glider habitat connectivity.

Additional activities to be considered by the Steering Committee include:

- implementation of actions that will support a greater understanding of the species dispersal across different habitat types, including in response to vegetation clearing which may include the tracking of koalas and greater glider
- surveys to contribute towards understanding koala and greater glider population density and carrying capacity across the Bowen Basin
- implementation of priorities identified in relevant recovery plans, threat abatement plans and/or approved conservation advices, and evaluate their success and cost effectiveness.

2.4 Publication

Pembroke reserve the right to publicise and report on the provision of funding. The recipient of the Program must obtain the Proponent's agreement before releasing any announcements, or conducting any publicity events for the Program.

The approved plan (this document) will be published to Pembroke's website, as the approval holder, in accordance with Condition 70 of the approval.

Outcomes of the Program's implementation is to be made publicly available (in accordance with the Approval). At a minimum, the peer-review of the outcomes of the Activities are to be published on the Approval holder's website. Reviews can also be published in a relevant scientific journal.

2.5 Reporting

Annual reporting will be provided by the Approval holder to the Commonwealth Department of Environment to document the progress of Activities, notable results of baseline and monitoring surveys and the status of the Program.

In accordance with Approval condition 16 (a) a report will be prepared at the completion of each Activity to document the methods, results, conclusions and relevant management recommendations. The report will be published on the Approval holder's website.

In accordance with conditions 33, 34 and 36 of the Approval, financial contributions will be reported in addition to the technical activity reporting.

In accordance with condition 40 of the Approval the first financial review must commence upon the year five anniversary of first funds contribution. The report must be submitted to DCCEEW within 6 commences of commencement, being 5 years and six months from first funds contribution. Further information regarding reporting commitments, relevant approval conditions and timing is provided with Table 6. This review must capture any other financial contributions made by third parties including other EPBC approval holders to fund the Program.

Further details of the reporting requirements associated with this program are provided in section 4.4 of this document.

3. Koala & Greater Glider Conservation Program

3.1 Background and Objectives

The Koala & Greater Glider Conservation Program aims to implement conservation outcomes and benefits in the region by providing an opportunity for industry to lead the implementation of research and studies and on-ground activities. The Program is established to align with conditions of Approval (EPBC 2017/7867) for the Olive Downs Mine and Access Road. The Program is funded by contributions made by the Approval holder.

The objective of the Program is to deliver activities that provide conservation gains to the conservation of the Greater Glider and Koala within the Bowen Basin.

The design of the activities will consider the current threats and conservation advice listings for targeted species to ensure that the Program achieves outcomes that align with DCCEEW policy. The outcomes of the activities will be documented and published to inform what is best practice for conservation.

For clarity in the context of Pembroke's broader approvals, the activities of this program are designed to be separate and additional to Pembroke's prior Stage 1 and emerging Stage 2 research obligations.

The objectives must also specifically link back to address the conditions of the Approval (EPBC 2017/7867 – conditions 32 to 40), as related to the Approval holder making financial contributions to a program managed by an independent entity that implements activities to achieve conservation of the koala and greater glider. Through the Program, the Approval holder must comply with the conditions of Approval.

The objectives of the Program and the mechanism to implement the activities to meet these objectives is outlined in Section 4.3 and has been scoped to allow the Approval holder to meet the conditions of the Approval which drive for conservation gains in the Bowen Basin.

3.2 Limitations

A number of limitations may be realised during the implementation of the Conservation Program and should be considered when scoping the activities in the early stages:

- Funds available may limit the scope of the activities. When preparing the activity plans, costs of implementation must consider the funds available. It is recommended that consultation and engagement with third parties is undertaken to seek additional buy-in or identify opportunities to target efforts, noting that third-parties may not necessarily be contributing members to the Program..
- The Steering Committee will be responsible for ensuring an independent peer review is conducted by an appropriate subject matter expert. If there are challenges to engage roles to meet the definitions in the Approval, the Approval holder will engage with the DCCEEW to ensure the fund management is compliant with the condition of Approval.

3.3 Scope of Program

The initial scope of the Program is primarily to achieve compliance with the conditions of Approval (EPBC 2017/7867) with a specific focus upon supporting conservation activities targeting koala and greater glider populations. To demonstrate that the Approval conditions can be met through the Program, clear references are made to condition requirements.

