

NSW National Parks and Wildlife Service

Kosciuszko Offset Strategy Kosciuszko Offset Project



© 2023 State of NSW and Department of Planning and Environment

With the exception of photographs, the State of NSW and Department of Planning and Environment are pleased to allow this material to be reproduced in whole or in part for educational and non-commercial use, provided the meaning is unchanged and its source, publisher and authorship are acknowledged. Specific permission is required for the reproduction of photographs.

The Department of Planning and Environment has compiled this report in good faith, exercising all due care and attention. No representation is made about the accuracy, completeness or suitability of the information in this publication for any particular purpose. The department shall not be liable for any damage which may occur to any person or organisation taking action or not on the basis of this publication. Readers should seek appropriate advice when applying the information to their specific needs.

All content in this publication is owned by the Department of Planning and Environment and is protected by Crown Copyright, unless credited otherwise. It is licensed under the <u>Creative Commons Attribution 4.0 International (CC BY 4.0)</u>, subject to the exemptions contained in the licence. The legal code for the licence is available at <u>Creative Commons</u>.

The Department of Planning and Environment asserts the right to be attributed as author of the original material in the following manner: © State of New South Wales and Department of Planning and Environment 2023.

Cover photo: O'Hares Creek and Tumut River confluence, Kosciuszko National Park. Linda Broome/DPE

Published by:

Environment and Heritage Department of Planning and Environment Locked Bag 5022, Parramatta NSW 2124 Phone: +61 2 9995 5000 (switchboard)

Phone: 1300 361 967 (Environment, Energy and Science enquiries)

TTY users: phone 133 677, then ask for 1300 361 967

Speak and listen users: phone 1300 555 727, then ask for 1300 361 967

Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

Report pollution and environmental incidents

Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au

See also www.environment.nsw.gov.au

ISBN 978-1-923076-18-1 NPWS 2023/0221 June 2023



Find out more about your environment at:

www.environment.nsw.gov.au

Versions and approvals

Version history

Version	Date	Description of change	Author
1.0	7 March 2023	Initial version	Stephen Higham

Approvals

Any significant changes to the Kosciuszko Offset Strategy require approval by the Southern Ranges Branch Director or Park Operations Projects Director. Two weeks prior to sending the amended document for approval, the Kosciuszko Offset Strategy will be sent to the Department of Climate Change, Energy, the Environment and Water for comment. This table provides a history of approvals.

Name	Title	Signature	Date
Atticus Fleming	Acting Coordinator General, Environment and Heritage Group	an 1	19 April 2023

Contents

Ver	sions and approvals	iii
1.	Introduction	1
	Planning approvals	1
	Objective	2
	A metrics-based approach for offset delivery	3
2.	Implementing the metrics-based approach	4
	Step 1: Quantifying the impacts and benefit that must be delivered	4
	Step 2: Implementing actions to deliver the required offset	5
	Step 3: Measuring and reporting on biodiversity benefits	6
3.	Commonwealth-listed species	9
4.	Governance arrangements	9
	Environment and Heritage Group Project Control Group	9
	Approvals	9
	NPWS-DCCEEW Audit Committee	10
	Offset fund management and budgets	10
	Reporting	10
5.	Adaptive management and contingency measures	11
	Adaptive management	11
	Contingency measures	11
6.	Kosciuszko Offset Strategy attachment	13

List of tables

Table 1	Threatened species, TECs and ecosystems likely to have residual if from Snowy 2.0	impacts 2
Table 2	Conservation status and number of hectares impacted for each three species, TEC and ecosystem	eatened 8

Acronyms and abbreviations

AIS	Asset of Intergenerational Significance
BAM	Biodiversity Assessment Method
BCD	Biodiversity Conservation Division, Department of Planning and Environment
BCS	Biodiversity, Conservation and Science, Department of Planning and Environment
BDAR	Biodiversity Development Assessment Report
DAWE	Department of Agriculture, Water and the Environment
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EW	Exploratory Works
KNP	Kosciuszko National Park
KOAP	Kosciuszko Offset Action Plan
KOS	Kosciuszko Offset Strategy
MNES	Matters of National Environmental Significance
MW	Main Works
NPWS	National Parks and Wildlife Service
NSW	New South Wales
PCG	Project Control Group
PCT	plant community type
SHL	Snowy Hydro Limited
TC	Transmission Connection
TEC	threatened ecological community

1. Introduction

Planning approvals

The NSW Government approved the Snowy 2.0 Exploratory Works in February 2019 (the EW approval), Main Works in May 2020 (the MW approval) and Transmission Connection in September 2022 (the TC approval). The Australian Government approved Main Works in June 2020 and Transmission Connection in October 2022, consistent with the NSW Government approval. The EW, MW and TC will be referred to collectively as the Snowy 2.0 project and the EW approval, MW approval and TC approval as the Snowy 2.0 approvals.

Under conditions specified in the Snowy 2.0 approvals, Snowy Hydro Limited (SHL) must pay up to \$92.9 million in biodiversity offsets to the National Parks and Wildlife Service (NPWS) by 2024. This amount will be referred to as the offset funds.

The offset funds must be applied to the implementation of activities carried out under this Kosciuszko Offset Strategy (KOS) and the relevant Kosciuszko Offset Action Plans (KOAPs) over at least the next 20 years.

The KOS and the KOAPs provide for the offset funds to be applied to actions which benefit a list of threatened species, threatened ecological communities (TECs) and ecosystems affected by the Snowy 2.0 project. This list is included in Table 1. The conservation status and number of hectares impacted for each species, TEC and ecosystem are provided in Table 2.

The KOS provides an overview of the offset strategy, while the individual KOAPs set out detailed management actions, offsetting targets and monitoring metrics for the listed threatened species, TEC and ecosystems impacted by the Snowy 2.0 project. As set out below, offset funds are to be applied to actions which deliver biodiversity gains for these species, TECs and ecosystems in Kosciuszko National Park (KNP).

The actions implemented under the KOS and KOAPs will be integrated with, but additional to, actions which are part of the core management of KNP. In this context, core management of KNP includes the implementation of the Wild Horse Heritage Management Plan and the implementation of conservation action plans for Assets of Intergenerational Significance.

Governance arrangements for the implementation of the KOS are set out in section 4.

The relevant conditions in the Snowy 2.0 approvals are included in the attachment to this KOS. The KOS attachment also provides further background information on the Kosciuszko Offset Project, including:

- offset payments received
- key threatening processes for biodiversity impacted by the Snowy 2.0 project
- Commonwealth Matters of National Environmental Significance (MNES)
- a summary of 2 statewide NPWS priority projects (that is, Ecological Health Performance Scorecards and Assets of Intergenerational Significance)
- a list of approved and published KOAPs.

Table 1 Threatened species, TECs and ecosystems likely to have residual impacts from Snowy 2.0

Species – flora	Species – fauna	Ecological communities	Ecosystems
Caladenia montana	Alpine she-oak skink*	Alpine sphagnum bogs and associated fens*	Dry sclerophyll forests
Clover glycine	Alpine tree frog*		Wet sclerophyll forests
Kiandra leek orchid	Booroolong frog*		Grassy woodlands
Leafy anchor plant	Broad-toothed rat*		Grasslands
Mauve burr-daisy Eastern pygmy-possui			
Max Mueller's burr- daisy	Gang-gang cockatoo		
Raleigh sedge	Masked owl		
Slender greenhood	Smoky mouse*		
	Southern myotis		
	White-bellied sea-eagle		
	Yellow-bellied glider		

^{*} Commonwealth-listed (MNES) species and TECs likely to be significantly impacted

Note: 3 additional species (hoary sunray, spotted-tailed quoll and *Thelymitra alpicola*) are listed in the MW approval (Schedule 3, condition 17) as species the proponent must minimise impacts on but are not offset-generating species and are therefore not covered by this KOS.

Objective

This KOS sets out a framework based on a clear objective to deliver a biodiversity gain in KNP equivalent to 120% of the biodiversity loss identified in the Snowy 2.0 environmental assessments. A benchmark of 120% has been set, as this is considered to be achievable over the next 20 years and will be able to be demonstrated as a biodiversity gain.