To inform the scope of the Program, a list of definitions and roles and responsibilities have been detailed in Table 1 and Table 2.

TABLE 1 DEFINITIONS

TERM	DEFINITION
Activity Plan	An activity plan will be prepared by an independent suitably qualified expert and detail the scope, objective and implementation of each activity. Benchmarks for outcomes will be established to inform reporting and peer-review.
Approval	EPBC 2017/7867 Olive Downs Mine Site and Access Road. The Conservation Program is to be prepared and implemented in accordance with the conditions of Approval to ensure compliance.
Conservation Program	The Koala & Greater Glider Conservation Program will be managed by the Steering Committee. The Conservation Program is to achieve conservation benefits in the Bowen Basin and consider the requirements of the conditions of the Approval.
the Program	The Koala & Greater Glider Conservation Program. The Program financial distributions are managed by the Steering Committee and will form part of the Company's audited financial reporting

A number of roles are identified as participants to the successfully delivery of the Program, including those that are defined in the Approval.

TABLE 2 ROLES AND RESPONSIBILITIES

ROLE	RESPONSIBILITY
Approval holder	• Pembroke Olive Downs Pty Ltd. • Contributor to the Conservation Program in accordance with EPBC Act conditions of approval. • Responsible for compliance against conditions of the Approval (EPBC 2017/7876) and submission of documents to comply with conditions.
The Department	• Department means the Australian Government agency responsible for administering the EPBC Act. • the relevant Department issuing the Approval, managing compliance with conditions and to receive reporting regarding the outcomes of the Program.
Independent suitably qualified expert (as defined in EPBC 2017/7876)	• that does not have individually, or by employment or family affiliation, any conflicting or competing interests with the approval holder and/or suitably qualified ecologist; • with at least a postgraduate degree (or equivalent) in Greater Glider ecology and/or Koala ecology; and • with a minimum 10 years of relevant experience in Greater Glider ecology and/or Koala ecology research, including at least 1 year experience in Australia.
Peer-review (as defined in EPBC 2017/7876)	• means reviewed by at least 1 recognised subject matter expert independent to the suitably qualified ecologist and independent suitably qualified expert.
Suitably qualified ecologist (as defined in EPBC 2017/7876)	• means a person who has professional qualifications and at least 3 years of work experience designing and implementing surveys for the listed threatened species and community and their habitat, and can give an authoritative assessment and advice on the presence and habitat requirements of the listed threatened species and community using relevant protocols, standards, methods and/or literature.

Suitable qualified person (as defined in EPBC 2017/7876)	• means a person who has professional qualifications, training, skills and/or experience related to the nominated subject matter and can give authoritative independent assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods and/or literature.
Steering Committee	• Responsible for directing the Funds. • Includes 2 representatives of the Approval holder and 2 representatives of the independent consultant • Oversees the implementation of the Conservation Program and Activities. • Manages conservation program and funding arrangement. • Undertakes the reviews of the outcomes at 5 years.

3.4 Program Schedule

The Program will be funded over a ten-year period, via the Program, during which activities will be established and implemented to meet the objectives. Table 3 provides an overview of the proposed Program schedule over the ten years. Where relevant, timeframes specified in the Approval have been included to ensure compliance with specified timeframes.

TABLE 3 CONSERVATION PROGRAM SCHEDULE

YEAR	STAGE	ACTIONS
1	Establishment	The commencement of Year 1 will coincide with the commencement of Stage 2. The actions of Year 1 include: • Initial financial allocation made to the Program at the commencement of Stage 2. • Establishment of the Steering Committee. • Engagement of Independent Suitably Qualified Expert. • Consultation with government environmental agencies, local environmental groups and council to inform scope of Activities. • Determining scope of Activity Plans for the Conservation Program to be prepared by an Independent Suitably Qualified Expert.
2-5	Implementation	The actions between Years 2-5 include: • Continued annual contributions to the Program. • Prior to the commissioning of each activity, provide to the Department information prepared by a suitably qualified person in accordance with condition 37. • Implementation of Activity Plans. • If any Activity Plans are concluded during these Years, a peer-review of the outcomes is to be undertaken and provided to the Department and published online.
5	Review	Specifically at Year 5: • A review of outcomes from the financial contributions must commence 5 years after the date of the first financial contribution or as otherwise agreed by the Minister in

		writing. This review must take into account progress of each activity and any subsequent on-ground actions. • Commissioning a detailed report of the outcomes from the review must be provided to the Department 6 months of the commencement of the review.
6-10	Implementation	The actions between Years 6-10 include: • Continued contributions to the Program. • Prior to the commissioning of each activity, provide to the Department information prepared by an independent suitably qualified expert in accordance with condition 37. • Implementation of Activity Plans. • If any Activity Plans are concluded during these Years, a peer-review of the outcomes is to be undertaken and provided to the Department and published online. • Implement outcomes of the 5-yearly review.

4. Scope of Conservation Program

4.1 Koala

4.1.1 Habitat

The koala (Phascolarctos cinereus) occurs widespread across many bioregions in Queensland from the coast to the central state from far north as Einasleigh Uplands and Wet Tropics to South-East Queensland. Records of the species are found in Desert Uplands, Central Mackay Coast, Mitchell Grass Downs, Mulga Lands, Brigalow Belt North and Brigalow Belt South.

In Queensland, koala habitat consists of southern and central western subhumid woodlands, and a number of eucalypt woodlands adjacent to waterbodies. The density of records in the Brigalow Belt bioregion is high in comparison to other bioregions (based on data in 2016 (Adams-Hosking et al. 2016)).

Habitat critical to the survival of the species is defined (in accordance with the Approved Conservation Advice (DAWE, 2022a)) as typically characterised by Eucalyptus forests and woodlands providing resources sufficient for foraging, breeding, growth and movement such as food and shelter trees.

The Olive Downs Complex is located within the Brigalow Belt bioregion and Northern Bowen Basin subregion. In accordance with the definition of habitat critical to the survival of the species, the following State Regional Ecosystems (REs) were mapped in the Olive Downs Complex area:

- eucalypt open forests to woodlands on floodplains (i.e. REs 11.3.3, 11.3.4, 11.3.7 and 11.3.25);
- eucalypt dry woodlands on inland depositional plains (i.e. REs 11.3.2, 11.5.3, 11.5.8c, 11.5.9, 11.5.9b and 11.9.2);
- vegetation surrounding and within the lacustrine and palustrine wetlands (i.e. REs 11.3.27f, 11.3.27i, 11.3.3c and 11.5.17); and
- regrowth woodland or shrubland with known koala food trees or shrublands with emergent koala food trees.

4.1.2 Threats and Recovery

Koala individuals and populations are impacted by climatic and anthropogenic changes to their environment. These changes result in impacts to population size of the listed Koala and distribution through associated ecologically threatening processes of habitat loss, fragmentation and degradation, exacerbation of disease impacts, disruption of population processes, impediments to safe movement and loss of genetic diversity (DAWE, 2022b).

The Approved Conservation Advice (DAWE, 2022a) identifies several threats impacting koala populations, including:

- loss of climatically suitable habitat
- increased intensity/frequency of drought, heatwaves and bushfire
- declining nutritional value of foliage
- clearing and degradation of koala habitat
- encounter mortality with vehicles and dogs
- koala retrovirus and chlamydia.

Overarching strategies and recovery actions and provide scope and direction to manage and mitigate threats to koala to provide conservation outcomes for the species. Actions within the Approved Conservation Advice is supported by the National Recovery Plan for the Koala (DAWE, 2022b), released by the Australian Government following the uplisting of the species to endangered in February 2022.

Policy provides guidance to stakeholder group on how the described actions can be implemented participate in outcomes-focused recovery actions. The on-ground strategies are informed by targeted research initiatives and engagement with experts to determine the effective implementation practices. The overarching strategies are:

- Supporting strategies

    1. Build and share knowledge
    2. Engage and partner with community in listed koala conservation
    3. Increase the area of protected habitat for the listed koala
    4. Integrate listed koala conservation into policy, statutory and land use plans.

- On-ground strategies

    5. Strategically restore listed koala habitat
    6. Actively manage listed koala metapopulations.

Each strategy is supported by prioritised actions and descriptions of the objective and how each should be implemented.