In other words, the KOS provides for actions that will generate a benefit exceeding requirements of the NSW and Australian Government offset conditions. Specifically, this means generating a net conservation gain for identified threatened species, TECs and ecosystems.

In setting an objective to exceed the statutory requirements, this KOS recognises the difficulties in measuring biodiversity gains and the inherent fluctuations in biodiversity over time. It provides a margin that will increase confidence that the minimum statutory requirements are being met. This is appropriate for one of Australia's largest and most significant national parks.

The objective also reflects a broader commitment by NPWS to not just maintaining biodiversity in our national parks but, over time, restoring and improving biodiversity where it has been impacted by a range of factors – for example, feral animals, changed fire regimes or development activities.

The KOS therefore provides for the delivery of offsets in a manner that aligns with, and will exceed, the requirements of the Australian Government's Environmental Offsets Policy (see section 4 of the KOS attachment for further detail).

A metrics-based approach for offset delivery

A metrics-based approach will be applied to the delivery of biodiversity offsets by NPWS. This will be achieved by:

- **Step 1 Quantifying the impacts** of Snowy 2.0 on the relevant threatened species, TECs and ecosystems in KNP, based on the Snowy 2.0 environmental impact assessments and associated Biodiversity Development Assessment Reports. This provides the baseline metric for the impact, noting it must be offset by 120%.
- Step 2 Offsetting the impacts by implementing cost-effective conservation actions (offset actions) of a scale and size that will deliver a biodiversity benefit equal to 120% of the identified impact for each threatened species, TEC and ecosystem.
- **Step 3 Measuring and reporting biodiversity benefits** by implementing targeted monitoring programs and reporting on the level of expenditure incurred in delivering the offset.

Case study – Leafy anchor plant

Step 1: Quantifying the impact

- A total of 45 leafy anchor plants will be impacted (source: Snowy 2.0 Main Works BDAR revised, February 2020).
- The benefit that must be delivered is the successful establishment of 54 leafy anchor plants (being 120% of the impact).

Step 2: Implementing cost-effective offset actions

- Suitable habitat for the establishment of 54 leafy anchor plants is identified within the treeless plains in KNP (northern extent).
- The area is prepared for example, hole preparation for planting and fencing, or alternative method required to protect plants from herbivore impacts.
- Seed is collected from the local population and plants established for planting out in the field
- There is adequate monitoring and protection of plants in the establishment phase to ensure plants reach maturity and are self-sustaining.

Step 3: Measuring and reporting

- The individual plants will be monitored every month for the first 6 months immediately after planting, then every November and March until first flowering.
- The metric to be reported will be the number of individual plants within the treeless plains in KNP (northern extent).
- The level of expenditure in delivering the offset will also be reported.
- Note: this will be integrated into an ecological health metric for KNP which reports on the total population of leafy anchor plants in the park.

These steps are further outlined in section 2. As indicated above, the offset actions will be additional to, but integrated with, the core (routine) park management actions typically implemented in KNP.

Implementing the metrics-based approach

Step 1: Quantifying the impacts and benefit that must be delivered

Offset actions must be implemented for each of the 19 threatened species, one TEC and 4 ecosystems (consisting of 19 plant community types) which are listed in Table 1 and Table 2. An overview of the 3-step metrics-based approach to the delivery of offsets is provided below. Separate KOAPs for each species, TEC and ecosystem provide specific detail on the metrics-based management actions, monitoring metrics and offsetting targets.

The Snowy 2.0 Exploratory Works (including modifications), Main Works and Transmission Connection environmental impact assessments identified that the project will have direct impacts on a total of up to 632 hectares (direct and indirect impacts on more than 1,100 hectares) of native vegetation within KNP. The area of vegetation or habitat impacted for each threatened species, TEC and ecosystem is provided at Table 2.

Step 1 of the metrics-based approach is to quantify, for each threatened species, TEC or ecosystem, the impact that must be offset, and identify a quantifiable benefit that must be delivered.