For the purposes of the conservation program, these strategies and actions are to be considered in design and implementation of the action plans to improve conservation of the koala in the Bowen Basin in line with government policy.

4.2 Greater glider

4.2.1 Habitat

The distribution of greater glider (southern and central) (Petauroides volans) in Queensland ranges from near Proserpine south into New South Wales. The species is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. Habitat depends on the resources available such as large, continuous patches of eucalypt forest, hollow-bearing trees and cool microclimatic forest/woodland areas. Distinction is made between denning and foraging habitat.

Within the Olive Downs Complex, greater glider habitat includes remnant and regrowth forest or woodland which contain suitable hollow bearing trees. This includes:

- all areas of eucalypt open forests to woodlands on floodplains (i.e. REs 11.3.3, 11.3.4, 11.3.7 and 11.3.25);
- eucalypt dry woodlands on inland depositional plains (i.e. REs 11.3.2, 11.5.3, 11.5.8c, 11.5.9, 11.5.9b and
- 11.9.2);
- vegetation surrounding and within the lacustrine and palustrine wetlands (i.e. REs 11.3.27f, 11.3.27i, 11.3.3c
- and 11.5.17);
- acacia woodland dominated / co-dominated by E. cambageana (i.e. RE 11.4.8); and
- patches of regrowth eucalypt forest or woodland with suitable hollow-bearing trees (primarily stags) (DPM Envirosciences 2019).

4.2.2 Threats and Recovery

Greater gliders were uplisted to endangered in 2022 due to continuing impact on the population of the species driven by key threats such as an increase in frequency and intensity of bushfires, inappropriate prescribed burning, climate change, land clearing and timber harvesting (DCCEEW, 2022).

The Approved Conservation Advice for greater glider identifies the following threats impacting on the species:

- Inappropriate fire regimes
- Habitat clearing and fragmentation
- Timber harvesting
- Barbed wire fencing (entanglement)
- Increased temperatures and changes to rainfall patterns
- Hyper-predation by owls
- Competition from *Cacatua galerita* (Sulphur-crested cockatoos)

Predation by feral cats and European red foxes.

Conservation and recovery actions are aimed at protecting habitat from natural hazards and changes in land use, particularly hollow-bearing trees and food trees and reduce impacts from habitat disturbance and modification. Many of the actions prioritise avoidance of habitat disturbance and ensuring that the identified threats have been appropriately considered and managed. A summary of the conservation and management priorities (relevant to the scope of this program) include:

Habitat loss, disturbance and modification:

- Protect and maintain sufficient areas of suitable habitat, including denning and foraging resources and habitat connectivity, to sustain viable subpopulations throughout the species' range.
- Where hollows are limiting, consider the use of nest boxes and artificial hollows that are suitable for the species. Monitor use of these structures to ensure they are being utilised, and revise designs or placement as required.
- Restore habitat and connectivity:
    - where habitat has been substantially fragmented, disturbed or modified,
    - between small habitat patches and larger areas of contiguous forest,
    - at a landscape scale through projects such as the Great Eastern Ranges Initiative, to facilitate movement and recolonisation of areas impacted by fires, droughts or other factors, and to provide opportunities for the species to adapt to the changing climate,
    - following climate-ready restoration guidelines (e.g. Hancock et al. 2018), and
    - following the National Restoration Standards (Standards Reference Group SERA 2021).

Climate change:

- Undertake habitat restoration to improve micro-climate conditions in areas at high risk of extreme temperatures and drought.

Invasive species:

- Develop and implement longer-term strategies to control predation by the European red fox and feral cat, as detailed in the relevant Threat Abatement Plans.

Other actions can be undertaken to support conservation and inform effective implementation such as surveys and research opportunities. Information and research priorities can be developed to investigate how the species interacts with habitat and moves across the landscape. The conservation advice for the species recommends survey and monitoring priorities which focuses on:

- determine trends in abundance and distribution,
- ascertain the status and viability of subpopulations,
- assess the impacts of compounding threats, and
- evaluate the relative benefits and effectiveness of management actions.

For the purposes of the conservation program, these strategies and actions are to be considered in design and implementation of the action plans to improve conservation of the koala in the Bowen Basin in line with government policy.