Threatened species

This will typically involve identifying either:

- the known impact on the population size:
 - For example, the population of the leafy anchor plant is reduced by 45 plants.
 - The benefit (offset) that must be delivered is therefore 54 plants (being 120% of the impact); or
- the **estimated impact** on the population size (using density or other suitable metric such as occupancy):
 - For example, 229 hectares of habitat for the smoky mouse was identified in the environmental impact assessment as being impacted by the project.
 - The density of the population in this habitat was not measured specifically in the assessment surveys. However, studies from elsewhere in KNP provide an approximate guide of one to 2 individuals per hectare, assuming 100% occupancy.
 - Assuming that the carrying capacity of the 229 hectares is reduced to zero, the impact of the project on the smoky mouse is conservatively estimated to be 229 x
 1.5 mice = a reduction in the population of 344 individuals.
 - The benefit (offset) that must be delivered is therefore an increase in the population of smoky mice of 344 x 1.2 = 413 individuals.
 - To increase the population of smoky mice by 413 individuals, it will be necessary to either:
 - increase the density of an existing population for example, increase the density by 0.25 mice per hectare across nearly 1,650 hectares, or
 - reintroduce the smoky mouse across an area of 275 hectares, assuming it reaches a density of 1.5 mice per hectare.

TECs and ecosystems

To quantify the impact that must be offset for a TEC or ecosystem, it will be assumed that the area of TEC or ecosystem impacted by the project is impacted to the point where the vegetation integrity score is now zero for direct impact areas (vegetation integrity is a score under the Biodiversity Assessment Method representing the degree to which the composition, structure and function of the vegetation at a site differs from the best-on-offer condition for the same vegetation type in the contemporary landscape).

This is a conservative approach which, for the purposes of this KOS, overstates the residual biodiversity impact. Accordingly, it will be assumed that the area of each TEC or ecosystem identified in Table 2 is the relevant area:

- For example, one hectare of directly impacted alpine bog or fen is assumed to have a vegetation integrity score of zero.
- The benefit (offset) that must be delivered will be equivalent to the restoration of 1.2 hectares.
- This could involve the complete (100%) restoration of 1.2 hectares, or the restoration of 2.4 hectares of bogs or fens that are currently at approximately 50% condition (based on vegetation integrity).

Step 2: Implementing actions to deliver the required offset

Step 1 will generate a quantifiable benefit that must be delivered for each of the relevant threatened species and TEC or ecosystem.

Step 2 involves setting out cost-effective actions that will deliver the quantifiable benefit identified in Step 1. A detailed description of the actions, including an explanation of how the relevant benefit will be delivered, will be set out in the KOAP for each threatened species, TEC and ecosystem.

Targeted offset actions will address the key threatening processes for each species and TEC identified in Table 4 of the KOS attachment. Actions will also consider relevant Australian Government Threat Abatement Plans to reduce the impacts from key threatening processes on native species.

Threatened species

For some threatened species, offsetting actions will be straightforward. For example, the establishment of at least 54 leafy anchor plants can be achieved by:

- identifying a suitable location
- securing the location for example, through fencing
- collecting seed and implementing a planting program
- maintaining 54 plants until they are mature and self-sustaining.

However, for other threatened species this will involve consideration of a range of more complex factors. For example, delivering an offset of at least 413 smoky mice could involve the following management interventions:

- identifying an area of suitable habitat for delivery of the offset
- measuring the current density (or other suitable metric such as occupancy) of smoky
 mice at that location and identifying the target density, and thus the required area across
 which the offset actions are to be delivered

- increasing the density (or other suitable metric) of smoky mice at that location through a series of targeted offset actions such as:
 - intensive feral predator and herbivore control (above and beyond core management)
 - o reintroduction of smoky mice (if the current density is zero or very low).

The net outcome from the management interventions will need to be an increase in the population of mice at that location of at least 413. This will require an assessment of the extent to which the existing population density can be increased through management actions. If it is expected that a small increase only in the existing density can be achieved, then the management intervention will need to occur over a larger area to generate the required total population increase.

The monitoring program to measure the change in density (or other suitable metric such as occupancy) will be set out in the Smoky Mouse KOAP. See Step 3 below.