4.3 Conservation Program Activities

Independent suitably qualified expert/s will be appointed by the Steering Committee to develop activities for the Conservation Program that will be funded by contributions made over 10 years, targeting koala and greater glider in the Bowen Basin. The focus will extend outside of the Olive Downs Mine and broader Complex to also consider areas across the Bowen Basin to achieve broader conservation outcomes for these species. These activities will be detailed in activity plans prepared in accordance with approval condition 37, which stipulates the following:

At a minimum, the following information, prepared by an independent suitably qualified expert, must be provided to the Department prior to commissioning each activity:

a) commitments, including financial commitments and proposed timeframes, that will be implemented to support the undertaking of the activity;

b) the proposed timeframe for undertaking the activity;

c) the independent suitably qualified expert/s who has designed and will implement the activity;

d) timing of a peer-review of the outcomes of the activity;

e) the proposed peer-reviewed scientific journal and/or other method/s to ensure the outcomes of the activity is made publicly available; and

f) details, with supporting evidence, of the consultation undertaken (including with the Queensland Government and relevant Recovery Teams) on how the activity can complement and/or align with other studies for the Koala and Greater Glider in the Bowen Basin.[1]

Consultation with relevant stakeholders will occur during the development of these activities. All reasonable efforts will be made to collaborate with academic organisations including supervising and supporting honours, Masters or PhD students as well as Indigenous groups and local government.

Activity plans are to be developed to include:

- Description of the activity;
- Objectives for the activity and performance outcomes to be achieved;
- How the activity will be implemented;
- Who will implement the activity;
- Overview of consultation undertake to inform the activity plan with stakeholders including, but not limited to, environmental groups, government agencies and universities;
- Funds committed to achieve the performance outcomes;
- Timing of peer-review reporting; and
- Timing of the activity completion and outcomes report issued.

In accordance with the Approval, the Conservation Program is to provide better protection and long-term conservation outcomes for the koala and greater glider in the Bowen Basin and, at a minimum, Program activities in condition 36 as follows:

- Translocation programs to translocate Koala and Greater Glider individuals from the project area during pre-clearance surveys and clearing to determine its success in reducing individual mortality and its effects on the population size of the greater glider;
- Revegetate, rehabilitate and restore habitat in the riparian zones associated with watercourses to create and maintain koala and greater glider habitat connectivity;
- Surveys to determine koala and greater glider population density and carrying capacity across the Bowen Basin; and
- Implement priorities identified in relevant recovery plans, threat abatement plans and/or approved conservation advices, and evaluate their success and cost-effectiveness.

In addition to the activities required by the Approval, examples of activities that can be investigated and further scoped by independent suitably qualified experts for koalas and greater glider are provided in Table 4 and Table 5. These activities are to be designed to achieve the objectives of the Conservation Program. The suggested activities consider research and on-ground implementation in line with species recovery plans as well as opportunities present to manage and mitigate known threats to the species.

[1] Approval Condition 37

The review to be undertaken at Year 5 can assist with scoping the activities of the subsequent 5 years; outcomes of the review may identify gaps in the Program or direct efforts to perform more effectively.

Table 4 Activities to achieve conservation outcomes for koala in the Bowen Basin

ACTIVITY	OUTCOME	DESCRIPTION AND IMPLEMENTATION	CONSISTENCY WITH SPECIES LISTING ADVICE/ PLANS
Koala population and dispersal study across various sites in Bowen Basin. Objective is to establish presence of koala populations and population size, home range size, habitat preferences and dispersal patterns. Data will also be obtained on population health and identify localised threats. Genetic information could also be gathered on different koala populations in the Bowen Basin. Within this context the works will consider Koala translocation[2] practices associated with operational clearing practices to determine the influence upon individual mortality and the localised population.	*The koala population study will provide critical information on the size and health of koala populations in Bowen Basin and inform required management actions. It will also be used as baseline to monitor over time to track the changes in populations. The outcome of this activity can be used to inform the implementation of other activities of the Conservation Program.*	The objective is to establish a greater understanding of koala populations and their dispersal patterns across the Bowen Basin. This will allow these populations to be better understood, monitored and protected over time. Similar to koala population studies in South-East Queensland, a baseline of population data can be gathered to understand koala population densities, dispersal patterns, habitat preferences and threats. This baseline data can then be used to monitor how these populations are tracking over time. It will also help to inform management actions to ensure their long-term sustainability in the Bowen Basin. Opportunities could be explored to collar and track individuals across different locations to obtain accurate information on translocation practices, habitat utilisation, health and dispersal patterns including use of cleared or disturbed land versus remnant bushland. Implementation: Opportunities to tie in with existing koala studies with academic institutions will be explored, or funding a masters or PhD student.	The proposed koala population study is consistent with the Koala Recovery Plan (DAWE 2022). The recovery plan states: • Substantial gaps exist in our knowledge of the distribution, population size and trends of the listed Koala in northern and inland Queensland. • Undertaking research on koala populations is a priority 2 action identified as 'essential' (DAWE 2022). • Objectives of the recovery plan are to be able to demonstrate area of occupancy of representative sample of koala populations is maintained or increased, and population health is maintained or improved. The proposed koala population study for Bowen Basin would support these objectives and provide meaningful information on these inland populations.

[2] Translocation in this instance is as defined by the Internation Union for the Conservation of Nature (ICUN) which states "the human-mediated movement of an organism form one area to another".

		Year 1 would include writing up the research study. Years 2 to 4 would be implementing the study and Year 5 writing up results.	
Reduce koala mortality on roads by working with road authorities in the Bowen Basin to identify koala "hot spots" and fund measures to reduce mortality.	*The activity will reduce koala injury and mortality as a result of vehicle strike and therefore improve the viability of the local population.*	The objective of this activity is to reduce koala mortality on roads. There are a number of major highways across the Bowen Basin that have a high volume of vehicles and trucks which intersect koala habitats. The Peak Downs Highway results in a high number of koala deaths each year. The objective of this action is to identify hot spots for koala mortality and install measures to reduce the number of deaths. It may include use of flashing signs at key times of the day and breeding season telling motorists to slow down and look out for koalas. Implementation: The activity may include installation of exclusion fencing and/or installation of larger culverts to direct koalas to under the road. Other technology could be explored such as installation of remote cameras at hot spots that have inbuilt artificial intelligence (AI) to detect an animal the size of a koala. If a koala is detected, a sound and flashing light can be triggered to deter the koala from crossing, and also alert a motorist. Where possible monitoring should also be implemented to gauge the effectiveness of these measures. Year 2 may be to identify areas of highway or road in Bowen Basin that have merit for work to be done to reduce koala deaths. Year 3 will be installing the proposed measures.	A reduction in koala deaths will support the goal of the Koala Recovery Plan which is to stop the trend of decline in population size of the listed koala, by having resilient, connected, and genetically healthy metapopulations across its range, and to increase the extent, quality and connectivity of habitat occupied. Vehicle strike is a recognised threat to koalas. In particular, young males in breeding season are often struck by vehicles as they move larger distances to mate[3]. Avoiding and mitigating direct threats is a priority 2 action identified as 'essential' (DAWE 2022).

[3] Dexter. C.E, 2023, Koalas in space and time: Lessons from 20 years of vehicle-strike trends and hot spots in South East Queensland, Austal Ecology, vol 49, Issue 2.

		Year 4 would be writing up results of the activities including any monitoring results.	
Identify riparian corridor vegetation for restoration and /or revegetation in the Bowen Basin. These riparian corridors will either be known to be utilised by koalas, or the area is currently degraded but is a known critical linkage between habitat patches. Through the restoration/revegetation of the riparian corridor, there will be an increase in the availability of foraging habitat and safe dispersal for the species. These restoration areas will be on land where the area will be conserved and protected on title to ensure long term outcomes.	*The activity will result in an increase in protected koala habitat, increase in foraging resources and connectivity for the species between habitat areas.*	In consultation with stakeholders across Bowen Basin including local governments, mining companies and other third parties, locations will be assessed and selected to undertake restoration of riparian corridor vegetation. Implementation: suitable sites will be selected to undergo targeted actions to improve the quality of habitat and availability of habitat features and resources for the key species. This may include revegetation or weed and pest management. Note that available budget will scope the extent to which this activity will be implemented and will inform the location and size of efforts, however targeted sites could overlap with areas also supporting greater glider habitat values.. To maximise the efficiency of investment, it may be possible to utilise land owned by a local or state government that may be willing to allow the restoration to occur and apply a legally binding mechanism on that land to ensure the area was protected from future development. Ongoing maintenance should be considered when scoping this activity plan as access may be requried for a period of time. Year 1 would be establishing budgets and undertaking consultation to identify the appropriate site. Years 2 to 3 would be completing the revegetation/restoration actions. Years 4 and 5 would be maintenance and reporting.	Restoring koala habitat and increasing the overall area of protected koala habitat on private or leasehold land is a priority 1 action (DAWE 2022). The goal of the recovery plan is to increase the extent, quality and connectivity of habitat occupied. Objectives include: • Strategically restore listed Koala habitat (Strategy 5) • Identify spatially and temporally strategic areas of high priority for: (i) restoration and revegetation based on Koala and eucalypt population viability; (ii) climate and fire refugia; and (iii) corridors facilitating movement and metapopulation processes of Koalas, • Increasing the overall area of protected koala habitat (Strategy 3).