TECs and ecosystems

In identifying actions that will deliver offsets for the relevant TECs or ecosystems, the KOAPs will set out a similar approach:

- identifying a defined area of the TEC or ecosystem that can be restored or improved
- articulating a baseline (current) measure of vegetation integrity for that area
- setting out actions (over and above core park management) that will be implemented to increase the functionality or carrying capacity of the area such as:
 - o fire management
 - weed control
 - o feral animal control
 - o other forms of restoration such as replanting and exclusion fencing.

The net outcome from the management interventions must be an uplift in condition (based on vegetation integrity) for the defined area that is sufficient to offset the total loss of 120% of the impacted area. For example, an increase in condition from 50% to 75% across 1,200 hectares of dry sclerophyll forests will be required to offset the assumed complete loss of 300 hectares of dry sclerophyll forests.

In developing each KOAP, the indicative management actions identified as part of the Snowy 2.0 environmental assessments will be taken into account. Advice from species and TEC or ecosystem experts will also inform the development of the KOAPs. Key threatening processes (outlined in Table 4 of the KOS attachment) and Commonwealth Threat Abatement Plans for each species and TEC will also be considered when developing KOAPs.

Step 3: Measuring and reporting on biodiversity benefits

Each KOAP must describe how the required biodiversity benefit (offset) will be measured. This will involve setting out the attributes to be measured and the methodology, timing and other relevant details regarding monitoring.

For example:

- the Smoky Mouse KOAP will set out how the density (or other suitable metric such as occupancy) of smoky mice is to be measured – what monitoring methodology will be employed, the monitoring design, timing and so on
- the Dry Sclerophyll Forest KOAP will set out the attributes that will be measured to assess the vegetation integrity, as well as the details of how these attributes will be evaluated.

It is recognised that quantifying and measuring the biodiversity benefit for smoky mice and many of the other species – whether the metric is density, occupancy or some other unit – will often present significant technical challenges. Combined with the influence of natural variability, it is anticipated there will be a level of uncertainty in relation to both measuring and interpreting relevant biodiversity metrics. This uncertainty will be addressed by:

- utilising the best available science, including, as appropriate, new technology
- adopting a conservative approach to the application of the KOS, through a 120% target
- applying an adaptive approach, including reviewing and updating targets, and monitoring methodologies and strategies, as required (see section 5, 'Adaptive management and contingency measures')
- utilising multiple measures (for example, density and occupancy) where that will help increase the confidence in results.

The results of monitoring for each threatened species, TEC and ecosystem will be reported annually, highlighting:

- the total level of benefit required to be delivered to achieve the offset for example, 54 leafy anchor plants
- the latest monitoring outcome.

Table 2 Conservation status and number of hectares impacted for each threatened species, TEC and ecosystem

	ew South Wales	Commonwealth	Total impact ¹ (EW+MW+TC) hectares/number
Alpine she-oak skink* Crit	tically endangered	Endangered	213
Alpine tree frog*	dangered	Vulnerable	54
Booroolong frog*	dangered	Endangered	8.9
Broad-toothed rat* Vul	nerable	Vulnerable	162
Caladenia montana Vul	nerable	Not listed	10.9
Clover glycine End	dangered	Vulnerable	1.5
Eastern pygmy-possum Vul	nerable	Not listed	602.2
Gang-gang cockatoo Vul	nerable	Endangered	56.5
Kiandra leek orchid Vul	nerable	Vulnerable	6
Leafy anchor plant Vul	nerable	Not listed	45 individuals
Mauve burr-daisy Vul	nerable	Vulnerable	22
Masked owl Vul	nerable	Not listed	1.3
Max Mueller's burr-daisy End	dangered	Not listed	2.6
Raleigh sedge End	dangered	Not listed	0.8
Slender greenhood Vul	nerable	Not listed	0.6
Smoky mouse* Crit	tically endangered	Endangered	229
Southern myotis Vul	nerable	Not listed	4
White-bellied sea-eagle Vul	nerable	Not listed	23
Yellow-bellied glider Vul	nerable	Vulnerable	20.9
Alpine sphagnum bogs and Notifens*	t listed ²	Endangered	1
Dry sclerophyll forests	See plant community types (PCTs) in the KOS attachment		300
Wet sclerophyll forests			179
Grassy woodlands			465
Grasslands			236