Table 5 Activities to Achieve Conservation Outcomes for Greater Glider

ACTIVITY	OUTCOME	DESCRIPTION AND OBJECTIVE	CONSISTENCY WITH SPECIES LISTING ADVICE/ PLANS
Determine what is the success rate of translocated greater gliders in Central Queensland? Can translocation be used as an effective mitigation measure for the greater glider, and under what conditions does translocation succeed?	*The activity will support an understanding as to whether translocating greater glider could be an effective mitigation measure.*	Explore potential to collar and relocate greater glider from Stage 2 impact area at Olive Downs to suitable adjacent habitat. Implementation: Monitor these individuals over a period of at least 12 months to gain information on their health, dispersal, habitat utilisation including the use of nest boxes. Do the species survive translocation and how far do they disperse? Year 1 will be developing this research study. Year 2 and 3 will be implementing this study. Year 4 will be writing up results.	Conservation Advice for greater glider (southern and central) (DCCEEW 2022) identifies land clearing and fragmentation of habitat as key threats to the species. Therefore, gaining more detailed information on the species dispersal patterns, and ability to recolonise in areas they are translocated into from a clearing area, will be key to understanding if this is a useful management tool. Understanding their dispersal will also help inform future management actions in relation to clearing distances they can cross, how often they may go to ground, and where threats lie.
Nest box study Do greater gliders use nest boxes? Do they have a preference for a certain type of nest box and is temperature a determining factor? Do nest boxes provide supplementary denning habitat for greater glider in non-remnant forest? Can nest boxes provide denning habitat in areas	*This activity will identify the effectiveness of nest boxes to provide denning habitat for Greater Glider and if they will allow Greater Glider to colonise new areas of habitat. Outcomes of this study will be shared to inform implementation and success of nest boxes.*	This activity will tie in with the greater glider translocation and monitoring study as well as build on work being done for Stage 1 of the Olive Downs Project. There are already over 500 nest boxes installed to compensate for hollows lost in Stage 1. Implementation: additional nest boxes will be installed to compensate for lost hollows in Stage 2. To inform the implementation of nest boxes in Stage, a nest box study will evaluate the success of installed nest boxes in Stage 1. The study could:	Conservation Advice for greater glider (DCCEEW 2022) summarises poor results from previous nest box programs. However the nest boxes installed at Olive Downs targeting greater glider are showing good success rates with > 10% of all boxes containing greater glider including females and young. Being able to understand the effectiveness of nest boxes as a supplementary denning resource is