^{*} Commonwealth-listed (MNES) threatened species and TEC likely to be significantly impacted

Source: Snowy 2.0 EW, MW and TC EIS - impacts to species, TECs and ecosystems

¹ Total hectares impacted include direct and indirect impacts (indirect impacts unknown for TC species)

² Alpine sphagnum bogs and associated fens TEC is protected under the NSW *Biodiversity Conservation Act 2016* as part of the endangered community 'Montane peatlands and swamps of the New England Tableland, NSW North Coast, Sydney Basin, South-East Corner, South-Eastern Highlands and Australian Alps Bioregions'

3. Commonwealth-listed species

For the 5 Commonwealth-listed threatened species and one TEC in Table 1, NPWS will develop and implement a specific KOAP in consultation with the Australian Department of Climate Change, Energy, Environment and Water (DCCEEW). Conservation actions will be consistent with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Environmental Offsets Policy (October 2012).

An Audit Committee has been established with DCCEEW to monitor and evaluate the implementation of the KOS and relevant KOAPs. The Director, Southern NSW Assessments, is the DCCEEW committee representative (see section 4, 'Governance arrangements' for further detail).

4. Governance arrangements

Environment and Heritage Group Project Control Group

An internal Environment and Heritage Group (EHG) (NPWS and Biodiversity Conservation Division (BCD)) Snowy 2.0 Project Control Group (PCG) has been established to provide comment and input on KOAPs and the Annual Offsets Works Program.

Membership of the PCG is:

- Director, NPWS Southern Ranges Branch and/or Director, NPWS Projects
- Manager, NPWS Snowy 2.0 Team (Chair)
- Manager, NPWS Southern Ranges Branch Programs
- Senior Conservation Planning Officers, BCD
- Senior Project Officer (Planning), NPWS Snowy 2.0 Team (Executive Officer)
- Senior Project Officer (Operations), NPWS Snowy 2.0 Team.

Membership of the PCG may change and is subject to the Southern Ranges Branch and/or Projects Branch Director's discretion.

Approvals

The KOS, KOAPs and Annual Offsets Works Program will be sent for approval to the Deputy Secretary, NPWS. The KOS and KOAPs for all threatened species, TEC and ecosystems will be sent to the Deputy Secretary, DCCEEW, for input, with the 5 Commonwealth-listed species and TEC KOAPs also being approved by the Deputy Secretary, DCCEEW.

As each KOAP is approved, a link to the published KOAP will be provided in section 6 of the KOS attachment.

Annual Offsets Work Programs can be amended throughout the year if circumstances, resourcing and priorities change and will be resubmitted to the Deputy Secretary, NPWS, if amended.

NPWS-DCCEEW Audit Committee

An Audit Committee has been established with DCCEEW to monitor and evaluate the implementation of this KOS and KOAPs as they apply to the Commonwealth-listed species. The committee consists of 2 representatives from NPWS, one from BCD and one from DCCEEW.

An annual report on the offsets and benefits delivered for all identified threatened species, TECs and ecosystems, expenditure and interest earnt will be provided to DCCEEW (through the Audit Committee) for information. The annual report will be provided to DCCEEW within 3 months of the end of each financial year.

Offset fund management and budgets

All offset funds paid to NPWS are maintained in an interest-earning departmental account (Department of Planning and Environment Restricted Cash Account). Funds held are accounted for separately from other projects. Interest is reinvested in this fund for future expenditure on the offset project.

KOAPs will be supported by annual budgets approved by the Deputy Secretary, NPWS. Budgets will include direct costs, including staff costs to implement actions. There will be a cap on administrative costs of no more than 10% of the total cost to implement each KOAP.

Reporting

As required by the Snowy 2.0 approvals, NPWS must monitor, evaluate and publicly report on progress of the implementation program and the effectiveness of the specific projects.

An annual report will be prepared by NPWS on the Snowy 2.0 biodiversity offset program for KNP and its implementation. The report will be delivered to the Deputy Secretary, NPWS.

The annual report will:

- detail the expenditure from the biodiversity offset fund on agreed actions under the KOAPs
- outline any interest earned and reinvested into the offset program
- provide details about the conservation actions carried out for each approved threatened species, TEC and threatened ecosystem KOAP
- include specific and measurable details on progress towards each KOAP objective that
 has been delivered (that is, the proportion of the proposed conservation actions
 achieved and proportion yet to be achieved if known) and provide a summary of
 monitoring data on the effectiveness of conservation actions
- document where adaptive management principles have been applied to each KOAP to improve the effectiveness of the plans.

The Deputy Secretary, NPWS, will provide DCCEEW with a copy of the annual report, noting it will contain information on the level of investment, the actions taken, and the benefits delivered for the 5 Commonwealth-listed species and ecological community.

A public annual report will also be prepared, providing an update on the program, its implementation and effectiveness. This report will be published on the NPWS website.

5. Adaptive management and contingency measures

Adaptive management

The principles of adaptive management include a cycle of:

- setting an objective
- strategy development (the KOS)
- development of management plans (KOAPs)
- implementation of management plans (Annual Offsets Work Programs)
- monitoring and evaluating
- adjusting and adapting.

Adjusting and adapting allows improved project management and improved conservation outcomes over time. This adaptive management cycle will be applied to the KOS and each KOAP throughout the life of the offset project until the objective is achieved for each species, TEC and ecosystem. The annual report will document when adaptive management principles have been applied to the KOS and KOAPs.

Within this adaptive management cycle, every step is intended to refine and improve progress towards achieving each KOAP objective. This KOS and all KOAPs will be updated as new or additional information becomes available.

Contingency measures

KOAPs will be reviewed every 5 years, with results of monitoring and measuring against the KOAP objective and actions reported annually (see 'Reporting' in section 4). If KOAP monitoring, measuring and reporting identify over time that biodiversity gains are not being realised and progress towards the KOAP objective is not being made (that is, there is little to no progress towards offsetting 120% of the biodiversity loss), then a comprehensive review of the KOAP will occur.

The comprehensive review of the KOAP will include the following contingency measures:

- a review of key threatening processes, including identification of any new or emerging threats for that species that were not identified or present when the KOAP was initially developed
- 2. identification of any new management actions to address the new or emerging threats
- 3. a review of current management actions. This may involve:
 - a reallocation of funding
 - a review of locations where actions are taking place to ensure that actions are
 occurring in the most suitable habitat or location for that species, TEC or ecosystem or
 whether management actions need to occur over a larger area to realise the
 biodiversity gain of 120%
 - consideration of captive breeding programs if the density remains low or is zero

- 4. a review of the metrics collected and used to measure progress towards the KOAP objective for example, is the metric (such as occupancy) still the most appropriate measure for that species?
- 5. identification of any other contingency measures that may benefit the species and move towards achieving the KOAP objective for example, further consultation with species experts and/or a literature review to ensure that best practice is still being implemented and any new technologies that may benefit the species are considered.

The comprehensive KOAP review will include consultation with the PCG and/or the Audit Committee (for Commonwealth-listed species). Any recommended changes to Commonwealth-listed species KOAPs will require approval from DCCEEW (see section 4, 'Governance arrangements' for further details).

6. Kosciuszko Offset Strategy attachment

An attachment to this strategy is available that includes background information about the Kosciuszko Offset Project. The attachment includes details on:

- overall project background, including details on planning approvals and biodiversity impacted, and a list of plant community types (PCTs) impacted
- offset payments for Snowy 2.0 approvals
- key threatening process for each threatened species, TECs and ecosystem identified under the KOS
- Commonwealth Matters of National Environmental Significance
- NPWS projects of Ecological Health Performance Scorecards and Assets of Intergenerational Significance
- links to approved and published KOAPs
- Exploratory Works, Main Works and Transmission Connection biodiversity offset-related planning conditions.