that would not normally support them. Undertake a comprehensive nest box monitoring program to determine uptake by resident and translocated greater gliders and non-target species.		• Determine the use/success of the nest boxes, including confirming if they provide denning resources for translocated gliders • establish any preference for nest box types • does installing nest boxes in areas with no natural hollows provide them with more suitable denning habitat to disperse into; and • determine if temperatures in nest boxes affect utilisation by greater glider. Year 1 will include developing the research study. Years 2 to 4 will be undertaking monitoring of nest boxes and tracking use of greater glider including translocated gliders. Year 5 will be writing up results. and may include installation of nest boxes for Stage 2.	critical for the conservation of the species into the future. If hollows are lost either through approved clearing or bushfire for example, nest boxes can supplement or provide an alternative denning resource in a short timeframe while natural hollows develop. Understanding what makes the nest boxes most effective will be an important part of the study. Monitoring nest boxes is one of the conservation and management priorities of conservation advice (DCCEEW 2022). The outcomes of the study can inform implementation of nest boxes across the country and may improve the success rate of utilisation.
Identify a riparian corridor for restoration and /or revegetation in Bowen Basin. These riparian corridors will either be known to be utilised by greater glider, or the area is currently degraded but a known critical linkage between habitat patches. Through the restoration/revegetation of the riparian corridor it will increase the availability of foraging, denning and dispersal habitat for the species. These restoration areas will be on land where the area will be conserved and protected on	*The proposed activity will result in restoration of greater glider habitat, an increase in foraging resources and improved connectivity between habitat patches.*	In consultation with stakeholders across Bowen Basin including local governments, mining companies and other third parties, locations will be assessed and selected to undertake restoration of riparian corridor vegetation. Implementation: suitable sites will be selected to undergo targeted actions to improve the quality of habitat and availability of habitat features and resources for the key species. This may include revegetation or weed and pest management. Note that available budget will scope the extent to which this activity will be implemented including inform the location and size of efforts, however targeted sites could overlap with areas also supporting koala habitat values. To maximise the efficiency of investment, it may be possible to utilise land owned by a local or state government that may be willing to allow the restoration to	The Conservation Advice for greater glider (DCCEEW 2022) identifies the restoration of habitat and connectivity as a key conservation action. It is recommended to occur where habitat has been substantially fragmented, disturbed or modified, areas between small habitat patches and larger areas of contiguous forest, and follow climate -ready restoration guidelines.

title to ensure long term outcomes. Explore potential to supplement these riparian corridors with nest boxes to build on success at Olive Downs.		occur and apply a legally binding mechanism on that land to ensure the area was protected from future development. Ongoing maintenance should be considered when scoping this activity plan as access may be required for a period of time. Year 1 would be establishing budgets and undertaking consultation to identify the appropriate site. Years 2 to 3 would be completing the revegetation/restoration actions. Years 4 and 5 would be maintenance and reporting.	

4.4 Reporting

The Approval specifies conditions that require the Approval to report on the implementation and outcomes of the funding contributions and success of the Conservation Program.

Table 6 outlines the program of reporting required to meet the conditions of Approval.

Table 6 Program of reporting

DOCUMENT	RESPONSIBITY	TIMING	SUBMISSION REQUIRED TO THE DEPARTMENT	RELEVANT CONDITION
Financial Framework supported by Conservation Program	Approval holder	Prior to commencement of Stage 2 Year 1	Yes	33 and 34
Annual Financial Contribution Reporting	Approval holder	Notice of fulfilled financial contribution to DCCEEW to occur annually within 20 business days of total allocated financial contribution being achieved Year 2 onwards	Yes	35
Activity Plan	Suitably qualified person/s Independent suitably qualified expert	Activities Implemented Report provided to the Department prior to commissioning of each activity	Yes	36, 37

Peer-review	Approval holder to support steering committee engagement of a suitably qualified ecologist	At the completion of each Activity Year 5	Yes and made publicly available	38
Financial contribution review	Approval holder	Must commence 5 years after the date of the first financial contribution Report provided to the Department within 6 months of the commencement of the review – being 5 years and 6 months	Yes	39 and 40
Final report	Approval holder	End of Year 10	No	-

References

Department of Agriculture, Water and the Environment, February 2022a, Conservation Advice for Phascolarctos cinereus (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory, http://www.environment.gov.au/biodiversity/threatened/species/pubs/85104-conservation-advice-12022022.pdf.

Department of Agriculture, Water and the Environment, March 2022b, National Recovery Plan for the Koala Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory), https://www.dcceew.gov.au/sites/default/files/documents/recovery-plan-koala-2022.pdf.

Department of Climate Change, Energy, the Environment and Water, July 2022, Conservation Advice for Petauroides volans (greater glider (southern and central)) https://www.environment.gov.au/biodiversity/threatened/species/pubs/254-conservation-advice-05072022.pdf.

IUCN/SSC (2013). Guidelines for Reintroductions and Other Conservation Translocations. Version 1.0. Gland, Switzerland: IUCN Species Survival Commission, viiii + 57 pp.